

WEBVTT

NOTE duration: "01:19:45.536"

NOTE Confidence: 0.9860934

00:00:00.160 --> 00:00:01.120 Really, it's a pleasure to

NOTE Confidence: 0.9860934

00:00:01.120 --> 00:00:01.920 be here tonight. My name

NOTE Confidence: 0.9860934

00:00:01.920 --> 00:00:03.199 is Pamela Coons, and I'm

NOTE Confidence: 0.9860934

00:00:03.199 --> 00:00:04.580 a GI medical oncologist

NOTE Confidence: 0.98843926

00:00:05.359 --> 00:00:06.799 and the chief of GI

NOTE Confidence: 0.98843926

00:00:06.799 --> 00:00:07.700 medical oncology

NOTE Confidence: 0.96358806

00:00:08.080 --> 00:00:09.679 here at Yale Cancer Center

NOTE Confidence: 0.96358806

00:00:09.679 --> 00:00:11.059 and Smilow Cancer Hospital.

NOTE Confidence: 0.99913883

00:00:11.599 --> 00:00:13.105 So, as I just mentioned,

NOTE Confidence: 0.9987545

00:00:13.405 --> 00:00:14.144 we are

NOTE Confidence: 0.9390334

00:00:14.684 --> 00:00:17.005 rounding out the four part

NOTE Confidence: 0.9390334

00:00:17.005 --> 00:00:18.605 CME webinar series for the

NOTE Confidence: 0.9390334

00:00:18.605 --> 00:00:20.545 center for GI cancers following

NOTE Confidence: 0.9390334

00:00:20.685 --> 00:00:22.545 the GI oncology urine review,

NOTE Confidence: 0.9571441

00:00:23.005 --> 00:00:24.945 then colorectal cancer and gastroesophageal

NOTE Confidence: 0.9719917

00:00:25.325 --> 00:00:26.305 cancer. And tonight,

NOTE Confidence: 0.98258924

00:00:26.685 --> 00:00:27.985 we are talking about neuroendocrine

NOTE Confidence: 0.9986881

00:00:28.500 --> 00:00:29.000 cancers.

NOTE Confidence: 0.9983162

00:00:30.980 --> 00:00:32.840 It's my pleasure to introduce

NOTE Confidence: 0.9983162

00:00:33.060 --> 00:00:34.680 my colleagues this evening.

NOTE Confidence: 0.9859643

00:00:35.140 --> 00:00:36.500 So first off, I will

NOTE Confidence: 0.9859643

00:00:36.500 --> 00:00:38.200 be talking about just NETS

NOTE Confidence: 0.9859643

00:00:38.260 --> 00:00:39.540 one zero one and some

NOTE Confidence: 0.9859643

00:00:39.540 --> 00:00:40.680 systemic treatment.

NOTE Confidence: 0.95901996

00:00:41.045 --> 00:00:42.645 Doctor David Klemstra is a

NOTE Confidence: 0.95901996

00:00:42.645 --> 00:00:43.784 professor of pathology,

NOTE Confidence: 0.99706507

00:00:44.325 --> 00:00:45.445 and he will be talking

NOTE Confidence: 0.99706507

00:00:45.445 --> 00:00:46.745 about NET pathology.

NOTE Confidence: 0.94921803

00:00:47.845 --> 00:00:49.604 Doctor John Kuntzmann is an

NOTE Confidence: 0.94921803

00:00:49.604 --> 00:00:51.284 assistant professor of surgery and

NOTE Confidence: 0.94921803  
00:00:51.284 --> 00:00:52.345 surgical oncology,  
NOTE Confidence: 0.7976837  
00:00:52.725 --> 00:00:53.700 and he will be discussing  
NOTE Confidence: 0.7976837  
00:00:53.700 --> 00:00:54.200 the  
NOTE Confidence: 0.9661551  
00:00:55.500 --> 00:00:56.000 primary  
NOTE Confidence: 0.9589959  
00:00:57.300 --> 00:00:59.620 and metastatic disease. And doctor  
NOTE Confidence: 0.9589959  
00:00:59.620 --> 00:01:01.620 Gabriella Spilberg is an assistant  
NOTE Confidence: 0.9589959  
00:01:01.620 --> 00:01:03.720 professor of radiology and biomedical  
NOTE Confidence: 0.9589959  
00:01:03.780 --> 00:01:05.700 engineering and nuclear medicine, and  
NOTE Confidence: 0.9589959  
00:01:05.700 --> 00:01:06.920 we'll talk about theranostics.  
NOTE Confidence: 0.9841385  
00:01:07.515 --> 00:01:08.555 We'll each talk for about  
NOTE Confidence: 0.9841385  
00:01:08.555 --> 00:01:10.075 fifteen minutes, and then we'll  
NOTE Confidence: 0.9841385  
00:01:10.075 --> 00:01:11.515 have a thirty minute q  
NOTE Confidence: 0.9841385  
00:01:11.515 --> 00:01:12.255 and a.  
NOTE Confidence: 0.972747  
00:01:14.955 --> 00:01:16.315 Alright. So to kick off,  
NOTE Confidence: 0.972747  
00:01:16.315 --> 00:01:17.855 I'm gonna do an introductory  
NOTE Confidence: 0.972747

00:01:18.155 --> 00:01:19.935 just around language and nomenclature

NOTE Confidence: 0.972747

00:01:20.155 --> 00:01:20.895 of NETs

NOTE Confidence: 0.9865067

00:01:21.275 --> 00:01:23.470 and some discussion around systemic

NOTE Confidence: 0.9865067

00:01:23.470 --> 00:01:23.970 treatment.

NOTE Confidence: 0.9430887

00:01:25.069 --> 00:01:26.050 These are my disclosures.

NOTE Confidence: 0.99600285

00:01:28.590 --> 00:01:29.709 And this is the outline.

NOTE Confidence: 0.99600285

00:01:29.709 --> 00:01:30.830 So I'll talk briefly about

NOTE Confidence: 0.99600285

00:01:30.830 --> 00:01:32.290 epidemiology and nomenclature,

NOTE Confidence: 0.99422705

00:01:33.150 --> 00:01:34.830 characteristics that impact how we

NOTE Confidence: 0.99422705

00:01:34.830 --> 00:01:35.890 think about treatment,

NOTE Confidence: 0.9968499

00:01:36.385 --> 00:01:37.905 and then discuss treatments for

NOTE Confidence: 0.9968499

00:01:37.905 --> 00:01:38.944 tumor control. I'll give an

NOTE Confidence: 0.9968499

00:01:38.944 --> 00:01:39.985 overview, but then I'll also

NOTE Confidence: 0.9968499

00:01:39.985 --> 00:01:40.865 talk about some of our

NOTE Confidence: 0.9968499

00:01:40.865 --> 00:01:42.145 newest treatments in the last

NOTE Confidence: 0.9968499

00:01:42.145 --> 00:01:42.965 couple of years.

NOTE Confidence: 0.99510586  
00:01:43.985 --> 00:01:45.104 So this is a slide  
NOTE Confidence: 0.99510586  
00:01:45.104 --> 00:01:45.985 I'd love to use because  
NOTE Confidence: 0.99510586  
00:01:45.985 --> 00:01:47.365 I think it really shows  
NOTE Confidence: 0.99510586  
00:01:47.585 --> 00:01:49.505 how much progress we've made  
NOTE Confidence: 0.99510586  
00:01:49.505 --> 00:01:50.705 in the last couple of  
NOTE Confidence: 0.99510586  
00:01:50.705 --> 00:01:51.205 decades.  
NOTE Confidence: 0.9863795  
00:01:51.770 --> 00:01:53.770 So until the late nineteen  
NOTE Confidence: 0.9863795  
00:01:53.770 --> 00:01:55.530 eighties, we only had two  
NOTE Confidence: 0.9863795  
00:01:55.530 --> 00:01:57.310 available therapies. Streptazosin  
NOTE Confidence: 0.96667373  
00:01:57.770 --> 00:01:59.310 was FDA approved for pancreatic  
NOTE Confidence: 0.96667373  
00:01:59.370 --> 00:02:01.070 NETs, and octreotide  
NOTE Confidence: 0.996877  
00:02:01.450 --> 00:02:03.790 was approved for hormone control.  
NOTE Confidence: 0.99971116  
00:02:04.135 --> 00:02:05.595 And then we had almost  
NOTE Confidence: 0.99971116  
00:02:05.655 --> 00:02:07.115 nothing for about  
NOTE Confidence: 0.9966262  
00:02:07.655 --> 00:02:09.834 twenty years. And then starting  
NOTE Confidence: 0.9966262

00:02:09.975 --> 00:02:11.895 in twenty eleven, we had  
NOTE Confidence: 0.9966262

00:02:11.895 --> 00:02:12.715 this explosion  
NOTE Confidence: 0.963916

00:02:13.495 --> 00:02:15.675 of available systemic treatments.  
NOTE Confidence: 0.9595059

00:02:16.375 --> 00:02:18.090 That's that's below the timeline.  
NOTE Confidence: 0.9595059

00:02:18.090 --> 00:02:19.470 And then above the timeline,  
NOTE Confidence: 0.9595059

00:02:19.690 --> 00:02:21.310 we had advances in imaging.  
NOTE Confidence: 0.95454216

00:02:21.770 --> 00:02:22.970 And we'll talk about all  
NOTE Confidence: 0.95454216

00:02:22.970 --> 00:02:24.169 of those things this this  
NOTE Confidence: 0.95454216

00:02:24.169 --> 00:02:24.669 evening.  
NOTE Confidence: 0.9522776

00:02:26.250 --> 00:02:27.450 So many of you, I'm  
NOTE Confidence: 0.9522776

00:02:27.450 --> 00:02:28.570 sure, have heard the word  
NOTE Confidence: 0.9522776

00:02:28.570 --> 00:02:30.525 carcinoid, which means cancer like.  
NOTE Confidence: 0.9522776

00:02:30.525 --> 00:02:31.885 This term was coined by  
NOTE Confidence: 0.9522776

00:02:31.885 --> 00:02:34.044 a German pathologist, doctor Orban  
NOTE Confidence: 0.9522776

00:02:34.044 --> 00:02:35.325 Dorfer, in the early nineteen  
NOTE Confidence: 0.9522776

00:02:35.325 --> 00:02:36.845 hundreds. And while this was

NOTE Confidence: 0.9522776  
00:02:36.845 --> 00:02:38.605 a really important contribution to  
NOTE Confidence: 0.9522776  
00:02:38.605 --> 00:02:39.264 the field,  
NOTE Confidence: 0.9996584  
00:02:39.565 --> 00:02:40.845 it also was a bit  
NOTE Confidence: 0.9996584  
00:02:40.845 --> 00:02:41.345 misleading.  
NOTE Confidence: 0.9986278  
00:02:41.900 --> 00:02:44.060 So he initially described these  
NOTE Confidence: 0.9986278  
00:02:44.060 --> 00:02:46.320 tumors as small and multifocal  
NOTE Confidence: 0.9688304  
00:02:46.780 --> 00:02:47.760 with undifferentiated  
NOTE Confidence: 0.9980092  
00:02:48.220 --> 00:02:49.200 cellular formations  
NOTE Confidence: 0.95253855  
00:02:49.580 --> 00:02:50.780 that they had well defined  
NOTE Confidence: 0.95253855  
00:02:50.780 --> 00:02:52.880 borders, had no metastatic potential  
NOTE Confidence: 0.95253855  
00:02:53.100 --> 00:02:54.139 and were slow growing and  
NOTE Confidence: 0.95253855  
00:02:54.139 --> 00:02:55.919 harmless. And it was for  
NOTE Confidence: 0.95253855  
00:02:56.175 --> 00:02:57.614 almost a hundred years after  
NOTE Confidence: 0.95253855  
00:02:57.614 --> 00:02:58.114 this  
NOTE Confidence: 0.9060912  
00:02:58.415 --> 00:02:58.915 that,  
NOTE Confidence: 0.99819726

00:02:59.455 --> 00:03:00.895 for a very long time,  
NOTE Confidence: 0.99819726

00:03:00.895 --> 00:03:02.334 these were actually not even  
NOTE Confidence: 0.99819726

00:03:02.334 --> 00:03:03.474 considered cancers.  
NOTE Confidence: 0.97795177

00:03:03.855 --> 00:03:04.655 It was really in the  
NOTE Confidence: 0.97795177

00:03:04.655 --> 00:03:05.155 late,  
NOTE Confidence: 0.96640074

00:03:05.614 --> 00:03:07.694 nineteen nineties, early two thousands  
NOTE Confidence: 0.96640074

00:03:07.694 --> 00:03:08.735 that they were described as  
NOTE Confidence: 0.96640074

00:03:08.735 --> 00:03:10.014 cancers and captured in the  
NOTE Confidence: 0.96640074

00:03:10.014 --> 00:03:11.555 SEER database as cancers.  
NOTE Confidence: 0.9984393

00:03:12.200 --> 00:03:13.880 And, so that that does  
NOTE Confidence: 0.9984393

00:03:13.880 --> 00:03:16.139 make some epidemiologic studies trickier.  
NOTE Confidence: 0.99855673

00:03:18.040 --> 00:03:19.419 So in terms of epidemiology,  
NOTE Confidence: 0.9840398

00:03:19.800 --> 00:03:21.720 both incidence and prevalence, on  
NOTE Confidence: 0.9840398

00:03:21.720 --> 00:03:23.400 the left is a figure  
NOTE Confidence: 0.9840398

00:03:23.400 --> 00:03:25.180 of incidence. So the incidence  
NOTE Confidence: 0.9840398

00:03:25.240 --> 00:03:26.864 or number diagnosed per year

NOTE Confidence: 0.9840398

00:03:26.864 --> 00:03:27.924 is actually low,

NOTE Confidence: 0.97142625

00:03:28.465 --> 00:03:29.745 but rising. So that is

NOTE Confidence: 0.97142625

00:03:29.745 --> 00:03:31.905 the the yellow line in

NOTE Confidence: 0.97142625

00:03:31.905 --> 00:03:33.345 comparison to the blue line,

NOTE Confidence: 0.97142625

00:03:33.345 --> 00:03:34.385 which is the incidence of

NOTE Confidence: 0.97142625

00:03:34.385 --> 00:03:35.605 all malignant neoplasms.

NOTE Confidence: 0.95239353

00:03:36.305 --> 00:03:37.745 So the incidence of NETs

NOTE Confidence: 0.95239353

00:03:37.745 --> 00:03:39.185 at present is about eight

NOTE Confidence: 0.95239353

00:03:39.185 --> 00:03:41.110 to ten per hundred thousand,

NOTE Confidence: 0.96834546

00:03:41.490 --> 00:03:43.270 but has increased pretty dramatically

NOTE Confidence: 0.96834546

00:03:43.330 --> 00:03:44.630 over the last thirty years

NOTE Confidence: 0.96834546

00:03:44.690 --> 00:03:46.130 thought to be in large

NOTE Confidence: 0.96834546

00:03:46.130 --> 00:03:47.510 part due to better diagnostics.

NOTE Confidence: 0.9665412

00:03:48.610 --> 00:03:49.110 However,

NOTE Confidence: 0.9922145

00:03:49.650 --> 00:03:51.490 that is probably not enough

NOTE Confidence: 0.9922145

00:03:51.490 --> 00:03:52.150 to describe,  
NOTE Confidence: 0.9992621

00:03:53.010 --> 00:03:53.830 to exclusively  
NOTE Confidence: 0.99928546

00:03:54.905 --> 00:03:56.665 describe the reasons for the  
NOTE Confidence: 0.99928546

00:03:56.665 --> 00:03:57.165 increase.  
NOTE Confidence: 0.9211714

00:03:57.945 --> 00:03:59.145 Prevalence is the number of  
NOTE Confidence: 0.9211714

00:03:59.145 --> 00:04:01.145 patients alive, and really NETs  
NOTE Confidence: 0.9211714

00:04:01.145 --> 00:04:02.845 have higher prevalence than previously  
NOTE Confidence: 0.9211714

00:04:02.905 --> 00:04:03.405 appreciated.  
NOTE Confidence: 0.96777004

00:04:03.785 --> 00:04:05.385 NET prevalence exceeds that of  
NOTE Confidence: 0.96777004

00:04:05.385 --> 00:04:07.085 stomach and pancreatic adenocarcinoma  
NOTE Confidence: 0.94584775

00:04:07.625 --> 00:04:08.860 combined. So really a much  
NOTE Confidence: 0.94584775

00:04:08.860 --> 00:04:10.780 bigger public health problem. And  
NOTE Confidence: 0.94584775

00:04:10.780 --> 00:04:12.460 in fact, NETs at present  
NOTE Confidence: 0.94584775

00:04:12.460 --> 00:04:14.080 are the second most common  
NOTE Confidence: 0.94584775

00:04:14.140 --> 00:04:14.960 GI malignancy.  
NOTE Confidence: 0.99381834

00:04:17.580 --> 00:04:19.180 Recently, a new version of

NOTE Confidence: 0.99381834  
00:04:19.180 --> 00:04:20.940 the AJCC guidelines came out.  
NOTE Confidence: 0.99381834  
00:04:20.940 --> 00:04:21.760 This is version  
NOTE Confidence: 0.98828983  
00:04:22.495 --> 00:04:23.695 nine. And we are starting  
NOTE Confidence: 0.98828983  
00:04:23.695 --> 00:04:25.855 to see better data around  
NOTE Confidence: 0.98828983  
00:04:25.855 --> 00:04:27.135 overall survival. And I thought  
NOTE Confidence: 0.98828983  
00:04:27.135 --> 00:04:28.895 just juxtaposing these was really  
NOTE Confidence: 0.98828983  
00:04:28.895 --> 00:04:30.095 important to show you that  
NOTE Confidence: 0.98828983  
00:04:30.095 --> 00:04:32.255 the five year overall survival  
NOTE Confidence: 0.98828983  
00:04:32.255 --> 00:04:33.635 for pancreatic NETs,  
NOTE Confidence: 0.97855514  
00:04:35.099 --> 00:04:37.020 for metastatic pancreatic NETs is  
NOTE Confidence: 0.97855514  
00:04:37.020 --> 00:04:38.379 about six to seven years,  
NOTE Confidence: 0.97855514  
00:04:38.379 --> 00:04:40.139 and for metastatic small bowel  
NOTE Confidence: 0.97855514  
00:04:40.139 --> 00:04:41.339 NETs is eight to ten  
NOTE Confidence: 0.97855514  
00:04:41.339 --> 00:04:41.839 years.  
NOTE Confidence: 0.9638752  
00:04:42.219 --> 00:04:43.659 It it can differ, as  
NOTE Confidence: 0.9638752

00:04:43.659 --> 00:04:44.960 you can see, by pathologic  
NOTE Confidence: 0.9638752

00:04:45.180 --> 00:04:45.680 stage.  
NOTE Confidence: 0.97511065

00:04:46.060 --> 00:04:46.939 But I think that we've  
NOTE Confidence: 0.97511065

00:04:46.939 --> 00:04:48.699 really made significant advances in  
NOTE Confidence: 0.97511065

00:04:48.699 --> 00:04:50.539 treating patients with metastatic disease  
NOTE Confidence: 0.97511065

00:04:50.539 --> 00:04:52.035 such that they live for  
NOTE Confidence: 0.97511065

00:04:52.035 --> 00:04:54.055 years, and these are really  
NOTE Confidence: 0.97511065

00:04:54.354 --> 00:04:55.875 metastatic NETs is really more  
NOTE Confidence: 0.97511065

00:04:55.875 --> 00:04:57.074 of a chronic condition in  
NOTE Confidence: 0.97511065

00:04:57.074 --> 00:04:57.895 chronic cancer.  
NOTE Confidence: 0.9791567

00:04:59.074 --> 00:05:01.074 NETs are epithelial neoplasms that  
NOTE Confidence: 0.9791567

00:05:01.074 --> 00:05:02.595 are derived from neuroendocrine cells  
NOTE Confidence: 0.9791567

00:05:02.595 --> 00:05:04.290 throughout the body. Most grow  
NOTE Confidence: 0.9791567

00:05:04.290 --> 00:05:05.730 slowly in comparison with their  
NOTE Confidence: 0.9791567

00:05:05.730 --> 00:05:06.230 adenocarcinoma  
NOTE Confidence: 0.9969164

00:05:06.610 --> 00:05:07.110 counterparts.

NOTE Confidence: 0.9787854  
00:05:07.570 --> 00:05:09.490 The majority are sporadic with  
NOTE Confidence: 0.9787854  
00:05:09.490 --> 00:05:10.770 about ten percent or less  
NOTE Confidence: 0.9787854  
00:05:10.770 --> 00:05:12.390 associated with familial syndromes.  
NOTE Confidence: 0.9430878  
00:05:12.930 --> 00:05:14.690 And really pathognomonic for the  
NOTE Confidence: 0.9430878  
00:05:14.690 --> 00:05:15.970 disease is the presence of  
NOTE Confidence: 0.9430878  
00:05:15.970 --> 00:05:16.470 somatostatin  
NOTE Confidence: 0.9290153  
00:05:16.850 --> 00:05:17.350 receptors.  
NOTE Confidence: 0.9833719  
00:05:17.714 --> 00:05:18.915 Eighty to ninety percent of  
NOTE Confidence: 0.9833719  
00:05:18.915 --> 00:05:21.315 NETs overexpress somatostatin receptor type  
NOTE Confidence: 0.9833719  
00:05:21.315 --> 00:05:21.815 two.  
NOTE Confidence: 0.9966512  
00:05:23.475 --> 00:05:25.335 The diagnostic workup includes  
NOTE Confidence: 0.92831975  
00:05:25.794 --> 00:05:27.495 really at the foundation  
NOTE Confidence: 0.95491964  
00:05:27.875 --> 00:05:29.315 cross sectional imaging. That is  
NOTE Confidence: 0.95491964  
00:05:29.315 --> 00:05:30.755 the primary tool that we  
NOTE Confidence: 0.95491964  
00:05:30.755 --> 00:05:32.730 monitor these patients with,  
NOTE Confidence: 0.9201475

00:05:33.210 --> 00:05:35.130 Either a multiphasic CT and  
NOTE Confidence: 0.9201475

00:05:35.130 --> 00:05:35.950 that multiphasic  
NOTE Confidence: 0.98626214

00:05:36.330 --> 00:05:37.390 is really critical.  
NOTE Confidence: 0.9957124

00:05:37.770 --> 00:05:40.029 We highly recommend arterial phase,  
NOTE Confidence: 0.9730517

00:05:40.570 --> 00:05:42.110 imaging as part of that.  
NOTE Confidence: 0.9730517

00:05:42.410 --> 00:05:44.430 An MRI is also acceptable.  
NOTE Confidence: 0.95471185

00:05:44.935 --> 00:05:46.854 And then somatostatin receptor imaging  
NOTE Confidence: 0.95471185

00:05:46.854 --> 00:05:48.134 with either gallium sixty eight  
NOTE Confidence: 0.95471185

00:05:48.134 --> 00:05:49.574 DOTAPET or copper sixty four,  
NOTE Confidence: 0.95471185

00:05:49.574 --> 00:05:51.014 which doctor Spilberg will will  
NOTE Confidence: 0.95471185

00:05:51.014 --> 00:05:51.915 talk about later,  
NOTE Confidence: 0.97866756

00:05:52.294 --> 00:05:53.975 has also become quite important.  
NOTE Confidence: 0.97866756

00:05:53.975 --> 00:05:56.055 So the somatostatin receptor based  
NOTE Confidence: 0.97866756

00:05:56.055 --> 00:05:57.495 imaging is often avid in  
NOTE Confidence: 0.97866756

00:05:57.495 --> 00:05:58.555 low grade disease,  
NOTE Confidence: 0.977021

00:05:59.009 --> 00:06:00.289 but not avid in high

NOTE Confidence: 0.977021

00:06:00.289 --> 00:06:01.970 grade. And the opposite is

NOTE Confidence: 0.977021

00:06:01.970 --> 00:06:03.750 true for f eighteen FDG

NOTE Confidence: 0.977021

00:06:03.810 --> 00:06:05.250 PET. It's avid in high

NOTE Confidence: 0.977021

00:06:05.250 --> 00:06:06.289 grade and not in low

NOTE Confidence: 0.977021

00:06:06.289 --> 00:06:06.789 grade.

NOTE Confidence: 0.9835576

00:06:07.889 --> 00:06:09.490 Tissue diagnosis, we have some

NOTE Confidence: 0.9835576

00:06:09.490 --> 00:06:10.710 minimum data elements.

NOTE Confidence: 0.9837832

00:06:11.185 --> 00:06:12.464 We like to see doctor

NOTE Confidence: 0.9837832

00:06:12.464 --> 00:06:13.904 Klimstra will be talking about

NOTE Confidence: 0.9837832

00:06:13.904 --> 00:06:15.425 this, in detail, so I

NOTE Confidence: 0.9837832

00:06:15.425 --> 00:06:16.305 will not be going over

NOTE Confidence: 0.9837832

00:06:16.305 --> 00:06:16.805 this.

NOTE Confidence: 0.94053346

00:06:17.265 --> 00:06:18.625 And then hormone and tumor

NOTE Confidence: 0.94053346

00:06:18.625 --> 00:06:20.625 markers, we sometimes measure twenty

NOTE Confidence: 0.94053346

00:06:20.625 --> 00:06:21.904 four hour urine and plasma

NOTE Confidence: 0.94053346

00:06:21.904 --> 00:06:23.425 five five HI. I'm I've  
NOTE Confidence: 0.94053346

00:06:23.425 --> 00:06:25.180 really pretty much pivoted using  
NOTE Confidence: 0.94053346

00:06:25.180 --> 00:06:26.860 the plasma test. It's much  
NOTE Confidence: 0.94053346

00:06:26.860 --> 00:06:27.920 easier for patients.  
NOTE Confidence: 0.9592965

00:06:28.620 --> 00:06:30.080 And there are some specific  
NOTE Confidence: 0.9592965

00:06:30.140 --> 00:06:32.480 peptides and amines like glucagon,  
NOTE Confidence: 0.9592965

00:06:32.779 --> 00:06:33.920 insulin, gastrin.  
NOTE Confidence: 0.98608017

00:06:34.620 --> 00:06:36.560 And and I've really stopped  
NOTE Confidence: 0.98608017

00:06:36.745 --> 00:06:38.425 checking chromogranin a. So I  
NOTE Confidence: 0.98608017

00:06:38.425 --> 00:06:38.925 I,  
NOTE Confidence: 0.96355665

00:06:39.384 --> 00:06:40.925 say here resist the temptation  
NOTE Confidence: 0.96355665

00:06:40.985 --> 00:06:42.345 to order chromogranin a. I  
NOTE Confidence: 0.96355665

00:06:42.345 --> 00:06:43.404 find that it is,  
NOTE Confidence: 0.9830886

00:06:43.944 --> 00:06:45.625 quite variable. It often leads  
NOTE Confidence: 0.9830886

00:06:45.625 --> 00:06:46.904 to more anxiety than it  
NOTE Confidence: 0.9830886

00:06:46.904 --> 00:06:48.025 is helpful both for the

NOTE Confidence: 0.9830886  
00:06:48.025 --> 00:06:49.485 physician and for the patient.  
NOTE Confidence: 0.99955684  
00:06:49.785 --> 00:06:50.585 I don't find it a  
NOTE Confidence: 0.99955684  
00:06:50.585 --> 00:06:51.485 useful biomarker.  
NOTE Confidence: 0.9941792  
00:06:53.640 --> 00:06:55.080 So there are, in my  
NOTE Confidence: 0.9941792  
00:06:55.080 --> 00:06:56.700 mind, a number of characteristics  
NOTE Confidence: 0.9941792  
00:06:57.000 --> 00:06:58.140 that that help,  
NOTE Confidence: 0.98867315  
00:06:59.000 --> 00:07:00.760 me decide how to treat  
NOTE Confidence: 0.98867315  
00:07:00.760 --> 00:07:01.720 the patient in front of  
NOTE Confidence: 0.98867315  
00:07:01.720 --> 00:07:03.900 me. They include functional status,  
NOTE Confidence: 0.9733722  
00:07:04.694 --> 00:07:05.814 so whether or not a  
NOTE Confidence: 0.9733722  
00:07:05.814 --> 00:07:07.495 patient has symptoms of of  
NOTE Confidence: 0.9733722  
00:07:07.495 --> 00:07:08.714 a measurable hormone,  
NOTE Confidence: 0.94242114  
00:07:09.175 --> 00:07:10.715 primary site stage,  
NOTE Confidence: 0.9997813  
00:07:11.254 --> 00:07:12.395 volume of disease,  
NOTE Confidence: 0.999264  
00:07:13.014 --> 00:07:13.995 degree of differentiation,  
NOTE Confidence: 0.9301758

00:07:14.534 --> 00:07:16.555 the WHO grade, the somatostatin  
NOTE Confidence: 0.9301758

00:07:16.775 --> 00:07:17.754 receptor status,  
NOTE Confidence: 0.98290646

00:07:18.620 --> 00:07:20.080 germline and somatic mutations,  
NOTE Confidence: 0.9977187

00:07:20.940 --> 00:07:22.300 sex, gender, race, and social  
NOTE Confidence: 0.9977187

00:07:22.300 --> 00:07:23.580 determinants of health. I'm only  
NOTE Confidence: 0.9977187

00:07:23.580 --> 00:07:24.620 gonna focus on a few  
NOTE Confidence: 0.9977187

00:07:24.620 --> 00:07:25.500 of these, but I'm really  
NOTE Confidence: 0.9977187

00:07:25.500 --> 00:07:27.500 gonna focus primarily on on  
NOTE Confidence: 0.9977187

00:07:27.500 --> 00:07:28.880 how we select the treatment.  
NOTE Confidence: 0.999629

00:07:29.660 --> 00:07:31.200 So treatment for  
NOTE Confidence: 0.97936374

00:07:31.604 --> 00:07:33.444 tumor control for NETs. I'm  
NOTE Confidence: 0.97936374

00:07:33.444 --> 00:07:34.645 really gonna focus on just  
NOTE Confidence: 0.97936374

00:07:34.645 --> 00:07:35.384 the neuroendocrine  
NOTE Confidence: 0.988923

00:07:35.925 --> 00:07:37.525 tumors. I'm not gonna talk  
NOTE Confidence: 0.988923

00:07:37.525 --> 00:07:40.104 about poorly differentiated neuroendocrine carcinomas  
NOTE Confidence: 0.988923

00:07:40.245 --> 00:07:41.285 tonight just for the sake  
NOTE Confidence: 0.988923

00:07:41.285 --> 00:07:42.565 of time. So these four  
NOTE Confidence: 0.988923

00:07:42.565 --> 00:07:44.425 buckets are somatostatin analogs,  
NOTE Confidence: 0.99991584

00:07:45.389 --> 00:07:46.210 targeted therapies,  
NOTE Confidence: 0.9999652

00:07:46.990 --> 00:07:47.490 cytotoxic  
NOTE Confidence: 0.9977334

00:07:47.790 --> 00:07:48.290 chemotherapy,  
NOTE Confidence: 0.99906665

00:07:49.070 --> 00:07:50.770 and radioligand therapy.  
NOTE Confidence: 0.9683478

00:07:51.870 --> 00:07:53.389 So doctor Spielberg will talk  
NOTE Confidence: 0.9683478

00:07:53.389 --> 00:07:54.750 about radioligand therapy. I will  
NOTE Confidence: 0.9683478

00:07:54.750 --> 00:07:55.949 not include that in in  
NOTE Confidence: 0.9683478

00:07:55.949 --> 00:07:56.610 my talk.  
NOTE Confidence: 0.9958812

00:07:57.814 --> 00:07:58.474 So the  
NOTE Confidence: 0.9981675

00:07:58.775 --> 00:07:59.275 overall  
NOTE Confidence: 0.9646567

00:07:59.814 --> 00:08:02.074 gap net treatment approach includes  
NOTE Confidence: 0.87597924

00:08:02.534 --> 00:08:04.314 surgical surgical debulking.  
NOTE Confidence: 0.9114201

00:08:04.615 --> 00:08:06.215 If possible, we resect the

NOTE Confidence: 0.9114201  
00:08:06.215 --> 00:08:08.634 primary and even sometimes metastatic  
NOTE Confidence: 0.9114201  
00:08:08.854 --> 00:08:09.354 disease.  
NOTE Confidence: 0.97798395  
00:08:09.750 --> 00:08:11.030 For pancreatic NETs less than  
NOTE Confidence: 0.97798395  
00:08:11.030 --> 00:08:12.310 two centimeters, we can also  
NOTE Confidence: 0.97798395  
00:08:12.310 --> 00:08:13.670 consider observation, and this is  
NOTE Confidence: 0.97798395  
00:08:13.670 --> 00:08:15.370 adapted from the NCCN guidelines.  
NOTE Confidence: 0.92595965  
00:08:15.670 --> 00:08:16.890 I will let doctor Kuntzmann  
NOTE Confidence: 0.92595965  
00:08:17.030 --> 00:08:18.470 focus on talking about surgery,  
NOTE Confidence: 0.92595965  
00:08:18.470 --> 00:08:19.850 both for primary and METs.  
NOTE Confidence: 0.9970375  
00:08:20.390 --> 00:08:21.850 If a patient has unresectable  
NOTE Confidence: 0.9970375  
00:08:22.150 --> 00:08:22.650 metastatic  
NOTE Confidence: 0.99850076  
00:08:23.055 --> 00:08:24.495 and low tumor burden disease,  
NOTE Confidence: 0.99850076  
00:08:24.495 --> 00:08:25.395 we often observe  
NOTE Confidence: 0.95334363  
00:08:26.095 --> 00:08:27.854 or use a somatostatin analog  
NOTE Confidence: 0.95334363  
00:08:27.854 --> 00:08:28.995 as first line treatment.  
NOTE Confidence: 0.99902767

00:08:29.455 --> 00:08:30.514 If they have unresectable  
NOTE Confidence: 0.9130102

00:08:31.134 --> 00:08:33.235 metastatic disease and have symptoms  
NOTE Confidence: 0.9130102

00:08:33.295 --> 00:08:34.415 for their from their primary  
NOTE Confidence: 0.9130102

00:08:34.415 --> 00:08:34.915 tumor.  
NOTE Confidence: 0.96571386

00:08:35.720 --> 00:08:37.160 Again, doctor Kuntzmann will talk  
NOTE Confidence: 0.96571386

00:08:37.160 --> 00:08:38.840 about indications for resection of  
NOTE Confidence: 0.96571386

00:08:38.840 --> 00:08:39.900 the primary tumor.  
NOTE Confidence: 0.9735257

00:08:40.360 --> 00:08:41.400 And then if patients have  
NOTE Confidence: 0.9735257

00:08:41.400 --> 00:08:43.500 unresectable metastatic or clinically  
NOTE Confidence: 0.9886326

00:08:43.880 --> 00:08:44.380 significant  
NOTE Confidence: 0.96417814

00:08:45.240 --> 00:08:46.840 tumor burden, we will think  
NOTE Confidence: 0.96417814

00:08:46.840 --> 00:08:48.360 about SSA as first line  
NOTE Confidence: 0.96417814

00:08:48.360 --> 00:08:50.595 or other systemic treatment options.  
NOTE Confidence: 0.96417814

00:08:50.895 --> 00:08:52.255 And those options, again, as  
NOTE Confidence: 0.96417814

00:08:52.255 --> 00:08:53.455 as seen in that timeline,  
NOTE Confidence: 0.96417814

00:08:53.455 --> 00:08:54.195 have really

NOTE Confidence: 0.99967605  
00:08:54.575 --> 00:08:56.355 expanded over the last decade.  
NOTE Confidence: 0.97191715  
00:08:57.055 --> 00:08:58.655 I've separated it into small  
NOTE Confidence: 0.97191715  
00:08:58.655 --> 00:09:00.335 bowel NET and pancreatic NET.  
NOTE Confidence: 0.97191715  
00:09:00.335 --> 00:09:01.695 There are some slight differences,  
NOTE Confidence: 0.97191715  
00:09:01.695 --> 00:09:03.475 although there is some overlap.  
NOTE Confidence: 0.98828685  
00:09:04.735 --> 00:09:07.050 The optimal sequence of therapies  
NOTE Confidence: 0.98828685  
00:09:07.190 --> 00:09:08.570 is currently unknown,  
NOTE Confidence: 0.9976201  
00:09:09.510 --> 00:09:10.550 and we are starting to  
NOTE Confidence: 0.9976201  
00:09:10.550 --> 00:09:11.050 see  
NOTE Confidence: 0.9659481  
00:09:11.590 --> 00:09:13.670 more clinical trials emerge that  
NOTE Confidence: 0.9659481  
00:09:13.670 --> 00:09:15.590 compare active agent to active  
NOTE Confidence: 0.9659481  
00:09:15.590 --> 00:09:16.870 agent. So we will start  
NOTE Confidence: 0.9659481  
00:09:16.870 --> 00:09:18.105 learning a little bit more  
NOTE Confidence: 0.9659481  
00:09:18.184 --> 00:09:18.845 about sequence  
NOTE Confidence: 0.83164215  
00:09:19.304 --> 00:09:19.385 and,  
NOTE Confidence: 0.99819255

00:09:20.584 --> 00:09:22.425 sort of comparisons of survival  
NOTE Confidence: 0.99819255

00:09:22.425 --> 00:09:23.625 and response rates as we  
NOTE Confidence: 0.99819255

00:09:23.625 --> 00:09:25.005 get data from those studies.  
NOTE Confidence: 0.997259

00:09:26.024 --> 00:09:27.704 So I'm gonna briefly review  
NOTE Confidence: 0.997259

00:09:27.704 --> 00:09:29.225 some of our FDA approved  
NOTE Confidence: 0.997259

00:09:29.225 --> 00:09:31.100 agents and the studies that  
NOTE Confidence: 0.997259

00:09:31.100 --> 00:09:32.000 led to those.  
NOTE Confidence: 0.9554459

00:09:32.620 --> 00:09:34.059 So we we know that  
NOTE Confidence: 0.9554459

00:09:34.059 --> 00:09:36.559 somatostatin analogs have an anticancer  
NOTE Confidence: 0.9554459

00:09:36.860 --> 00:09:38.700 effect or anti proliferative effect  
NOTE Confidence: 0.9554459

00:09:38.700 --> 00:09:39.660 on the basis of the  
NOTE Confidence: 0.9554459

00:09:39.660 --> 00:09:41.600 PROMID and the CLARINET studies.  
NOTE Confidence: 0.9801157

00:09:42.059 --> 00:09:43.740 The CLARINET study led to  
NOTE Confidence: 0.9801157

00:09:43.740 --> 00:09:45.304 the FDA approval of lanreotide  
NOTE Confidence: 0.997282

00:09:45.765 --> 00:09:47.385 for tumor control in twenty  
NOTE Confidence: 0.997282

00:09:47.605 --> 00:09:48.965 fourteen on the basis of

NOTE Confidence: 0.997282  
00:09:48.965 --> 00:09:51.385 a prolonged progression free survival.  
NOTE Confidence: 0.97585964  
00:09:51.925 --> 00:09:53.385 PFS is the primary  
NOTE Confidence: 0.9245196  
00:09:53.925 --> 00:09:56.005 endpoint for most neuroendocrine tumor  
NOTE Confidence: 0.9245196  
00:09:56.005 --> 00:09:57.304 studies mostly because  
NOTE Confidence: 0.98136264  
00:09:57.660 --> 00:09:58.700 OS is going to be  
NOTE Confidence: 0.98136264  
00:09:58.700 --> 00:10:00.399 impractical given that NETs,  
NOTE Confidence: 0.968982  
00:10:01.420 --> 00:10:03.339 have a much longer overall  
NOTE Confidence: 0.968982  
00:10:03.339 --> 00:10:05.260 survival. Patients have often gone  
NOTE Confidence: 0.968982  
00:10:05.260 --> 00:10:07.019 to get subsequent therapies. So  
NOTE Confidence: 0.968982  
00:10:07.019 --> 00:10:08.540 overall survival ends up being  
NOTE Confidence: 0.968982  
00:10:08.540 --> 00:10:10.079 a really impractical endpoint.  
NOTE Confidence: 0.9729529  
00:10:12.925 --> 00:10:15.324 Somatostatin analogs do not shrink  
NOTE Confidence: 0.9729529  
00:10:15.324 --> 00:10:16.285 NETs, so I think that's  
NOTE Confidence: 0.9729529  
00:10:16.285 --> 00:10:17.964 another very important point. The  
NOTE Confidence: 0.9729529  
00:10:17.964 --> 00:10:19.004 response rate is in the  
NOTE Confidence: 0.9729529

00:10:19.004 --> 00:10:19.745 single digits.  
NOTE Confidence: 0.9993827

00:10:20.125 --> 00:10:22.384 Side effects include nausea, diarrhea,  
NOTE Confidence: 0.99468166

00:10:23.324 --> 00:10:23.824 gallstones,  
NOTE Confidence: 0.9978094

00:10:25.245 --> 00:10:26.064 and hyperglycemia.  
NOTE Confidence: 0.9460073

00:10:29.059 --> 00:10:31.380 Everolimus is also FDA approved  
NOTE Confidence: 0.9460073

00:10:31.380 --> 00:10:33.300 really across the board for  
NOTE Confidence: 0.9460073

00:10:33.300 --> 00:10:35.620 pancreatic NET, GI, and lung  
NOTE Confidence: 0.9460073

00:10:35.620 --> 00:10:37.220 NET. There was a series  
NOTE Confidence: 0.9460073

00:10:37.220 --> 00:10:38.760 of studies called the radiant  
NOTE Confidence: 0.9460073

00:10:39.035 --> 00:10:39.355 trials.  
NOTE Confidence: 0.997124

00:10:40.315 --> 00:10:42.075 So RADIANT three and RADIANT  
NOTE Confidence: 0.997124

00:10:42.075 --> 00:10:43.615 four were the key trials  
NOTE Confidence: 0.9873029

00:10:43.915 --> 00:10:45.434 that led to FDA approval  
NOTE Confidence: 0.9873029

00:10:45.434 --> 00:10:47.434 in the respective primary sites.  
NOTE Confidence: 0.9873029

00:10:47.434 --> 00:10:48.554 So RADIANT three was for  
NOTE Confidence: 0.9873029

00:10:48.554 --> 00:10:51.115 pancreatic NET. RADIANT four was

NOTE Confidence: 0.9873029

00:10:51.115 --> 00:10:52.710 for GI and Lung NET.

NOTE Confidence: 0.9873029

00:10:52.870 --> 00:10:53.670 And you can see here

NOTE Confidence: 0.9873029

00:10:53.670 --> 00:10:54.950 that the median PFS is

NOTE Confidence: 0.9873029

00:10:54.950 --> 00:10:56.390 actually very similar in those

NOTE Confidence: 0.9873029

00:10:56.390 --> 00:10:56.890 studies,

NOTE Confidence: 0.9953193

00:10:57.350 --> 00:10:58.870 with an absolute difference of

NOTE Confidence: 0.9953193

00:10:58.870 --> 00:10:59.370 about,

NOTE Confidence: 0.9993922

00:10:59.750 --> 00:11:00.950 five to six months for

NOTE Confidence: 0.9993922

00:11:00.950 --> 00:11:01.770 both of these.

NOTE Confidence: 0.91521454

00:11:03.030 --> 00:11:04.090 Treatment outcomes,

NOTE Confidence: 0.8827832

00:11:04.550 --> 00:11:05.050 also,

NOTE Confidence: 0.9822534

00:11:05.505 --> 00:11:07.345 this agent does not yield

NOTE Confidence: 0.9822534

00:11:07.345 --> 00:11:07.845 shrinkage,

NOTE Confidence: 0.98959225

00:11:08.225 --> 00:11:10.625 single digit response rates, but

NOTE Confidence: 0.98959225

00:11:10.625 --> 00:11:12.785 prolongs progression free survival. Side

NOTE Confidence: 0.98959225

00:11:12.785 --> 00:11:13.905 effects, this is a more  
NOTE Confidence: 0.98959225

00:11:13.905 --> 00:11:14.405 difficult  
NOTE Confidence: 0.9526487

00:11:14.785 --> 00:11:17.025 treatment than somatostatin analog, so  
NOTE Confidence: 0.9526487

00:11:17.025 --> 00:11:17.925 it causes hyperglycemia,  
NOTE Confidence: 0.9531069

00:11:18.705 --> 00:11:19.205 fatigue,  
NOTE Confidence: 0.9749732

00:11:19.850 --> 00:11:20.350 stomatitis,  
NOTE Confidence: 0.99642706

00:11:20.730 --> 00:11:22.670 rash, pneumonitis, and diarrhea.  
NOTE Confidence: 0.9799175

00:11:23.290 --> 00:11:24.910 So these were approved,  
NOTE Confidence: 0.99244136

00:11:25.343 --> 00:11:26.270 in twenty eleven.  
NOTE Confidence: 0.99122727

00:11:29.210 --> 00:11:29.710 Sunitinib  
NOTE Confidence: 0.9939637

00:11:30.090 --> 00:11:31.710 is FDA approved for pancreatic  
NOTE Confidence: 0.9939637

00:11:32.010 --> 00:11:32.510 NETs.  
NOTE Confidence: 0.9318161

00:11:33.105 --> 00:11:35.425 Again, very similar PFS data  
NOTE Confidence: 0.9318161

00:11:35.425 --> 00:11:36.485 compared to Everlimus.  
NOTE Confidence: 0.9574141

00:11:37.184 --> 00:11:38.405 So this was a sunitinib  
NOTE Confidence: 0.9574141

00:11:38.465 --> 00:11:40.405 versus placebo study in pancreatic

NOTE Confidence: 0.9574141  
00:11:40.545 --> 00:11:42.465 NET. Medium PFS was eleven  
NOTE Confidence: 0.9574141  
00:11:42.465 --> 00:11:43.285 months versus,  
NOTE Confidence: 0.9990778  
00:11:43.585 --> 00:11:45.205 excuse me, versus five months.  
NOTE Confidence: 0.9648601  
00:11:45.910 --> 00:11:47.190 This I've sort of given  
NOTE Confidence: 0.9648601  
00:11:47.190 --> 00:11:48.890 the these, trials  
NOTE Confidence: 0.9957974  
00:11:49.750 --> 00:11:50.710 presenting to you in a  
NOTE Confidence: 0.9957974  
00:11:50.710 --> 00:11:52.410 way that they become increasingly  
NOTE Confidence: 0.9957974  
00:11:52.550 --> 00:11:54.309 difficult more difficult in terms  
NOTE Confidence: 0.9957974  
00:11:54.309 --> 00:11:56.570 of side effects. So sunitinib  
NOTE Confidence: 0.9957974  
00:11:56.790 --> 00:11:59.130 can cause hypertension, fatigue, diarrhea,  
NOTE Confidence: 0.9976522  
00:11:59.750 --> 00:12:01.370 nausea, vomiting, and rash.  
NOTE Confidence: 0.99858654  
00:12:02.845 --> 00:12:05.005 So the newest tyrosine kinase  
NOTE Confidence: 0.99858654  
00:12:05.005 --> 00:12:07.324 inhibitor that was just FDA  
NOTE Confidence: 0.99858654  
00:12:07.324 --> 00:12:08.764 approved in April of twenty  
NOTE Confidence: 0.99858654  
00:12:08.764 --> 00:12:10.225 five, so just last month,  
NOTE Confidence: 0.98016655

00:12:10.764 --> 00:12:11.665 is cabozantinib.  
NOTE Confidence: 0.9979626

00:12:12.365 --> 00:12:12.865 Cabozantinib  
NOTE Confidence: 0.94645107

00:12:13.324 --> 00:12:15.000 has slightly different targets than  
NOTE Confidence: 0.94645107

00:12:15.000 --> 00:12:17.260 sunitinib, most notably CNET.  
NOTE Confidence: 0.98710585

00:12:18.280 --> 00:12:19.260 This was a,  
NOTE Confidence: 0.97664726

00:12:20.280 --> 00:12:21.980 a sort of two cohort,  
NOTE Confidence: 0.98304033

00:12:22.840 --> 00:12:23.960 study. So they had a  
NOTE Confidence: 0.98304033

00:12:23.960 --> 00:12:25.640 pancreatic NET study and an  
NOTE Confidence: 0.98304033

00:12:25.640 --> 00:12:27.240 extra pancreatic NET study. So  
NOTE Confidence: 0.98304033

00:12:27.240 --> 00:12:28.600 in the extra pancreatic NET  
NOTE Confidence: 0.98304033

00:12:28.600 --> 00:12:29.740 cohort, which is the,  
NOTE Confidence: 0.9984215

00:12:30.045 --> 00:12:31.005 Kaplan Meier curve that you're  
NOTE Confidence: 0.9984215

00:12:31.005 --> 00:12:32.225 looking at here, we saw  
NOTE Confidence: 0.9631338

00:12:32.605 --> 00:12:34.304 a prolongation of PFS  
NOTE Confidence: 0.97824144

00:12:34.684 --> 00:12:35.505 for cabozantinib  
NOTE Confidence: 0.998893

00:12:35.885 --> 00:12:36.705 versus placebo.

NOTE Confidence: 0.96095616  
00:12:37.325 --> 00:12:38.684 The response rate was single  
NOTE Confidence: 0.96095616  
00:12:38.684 --> 00:12:39.825 digits four percent.  
NOTE Confidence: 0.9985204  
00:12:40.524 --> 00:12:42.464 For the pancreatic NET cohort,  
NOTE Confidence: 0.9884564  
00:12:43.480 --> 00:12:44.780 I saw a slightly longer  
NOTE Confidence: 0.9884564  
00:12:44.920 --> 00:12:46.920 median PFS, and the response  
NOTE Confidence: 0.9884564  
00:12:46.920 --> 00:12:47.960 rate was actually higher. It  
NOTE Confidence: 0.9884564  
00:12:47.960 --> 00:12:49.340 was eighteen percent.  
NOTE Confidence: 0.9981929  
00:12:49.720 --> 00:12:51.160 So this is now FDA  
NOTE Confidence: 0.9981929  
00:12:51.160 --> 00:12:52.860 approved for adults and pediatric  
NOTE Confidence: 0.9981929  
00:12:53.000 --> 00:12:54.460 patients with lung,  
NOTE Confidence: 0.96015567  
00:12:55.240 --> 00:12:57.480 GI, pancreas, and unknown primary  
NOTE Confidence: 0.96015567  
00:12:57.480 --> 00:12:57.975 NET,  
NOTE Confidence: 0.92168957  
00:12:58.454 --> 00:12:59.675 because end of March.  
NOTE Confidence: 0.9973227  
00:13:03.894 --> 00:13:05.675 So in terms of chemotherapy,  
NOTE Confidence: 0.8830311  
00:13:07.014 --> 00:13:07.514 capecitabine  
NOTE Confidence: 0.99878865

00:13:07.815 --> 00:13:08.315 temozolomide  
NOTE Confidence: 0.96846294

00:13:08.774 --> 00:13:10.170 is used very commonly in  
NOTE Confidence: 0.96846294

00:13:10.410 --> 00:13:11.850 pancreatic NET on the basis  
NOTE Confidence: 0.96846294

00:13:11.850 --> 00:13:13.290 of the ECOG ACRAN twenty  
NOTE Confidence: 0.96846294

00:13:13.290 --> 00:13:14.429 two eleven study.  
NOTE Confidence: 0.999158

00:13:15.130 --> 00:13:15.630 And  
NOTE Confidence: 0.9979143

00:13:16.010 --> 00:13:17.209 this, was a study I  
NOTE Confidence: 0.9979143

00:13:17.209 --> 00:13:18.809 had the opportunity to lead.  
NOTE Confidence: 0.9979143

00:13:18.809 --> 00:13:19.550 It demonstrated  
NOTE Confidence: 0.999423

00:13:20.170 --> 00:13:21.870 a benefit of the combination  
NOTE Confidence: 0.999423

00:13:22.089 --> 00:13:22.990 arm compared  
NOTE Confidence: 0.99795234

00:13:23.774 --> 00:13:24.355 to temozolomide  
NOTE Confidence: 0.9487722

00:13:24.815 --> 00:13:26.495 alone. And also a really  
NOTE Confidence: 0.9487722

00:13:26.495 --> 00:13:27.934 key takeaway is that this  
NOTE Confidence: 0.9487722

00:13:27.934 --> 00:13:29.375 does in fact yield tumor  
NOTE Confidence: 0.9487722

00:13:29.375 --> 00:13:31.135 shrinkage. So about a forty

NOTE Confidence: 0.9487722

00:13:31.135 --> 00:13:32.495 percent response rate for the

NOTE Confidence: 0.9487722

00:13:32.495 --> 00:13:33.475 combination arm.

NOTE Confidence: 0.95702785

00:13:33.934 --> 00:13:35.375 Pretty well tolerated, but can

NOTE Confidence: 0.95702785

00:13:35.375 --> 00:13:36.115 cause cytopenias,

NOTE Confidence: 0.98921657

00:13:36.815 --> 00:13:39.160 fatigue, diarrhea, nausea, vomiting, and

NOTE Confidence: 0.98921657

00:13:39.160 --> 00:13:39.980 hand foot syndrome.

NOTE Confidence: 0.9489089

00:13:41.960 --> 00:13:43.720 One key takeaway from this,

NOTE Confidence: 0.9489089

00:13:43.880 --> 00:13:44.920 I'm gonna focus in the

NOTE Confidence: 0.9489089

00:13:44.920 --> 00:13:45.800 figure on the right, is

NOTE Confidence: 0.9489089

00:13:45.800 --> 00:13:47.000 that I had mentioned response

NOTE Confidence: 0.9489089

00:13:47.000 --> 00:13:48.440 rate is high in both

NOTE Confidence: 0.9489089

00:13:48.440 --> 00:13:48.940 arms.

NOTE Confidence: 0.99522156

00:13:49.480 --> 00:13:50.600 The study was not designed

NOTE Confidence: 0.99522156

00:13:50.600 --> 00:13:51.800 to detect a difference in

NOTE Confidence: 0.99522156

00:13:51.800 --> 00:13:53.644 response rate, but this is

NOTE Confidence: 0.99522156

00:13:53.644 --> 00:13:55.324 for a patient population who  
NOTE Confidence: 0.99522156

00:13:55.324 --> 00:13:57.084 is in need of objective  
NOTE Confidence: 0.99522156

00:13:57.084 --> 00:13:57.584 shrinkage.  
NOTE Confidence: 0.99837637

00:13:58.204 --> 00:13:59.485 Another takeaway is that I  
NOTE Confidence: 0.99837637

00:13:59.485 --> 00:14:00.605 do not generally use this  
NOTE Confidence: 0.99837637

00:14:00.605 --> 00:14:01.804 for patients with small bowel  
NOTE Confidence: 0.99837637

00:14:01.804 --> 00:14:02.304 nets.  
NOTE Confidence: 0.9931411

00:14:03.964 --> 00:14:05.404 So as we're thinking about  
NOTE Confidence: 0.9931411

00:14:05.404 --> 00:14:07.245 selecting treatments, it's really critical  
NOTE Confidence: 0.9931411

00:14:07.245 --> 00:14:09.050 to think about patient characteristics,  
NOTE Confidence: 0.95901835

00:14:10.470 --> 00:14:11.350 pay the patient in front  
NOTE Confidence: 0.95901835

00:14:11.350 --> 00:14:12.490 of you. What other comorbidities  
NOTE Confidence: 0.95901835

00:14:12.710 --> 00:14:14.230 do they have? Treatment outcomes  
NOTE Confidence: 0.95901835

00:14:14.230 --> 00:14:15.750 do you need? Is stability  
NOTE Confidence: 0.95901835

00:14:15.750 --> 00:14:16.950 gonna be sufficient, or do  
NOTE Confidence: 0.95901835

00:14:16.950 --> 00:14:18.230 you really need a response

NOTE Confidence: 0.95901835  
00:14:18.230 --> 00:14:19.990 if a patient has symptoms  
NOTE Confidence: 0.95901835  
00:14:19.990 --> 00:14:21.270 from tumor bulk or from  
NOTE Confidence: 0.95901835  
00:14:21.270 --> 00:14:21.770 hormones?  
NOTE Confidence: 0.99884075  
00:14:22.095 --> 00:14:23.055 And then as we think  
NOTE Confidence: 0.99884075  
00:14:23.055 --> 00:14:24.115 about our buckets  
NOTE Confidence: 0.9913325  
00:14:24.894 --> 00:14:27.074 of peptide receptor radionuclide therapy,  
NOTE Confidence: 0.9913325  
00:14:27.214 --> 00:14:28.514 somatostatin analogs,  
NOTE Confidence: 0.95863026  
00:14:28.894 --> 00:14:31.074 targeted therapies, and cytotoxic chemotherapies,  
NOTE Confidence: 0.93470395  
00:14:32.014 --> 00:14:34.035 the you can weigh these  
NOTE Confidence: 0.93470395  
00:14:34.095 --> 00:14:34.995 different variables.  
NOTE Confidence: 0.9495975  
00:14:36.810 --> 00:14:38.190 So trials to watch.  
NOTE Confidence: 0.9987349  
00:14:38.570 --> 00:14:39.370 I'm not gonna go through  
NOTE Confidence: 0.9987349  
00:14:39.370 --> 00:14:40.330 these in detail, but I  
NOTE Confidence: 0.9987349  
00:14:40.330 --> 00:14:41.130 want you to have these  
NOTE Confidence: 0.9987349  
00:14:41.130 --> 00:14:41.630 available  
NOTE Confidence: 0.9649349

00:14:41.930 --> 00:14:43.950 afterwards. The the our presentations  
NOTE Confidence: 0.9649349

00:14:44.010 --> 00:14:45.690 are being recorded tonight. So  
NOTE Confidence: 0.9649349

00:14:45.690 --> 00:14:47.130 really exciting that we're starting  
NOTE Confidence: 0.9649349

00:14:47.130 --> 00:14:48.105 to see we have an  
NOTE Confidence: 0.9649349

00:14:48.345 --> 00:14:50.024 adjuvant study in pancreatic NET  
NOTE Confidence: 0.9649349

00:14:50.024 --> 00:14:50.764 of CAPTEM.  
NOTE Confidence: 0.9917518

00:14:51.545 --> 00:14:53.324 There's a study looking at,  
NOTE Confidence: 0.99510705

00:14:54.024 --> 00:14:56.045 more frequent dosing of octreotide  
NOTE Confidence: 0.9842998

00:14:56.824 --> 00:14:57.704 to see if that is  
NOTE Confidence: 0.9842998

00:14:57.704 --> 00:14:58.904 something that can help slow  
NOTE Confidence: 0.9842998

00:14:58.904 --> 00:15:00.605 growth. And then for metastatic  
NOTE Confidence: 0.9842998

00:15:00.745 --> 00:15:01.245 paragangliomide  
NOTE Confidence: 0.8136994

00:15:01.785 --> 00:15:02.285 pheo,  
NOTE Confidence: 0.9931221

00:15:02.600 --> 00:15:05.260 temozolomide versus temozolomide plus olaparib,  
NOTE Confidence: 0.9931221

00:15:05.320 --> 00:15:06.460 which is a PARP inhibitor.  
NOTE Confidence: 0.97875756

00:15:07.560 --> 00:15:09.160 So take home points. I

NOTE Confidence: 0.97875756

00:15:09.160 --> 00:15:10.040 hope I've shown you that

NOTE Confidence: 0.97875756

00:15:10.040 --> 00:15:11.320 NETs are not that rare.

NOTE Confidence: 0.97875756

00:15:11.320 --> 00:15:12.520 They are deserving of high

NOTE Confidence: 0.97875756

00:15:12.520 --> 00:15:14.760 quality basic translational clinical research

NOTE Confidence: 0.97875756

00:15:14.760 --> 00:15:15.260 efforts.

NOTE Confidence: 0.9789567

00:15:15.640 --> 00:15:16.920 We have many tools in

NOTE Confidence: 0.9789567

00:15:16.920 --> 00:15:17.580 the toolbox,

NOTE Confidence: 0.9833277

00:15:18.695 --> 00:15:20.535 that include a range of

NOTE Confidence: 0.9833277

00:15:20.535 --> 00:15:23.035 classes of therapy, SSAs, radioligand,

NOTE Confidence: 0.95106125

00:15:23.415 --> 00:15:24.555 targeted, and chemotherapies.

NOTE Confidence: 0.9599082

00:15:26.135 --> 00:15:27.575 However, there's no known optimal

NOTE Confidence: 0.9599082

00:15:27.575 --> 00:15:29.735 sequence. And really that tailoring

NOTE Confidence: 0.9599082

00:15:29.735 --> 00:15:31.029 of treatment for every patient

NOTE Confidence: 0.9599082

00:15:31.029 --> 00:15:32.550 requires a careful balance of

NOTE Confidence: 0.9599082

00:15:32.550 --> 00:15:34.089 patient and treatment characteristics.

NOTE Confidence: 0.97708577

00:15:34.709 --> 00:15:35.509 And I think the last  
NOTE Confidence: 0.97708577

00:15:35.509 --> 00:15:36.870 takeaway is a perfect segue  
NOTE Confidence: 0.97708577

00:15:36.870 --> 00:15:38.470 into passing the baton to  
NOTE Confidence: 0.97708577

00:15:38.470 --> 00:15:39.930 my partners is that multidisciplinary  
NOTE Confidence: 0.9989042

00:15:40.310 --> 00:15:41.670 care and coordination is really  
NOTE Confidence: 0.9989042

00:15:41.670 --> 00:15:42.970 essential in this disease.  
NOTE Confidence: 0.9778841

00:15:43.765 --> 00:15:45.285 So, so thank you. I  
NOTE Confidence: 0.9778841

00:15:45.285 --> 00:15:47.065 will I will pause here,  
NOTE Confidence: 0.9992308

00:15:47.685 --> 00:15:49.605 and I will pass the  
NOTE Confidence: 0.9992308

00:15:49.605 --> 00:15:50.105 baton.  
NOTE Confidence: 0.9637464

00:15:51.125 --> 00:15:52.485 So the next speaker up  
NOTE Confidence: 0.9637464

00:15:52.485 --> 00:15:53.465 is doctor Klimstra.  
NOTE Confidence: 0.9161374

00:15:55.845 --> 00:15:57.685 Thanks, Pam. Just bringing up  
NOTE Confidence: 0.9161374

00:15:57.685 --> 00:15:58.185 my  
NOTE Confidence: 0.992579

00:15:59.390 --> 00:15:59.890 slides.  
NOTE Confidence: 0.9026114

00:16:01.150 --> 00:16:01.390 So,

NOTE Confidence: 0.9189456  
00:16:02.830 --> 00:16:04.510 as Doctor. Coons said, a  
NOTE Confidence: 0.9189456  
00:16:04.510 --> 00:16:06.190 perfect segue is to talk  
NOTE Confidence: 0.9189456  
00:16:06.270 --> 00:16:07.410 take a step back  
NOTE Confidence: 0.95916384  
00:16:07.790 --> 00:16:08.990 a little bit and talk  
NOTE Confidence: 0.95916384  
00:16:08.990 --> 00:16:10.670 about how do we establish  
NOTE Confidence: 0.95916384  
00:16:10.670 --> 00:16:11.330 the diagnosis  
NOTE Confidence: 0.9937609  
00:16:11.790 --> 00:16:12.290 of  
NOTE Confidence: 0.6991152  
00:16:12.775 --> 00:16:14.315 gastroenter or pancreatic  
NOTE Confidence: 0.8501005  
00:16:14.855 --> 00:16:16.555 neuroendocrine tumors. It's a mouthful  
NOTE Confidence: 0.8501005  
00:16:16.615 --> 00:16:17.995 GepNets or GepNens  
NOTE Confidence: 0.9190833  
00:16:18.375 --> 00:16:20.215 depending on what you're speaking  
NOTE Confidence: 0.9190833  
00:16:20.215 --> 00:16:20.715 of.  
NOTE Confidence: 0.9975083  
00:16:21.335 --> 00:16:22.475 These are my disclosures.  
NOTE Confidence: 0.98447335  
00:16:24.135 --> 00:16:24.955 So neuroendocrine  
NOTE Confidence: 0.99630105  
00:16:25.569 --> 00:16:27.910 tumors have classic histologic features  
NOTE Confidence: 0.99630105

00:16:28.050 --> 00:16:29.910 that are typically well recognized.  
NOTE Confidence: 0.9456748

00:16:32.209 --> 00:16:34.069 They've been described for  
NOTE Confidence: 0.8234569

00:16:34.449 --> 00:16:35.670 over a hundred years.  
NOTE Confidence: 0.88937914

00:16:37.170 --> 00:16:38.870 But they're actually very diverse.  
NOTE Confidence: 0.9568864

00:16:39.295 --> 00:16:40.815 They can arise throughout the  
NOTE Confidence: 0.9568864

00:16:40.815 --> 00:16:42.495 body. We're really focused below  
NOTE Confidence: 0.9568864

00:16:42.495 --> 00:16:43.695 the diaphragm here, but of  
NOTE Confidence: 0.9568864

00:16:43.695 --> 00:16:45.235 course the lung thymus  
NOTE Confidence: 0.83755493

00:16:45.695 --> 00:16:47.395 scan, other sites are also  
NOTE Confidence: 0.9733146

00:16:47.855 --> 00:16:49.855 common. And microscopically, we refer  
NOTE Confidence: 0.9733146

00:16:49.855 --> 00:16:51.695 to this growth patterns with  
NOTE Confidence: 0.9733146

00:16:51.695 --> 00:16:53.590 nests and ribbons as being  
NOTE Confidence: 0.9733146

00:16:53.590 --> 00:16:54.090 organoid.  
NOTE Confidence: 0.99703985

00:16:54.550 --> 00:16:56.230 And the nuclei are also  
NOTE Confidence: 0.99703985

00:16:56.230 --> 00:16:56.730 very  
NOTE Confidence: 0.767187

00:16:57.590 --> 00:16:58.090 characteristic.

NOTE Confidence: 0.96950775

00:16:59.110 --> 00:17:00.390 But in general, we prove

NOTE Confidence: 0.96950775

00:17:00.390 --> 00:17:02.170 the diagnosis using immunohistochemistry

NOTE Confidence: 0.92241776

00:17:02.710 --> 00:17:04.490 for markers of neuroendocrine differentiation

NOTE Confidence: 0.92241776

00:17:04.630 --> 00:17:05.590 and we'll talk about that

NOTE Confidence: 0.92241776

00:17:05.590 --> 00:17:06.525 a little more minute.

NOTE Confidence: 0.9925052

00:17:07.005 --> 00:17:08.205 I think probably the most

NOTE Confidence: 0.9925052

00:17:08.205 --> 00:17:09.025 important takeaway

NOTE Confidence: 0.9899378

00:17:09.405 --> 00:17:09.905 from

NOTE Confidence: 0.9511545

00:17:10.445 --> 00:17:11.325 what I'm going to say

NOTE Confidence: 0.9511545

00:17:11.325 --> 00:17:12.705 is the fact that neuroendocrine

NOTE Confidence: 0.9511545

00:17:12.845 --> 00:17:13.345 neoplasms

NOTE Confidence: 0.9989554

00:17:13.645 --> 00:17:15.425 can be either well differentiated

NOTE Confidence: 0.96382093

00:17:16.125 --> 00:17:18.045 or poorly differentiated. And these

NOTE Confidence: 0.96382093

00:17:18.045 --> 00:17:18.785 are really

NOTE Confidence: 0.9234534

00:17:19.244 --> 00:17:20.465 very, very different

NOTE Confidence: 0.99675876

00:17:20.765 --> 00:17:21.265 categories.  
NOTE Confidence: 0.94847137

00:17:22.340 --> 00:17:23.940 Differentiation of course refers to  
NOTE Confidence: 0.94847137

00:17:23.940 --> 00:17:25.700 the resemblance of neoplastic cells  
NOTE Confidence: 0.94847137

00:17:25.700 --> 00:17:27.380 to their normal counterparts. So  
NOTE Confidence: 0.94847137

00:17:27.380 --> 00:17:28.340 for instance, this is a  
NOTE Confidence: 0.94847137

00:17:28.340 --> 00:17:29.859 pancreatic islet and this is  
NOTE Confidence: 0.94847137

00:17:29.859 --> 00:17:31.940 a pancreatic neuroendocrine tumor. And  
NOTE Confidence: 0.94847137

00:17:31.940 --> 00:17:33.220 you can see in this  
NOTE Confidence: 0.94847137

00:17:33.220 --> 00:17:34.040 well differentiated  
NOTE Confidence: 0.90986633

00:17:35.060 --> 00:17:36.260 tumor, it looks very much  
NOTE Confidence: 0.90986633

00:17:36.260 --> 00:17:37.845 like the normal islets. And  
NOTE Confidence: 0.90986633

00:17:37.845 --> 00:17:40.165 they strongly express markers that  
NOTE Confidence: 0.90986633

00:17:40.165 --> 00:17:41.605 are found in in in  
NOTE Confidence: 0.90986633

00:17:41.605 --> 00:17:43.544 normal neuroendocrine cells like chromogranin  
NOTE Confidence: 0.90986633

00:17:43.605 --> 00:17:44.265 and cementifazin.  
NOTE Confidence: 0.9726176

00:17:46.325 --> 00:17:48.005 But well differentiated and poorly

NOTE Confidence: 0.9726176

00:17:48.005 --> 00:17:49.544 differentiated neuroendocrine neoplasms,

NOTE Confidence: 0.9931253

00:17:50.090 --> 00:17:52.030 although they share neuroendocrine differentiation

NOTE Confidence: 0.9386434

00:17:52.410 --> 00:17:54.170 are really different. And I

NOTE Confidence: 0.9386434

00:17:54.170 --> 00:17:54.990 can't overemphasize

NOTE Confidence: 0.9876169

00:17:55.290 --> 00:17:55.790 this.

NOTE Confidence: 0.9645957

00:17:56.490 --> 00:17:58.090 They can on occasion be

NOTE Confidence: 0.9645957

00:17:58.090 --> 00:17:59.550 difficult for us to distinguish.

NOTE Confidence: 0.9977125

00:18:00.490 --> 00:18:02.270 Sometimes they share some histologic

NOTE Confidence: 0.96112174

00:18:02.570 --> 00:18:04.165 features. But these are really

NOTE Confidence: 0.96112174

00:18:04.165 --> 00:18:05.845 fundamentally different. They arise from

NOTE Confidence: 0.96112174

00:18:05.845 --> 00:18:06.665 different cells.

NOTE Confidence: 0.976803

00:18:07.045 --> 00:18:08.345 They have a different relationship

NOTE Confidence: 0.976803

00:18:08.405 --> 00:18:10.484 to non neuroendocrine neoplasia like

NOTE Confidence: 0.976803

00:18:10.484 --> 00:18:10.984 adenocarcinoma

NOTE Confidence: 0.905996

00:18:12.005 --> 00:18:13.545 or squamous cell carcinoma.

NOTE Confidence: 0.99271035

00:18:13.845 --> 00:18:14.665 They're genetically  
NOTE Confidence: 0.9341197

00:18:15.445 --> 00:18:17.365 different and they're dramatically different  
NOTE Confidence: 0.9341197

00:18:17.365 --> 00:18:18.665 in terms of their aggressiveness  
NOTE Confidence: 0.9983175

00:18:19.390 --> 00:18:20.369 and their treatment.  
NOTE Confidence: 0.9370415

00:18:20.910 --> 00:18:22.210 And just to give you  
NOTE Confidence: 0.9370415

00:18:22.350 --> 00:18:23.950 some examples of this, you  
NOTE Confidence: 0.9370415

00:18:23.950 --> 00:18:25.150 know you look at well  
NOTE Confidence: 0.9370415

00:18:25.150 --> 00:18:27.390 differentiated neuroendocrine tumors, they tend  
NOTE Confidence: 0.9370415

00:18:27.390 --> 00:18:29.010 to be associated with MEN1,  
NOTE Confidence: 0.9370415

00:18:29.230 --> 00:18:31.010 whether differentiated or not.  
NOTE Confidence: 0.98235905

00:18:31.805 --> 00:18:33.405 There can be precursor lesions  
NOTE Confidence: 0.98235905

00:18:33.405 --> 00:18:34.684 in the endocrine lineage in  
NOTE Confidence: 0.98235905

00:18:34.684 --> 00:18:36.205 the well differentiated but not  
NOTE Confidence: 0.98235905

00:18:36.205 --> 00:18:36.705 poorly.  
NOTE Confidence: 0.98613954

00:18:37.484 --> 00:18:39.345 On the contrary, the non  
NOTE Confidence: 0.98613954

00:18:39.405 --> 00:18:41.425 neuroendocrine precursors like dysplasia

NOTE Confidence: 0.9859885  
00:18:41.965 --> 00:18:43.085 can be associated with a  
NOTE Confidence: 0.9859885  
00:18:43.085 --> 00:18:44.865 poorly differentiated neuroendocrine neoplasm.  
NOTE Confidence: 0.94880885  
00:18:47.380 --> 00:18:48.500 The important point at the  
NOTE Confidence: 0.94880885  
00:18:48.500 --> 00:18:49.540 bottom is that they never  
NOTE Confidence: 0.94880885  
00:18:49.540 --> 00:18:51.060 co occur. So the well  
NOTE Confidence: 0.94880885  
00:18:51.060 --> 00:18:52.920 differentiated ones stay well differentiated  
NOTE Confidence: 0.94880885  
00:18:52.980 --> 00:18:54.359 ones and the poorly differentiated  
NOTE Confidence: 0.94880885  
00:18:54.500 --> 00:18:55.540 are poorly and they aren't  
NOTE Confidence: 0.94880885  
00:18:55.540 --> 00:18:56.440 mixed together.  
NOTE Confidence: 0.96328396  
00:18:57.220 --> 00:18:58.660 This is just an example  
NOTE Confidence: 0.96328396  
00:18:58.660 --> 00:18:59.940 from the lung but similar  
NOTE Confidence: 0.96328396  
00:18:59.940 --> 00:19:00.440 conclusions  
NOTE Confidence: 0.9559468  
00:19:01.075 --> 00:19:02.915 exist for any anatomic site.  
NOTE Confidence: 0.9559468  
00:19:02.915 --> 00:19:05.095 They're very different genomic alterations.  
NOTE Confidence: 0.9745018  
00:19:05.635 --> 00:19:06.755 The top two are quite  
NOTE Confidence: 0.9745018

00:19:06.755 --> 00:19:09.015 characteristic of poorly differentiated neuroendocrine

NOTE Confidence: 0.9745018

00:19:09.075 --> 00:19:10.295 carcinomas. RB,

NOTE Confidence: 0.96184415

00:19:10.835 --> 00:19:12.035 and p fifty three are

NOTE Confidence: 0.96184415

00:19:12.035 --> 00:19:13.095 commonly mutated.

NOTE Confidence: 0.9266608

00:19:13.770 --> 00:19:15.770 And MEN for instance is

NOTE Confidence: 0.9266608

00:19:15.770 --> 00:19:17.310 mutated in the well differentiated

NOTE Confidence: 0.9266608

00:19:17.450 --> 00:19:18.350 but not poorly.

NOTE Confidence: 0.7104634

00:19:19.210 --> 00:19:19.710 So,

NOTE Confidence: 0.9695376

00:19:20.650 --> 00:19:22.650 really try to keep in

NOTE Confidence: 0.9695376

00:19:22.650 --> 00:19:23.790 mind that when someone

NOTE Confidence: 0.9709849

00:19:24.650 --> 00:19:26.109 uses the term well differentiated,

NOTE Confidence: 0.9709849

00:19:26.250 --> 00:19:27.869 they're talking about a completely

NOTE Confidence: 0.9709849

00:19:28.010 --> 00:19:28.510 different

NOTE Confidence: 0.99358207

00:19:28.865 --> 00:19:30.645 best than a poorly differentiated

NOTE Confidence: 0.99358207

00:19:30.785 --> 00:19:31.925 neuroendocrine neoplasm.

NOTE Confidence: 0.9998348

00:19:32.865 --> 00:19:33.365 Terminology  
NOTE Confidence: 0.9771132

00:19:33.665 --> 00:19:34.785 in this area has been  
NOTE Confidence: 0.9771132

00:19:34.785 --> 00:19:36.625 a problem for years and  
NOTE Confidence: 0.9771132

00:19:36.625 --> 00:19:38.085 we were able to standardize  
NOTE Confidence: 0.9771132

00:19:38.385 --> 00:19:38.885 this  
NOTE Confidence: 0.96373826

00:19:39.345 --> 00:19:41.640 for most anatomic sites. Certainly  
NOTE Confidence: 0.96373826

00:19:41.640 --> 00:19:43.320 south of the diaphragm it's  
NOTE Confidence: 0.96373826

00:19:43.320 --> 00:19:45.020 standardized. The lung people  
NOTE Confidence: 0.99594164

00:19:45.320 --> 00:19:46.700 are still a little  
NOTE Confidence: 0.97999895

00:19:47.160 --> 00:19:48.680 unhappy with this and prefer  
NOTE Confidence: 0.97999895

00:19:48.680 --> 00:19:50.060 to use the term carcinoid  
NOTE Confidence: 0.9945339

00:19:50.840 --> 00:19:53.020 for the well differentiated tumors.  
NOTE Confidence: 0.97153634

00:19:53.880 --> 00:19:55.755 But generically we use the  
NOTE Confidence: 0.97153634

00:19:55.835 --> 00:19:57.515 term neoplasm to refer to  
NOTE Confidence: 0.97153634

00:19:57.515 --> 00:19:59.455 both well and poorly differentiated.  
NOTE Confidence: 0.9853471

00:20:00.315 --> 00:20:01.055 The term

NOTE Confidence: 0.8341649  
00:20:01.755 --> 00:20:03.755 term term tumor means well  
NOTE Confidence: 0.8341649  
00:20:03.755 --> 00:20:04.255 differentiated.  
NOTE Confidence: 0.9990349  
00:20:05.675 --> 00:20:06.895 The term carcinoma  
NOTE Confidence: 0.97223645  
00:20:07.355 --> 00:20:08.575 means poorly differentiated.  
NOTE Confidence: 0.94804  
00:20:09.659 --> 00:20:10.539 And that can be either  
NOTE Confidence: 0.94804  
00:20:10.539 --> 00:20:12.619 small cell carcinoma or large  
NOTE Confidence: 0.94804  
00:20:12.619 --> 00:20:13.919 cell neuroendocrine carcinoma.  
NOTE Confidence: 0.95691055  
00:20:14.859 --> 00:20:16.080 There are also rare,  
NOTE Confidence: 0.9218917  
00:20:16.859 --> 00:20:18.320 entities that are mixed,  
NOTE Confidence: 0.9483239  
00:20:18.619 --> 00:20:20.159 a component of both neuroendocrine  
NOTE Confidence: 0.9672029  
00:20:20.460 --> 00:20:21.980 and non neuroendocrine. And we  
NOTE Confidence: 0.9672029  
00:20:21.980 --> 00:20:23.415 really don't have time to  
NOTE Confidence: 0.9672029  
00:20:23.415 --> 00:20:24.375 get into these, but you  
NOTE Confidence: 0.9672029  
00:20:24.375 --> 00:20:25.015 may see,  
NOTE Confidence: 0.9958507  
00:20:25.415 --> 00:20:27.115 occasional reports of these  
NOTE Confidence: 0.95686454

00:20:27.575 --> 00:20:28.715 mixed variants.  
NOTE Confidence: 0.9818813

00:20:30.215 --> 00:20:31.415 Now how do we recognize  
NOTE Confidence: 0.9818813

00:20:31.415 --> 00:20:32.135 that we're dealing with a  
NOTE Confidence: 0.9818813

00:20:32.135 --> 00:20:33.275 neuroendocrine tumor?  
NOTE Confidence: 0.9963403

00:20:33.655 --> 00:20:35.515 In the well differentiated category,  
NOTE Confidence: 0.9963403

00:20:35.655 --> 00:20:36.750 it's really not  
NOTE Confidence: 0.98553807

00:20:37.310 --> 00:20:39.170 a big challenge. These organoid  
NOTE Confidence: 0.98553807

00:20:39.230 --> 00:20:40.270 patterns, you can see the  
NOTE Confidence: 0.98553807

00:20:40.270 --> 00:20:40.770 ribbons  
NOTE Confidence: 0.89828765

00:20:41.310 --> 00:20:42.350 in the top left or  
NOTE Confidence: 0.89828765

00:20:42.350 --> 00:20:43.550 the nest in the bottom  
NOTE Confidence: 0.89828765

00:20:43.550 --> 00:20:45.810 left, quite typical. The nuclei  
NOTE Confidence: 0.89828765

00:20:45.869 --> 00:20:46.770 are quite typical.  
NOTE Confidence: 0.9758608

00:20:47.869 --> 00:20:49.010 The poorly differentiated  
NOTE Confidence: 0.9673759

00:20:49.525 --> 00:20:50.965 carcinomas are a little different  
NOTE Confidence: 0.9673759

00:20:50.965 --> 00:20:52.165 though. They tend to have

NOTE Confidence: 0.9673759

00:20:52.165 --> 00:20:54.184 a very poorly differentiated morphology.

NOTE Confidence: 0.99046266

00:20:55.045 --> 00:20:56.325 There are some features that

NOTE Confidence: 0.99046266

00:20:56.325 --> 00:20:58.184 we equate with neuroendocrine differentiation,

NOTE Confidence: 0.91910845

00:20:59.365 --> 00:21:00.984 such as a nesting pattern,

NOTE Confidence: 0.91910845

00:21:01.205 --> 00:21:02.804 a certain pattern to the

NOTE Confidence: 0.91910845

00:21:02.804 --> 00:21:03.304 chromatin.

NOTE Confidence: 0.95466226

00:21:04.400 --> 00:21:06.480 But these require some additional

NOTE Confidence: 0.95466226

00:21:06.480 --> 00:21:07.840 evidence to prove that they're

NOTE Confidence: 0.95466226

00:21:07.840 --> 00:21:08.340 neuroendocrine.

NOTE Confidence: 0.96918786

00:21:08.960 --> 00:21:10.400 And that is found in

NOTE Confidence: 0.96918786

00:21:10.400 --> 00:21:11.359 the in the form of

NOTE Confidence: 0.96918786

00:21:11.359 --> 00:21:12.820 immunistic chemical staining.

NOTE Confidence: 0.9271799

00:21:13.760 --> 00:21:14.880 This is a longer list

NOTE Confidence: 0.9271799

00:21:14.880 --> 00:21:16.240 than you need, because there

NOTE Confidence: 0.9271799

00:21:16.240 --> 00:21:17.679 are many markers that have

NOTE Confidence: 0.9271799

00:21:17.679 --> 00:21:18.179 been  
NOTE Confidence: 0.9620622

00:21:18.585 --> 00:21:19.865 used in the past or  
NOTE Confidence: 0.9620622

00:21:19.865 --> 00:21:21.705 that have recently been developed.  
NOTE Confidence: 0.9620622

00:21:21.705 --> 00:21:23.304 But the three highlighted ones,  
NOTE Confidence: 0.9620622

00:21:23.304 --> 00:21:23.804 chromogranin,  
NOTE Confidence: 0.69345176

00:21:24.424 --> 00:21:24.924 a,  
NOTE Confidence: 0.9053383

00:21:25.465 --> 00:21:25.965 synaptophysin,  
NOTE Confidence: 0.8921131

00:21:26.905 --> 00:21:27.725 and insulinoma  
NOTE Confidence: 0.8707947

00:21:28.025 --> 00:21:29.784 associated protein or I n  
NOTE Confidence: 0.8707947

00:21:29.784 --> 00:21:30.825 s m one are the  
NOTE Confidence: 0.8707947

00:21:30.825 --> 00:21:32.044 three that are currently  
NOTE Confidence: 0.9980857

00:21:32.609 --> 00:21:33.830 accepted as  
NOTE Confidence: 0.990319

00:21:34.130 --> 00:21:35.590 both sensitive and specific  
NOTE Confidence: 0.9985011

00:21:35.970 --> 00:21:37.350 for neuroendocrine differentiation.  
NOTE Confidence: 0.99883693

00:21:39.170 --> 00:21:39.670 Now  
NOTE Confidence: 0.9763301

00:21:40.770 --> 00:21:41.970 when you're talking about a

NOTE Confidence: 0.9763301  
00:21:41.970 --> 00:21:44.070 well differentiated neuroendocrine tumor,  
NOTE Confidence: 0.949013  
00:21:44.545 --> 00:21:45.665 almost all of them are  
NOTE Confidence: 0.949013  
00:21:45.665 --> 00:21:47.265 positive for these markers when  
NOTE Confidence: 0.949013  
00:21:47.265 --> 00:21:48.244 used in combination,  
NOTE Confidence: 0.73820335  
00:21:48.785 --> 00:21:50.705 chromogran and synaptophys and stain  
NOTE Confidence: 0.73820335  
00:21:50.705 --> 00:21:51.765 ninety five percent.  
NOTE Confidence: 0.9841908  
00:21:52.945 --> 00:21:53.445 Certain  
NOTE Confidence: 0.94260985  
00:21:53.825 --> 00:21:54.725 other nonneuroendocrine  
NOTE Confidence: 0.9986202  
00:21:55.105 --> 00:21:55.605 neoplasms  
NOTE Confidence: 0.9631461  
00:21:55.905 --> 00:21:57.905 do stain predictably for these  
NOTE Confidence: 0.9631461  
00:21:57.905 --> 00:21:58.865 that we have to know  
NOTE Confidence: 0.9631461  
00:21:58.865 --> 00:22:00.630 about. And occasionally you can  
NOTE Confidence: 0.9631461  
00:22:00.630 --> 00:22:02.310 have idiosyncratic staining of other  
NOTE Confidence: 0.9631461  
00:22:02.310 --> 00:22:03.510 neoplasms, so they're not a  
NOTE Confidence: 0.9631461  
00:22:03.510 --> 00:22:05.290 hundred percent specific, but they're  
NOTE Confidence: 0.9631461

00:22:05.350 --> 00:22:06.410 they're very reliable.  
NOTE Confidence: 0.96686614

00:22:06.950 --> 00:22:08.950 In fact, some pathologists question  
NOTE Confidence: 0.96686614

00:22:08.950 --> 00:22:10.630 whether it's truly necessary to  
NOTE Confidence: 0.96686614

00:22:10.630 --> 00:22:13.225 stain every obvious neuroendocrine tumor  
NOTE Confidence: 0.9771714

00:22:13.845 --> 00:22:15.205 for these markers. I think  
NOTE Confidence: 0.9771714

00:22:15.205 --> 00:22:16.804 it tends to make people  
NOTE Confidence: 0.9771714

00:22:16.804 --> 00:22:17.924 more comfortable to see that  
NOTE Confidence: 0.9771714

00:22:17.924 --> 00:22:18.965 this has been done just  
NOTE Confidence: 0.9771714

00:22:18.965 --> 00:22:20.345 to make absolutely sure.  
NOTE Confidence: 0.9982883

00:22:20.804 --> 00:22:21.684 But there are some that  
NOTE Confidence: 0.9982883

00:22:21.684 --> 00:22:22.825 are just so prototypical  
NOTE Confidence: 0.9313815

00:22:23.125 --> 00:22:24.404 you don't you don't honestly  
NOTE Confidence: 0.9313815

00:22:24.404 --> 00:22:25.065 need it.  
NOTE Confidence: 0.999327

00:22:25.970 --> 00:22:27.010 That is not the case  
NOTE Confidence: 0.999327

00:22:27.010 --> 00:22:28.230 for the poorly differentiated.  
NOTE Confidence: 0.98272103

00:22:29.810 --> 00:22:31.650 Small cell neuroendocrine carcinoma has

NOTE Confidence: 0.98272103

00:22:31.650 --> 00:22:32.869 a very classic morphologic

NOTE Confidence: 0.9740798

00:22:33.170 --> 00:22:35.109 finding, and you can consider

NOTE Confidence: 0.9740798

00:22:35.170 --> 00:22:37.270 making this diagnosis without immunohistochemical

NOTE Confidence: 0.9479122

00:22:37.810 --> 00:22:38.930 support as long as you've

NOTE Confidence: 0.9479122

00:22:38.930 --> 00:22:40.150 ruled out other things.

NOTE Confidence: 0.99531436

00:22:40.705 --> 00:22:42.565 But large cell neuroendocrine carcinoma

NOTE Confidence: 0.99531436

00:22:42.865 --> 00:22:44.325 absolutely has to have

NOTE Confidence: 0.9641768

00:22:44.705 --> 00:22:45.205 immunohistochemical

NOTE Confidence: 0.98032516

00:22:45.744 --> 00:22:47.185 staining to prove that it's

NOTE Confidence: 0.98032516

00:22:47.185 --> 00:22:47.685 neuroendocrine.

NOTE Confidence: 0.998867

00:22:48.465 --> 00:22:49.345 And there can be some

NOTE Confidence: 0.998867

00:22:49.345 --> 00:22:50.405 debate about

NOTE Confidence: 0.9412897

00:22:50.785 --> 00:22:52.325 how strong or how diffusely

NOTE Confidence: 0.9412897

00:22:52.385 --> 00:22:53.425 positive it should be. I

NOTE Confidence: 0.9412897

00:22:53.425 --> 00:22:54.145 mean if you get a

NOTE Confidence: 0.9412897  
00:22:54.145 --> 00:22:55.990 stain like this chromogranon and  
NOTE Confidence: 0.9412897  
00:22:55.990 --> 00:22:57.690 when it's it's quite compelling.  
NOTE Confidence: 0.84190077  
00:22:58.549 --> 00:22:59.450 But the WHO  
NOTE Confidence: 0.99865866  
00:22:59.750 --> 00:23:00.710 now is saying that you  
NOTE Confidence: 0.99865866  
00:23:00.710 --> 00:23:01.910 should have two of those  
NOTE Confidence: 0.99865866  
00:23:01.910 --> 00:23:02.730 three markers  
NOTE Confidence: 0.9987949  
00:23:03.190 --> 00:23:05.049 positive to verify this diagnosis.  
NOTE Confidence: 0.98854285  
00:23:07.585 --> 00:23:08.865 One side point I'd like  
NOTE Confidence: 0.98854285  
00:23:08.865 --> 00:23:09.985 to make is you have  
NOTE Confidence: 0.98854285  
00:23:09.985 --> 00:23:11.205 to be careful with immunohistochemistry.  
NOTE Confidence: 0.999597  
00:23:12.305 --> 00:23:12.805 So  
NOTE Confidence: 0.9956984  
00:23:13.345 --> 00:23:13.845 adenocarcinomas  
NOTE Confidence: 0.99891216  
00:23:14.625 --> 00:23:16.485 can also have neuroendocrine differentiation.  
NOTE Confidence: 0.98439854  
00:23:17.185 --> 00:23:18.065 It can come in the  
NOTE Confidence: 0.98439854  
00:23:18.065 --> 00:23:20.225 form of scattered positive cells  
NOTE Confidence: 0.98439854

00:23:20.225 --> 00:23:21.359 like you see in this  
NOTE Confidence: 0.99720025

00:23:21.920 --> 00:23:22.420 adenocarcinoma  
NOTE Confidence: 0.9480966

00:23:22.880 --> 00:23:24.260 with a few cells labeling,  
NOTE Confidence: 0.99912214

00:23:25.280 --> 00:23:26.559 or it can actually be  
NOTE Confidence: 0.99912214

00:23:26.559 --> 00:23:27.380 more extensive  
NOTE Confidence: 0.85077125

00:23:28.240 --> 00:23:29.679 and and just detect it  
NOTE Confidence: 0.85077125

00:23:29.679 --> 00:23:30.179 incidentally.  
NOTE Confidence: 0.9957327

00:23:30.480 --> 00:23:31.540 And it really  
NOTE Confidence: 0.99120903

00:23:31.920 --> 00:23:32.660 the prognostic  
NOTE Confidence: 0.9828968

00:23:33.040 --> 00:23:34.705 import of this kind of  
NOTE Confidence: 0.9828968

00:23:34.705 --> 00:23:36.705 finding is really not clear.  
NOTE Confidence: 0.9828968

00:23:36.705 --> 00:23:38.485 We don't believe it's prognostically  
NOTE Confidence: 0.9828968

00:23:38.705 --> 00:23:40.244 relevant. These are still adenocarcinomas.  
NOTE Confidence: 0.9451833

00:23:41.345 --> 00:23:42.305 And so be a little  
NOTE Confidence: 0.9451833

00:23:42.305 --> 00:23:43.744 bit careful about asking a  
NOTE Confidence: 0.9451833

00:23:43.744 --> 00:23:45.744 pathologist to do neuroendocrine markers

NOTE Confidence: 0.9451833

00:23:45.744 --> 00:23:47.585 on something they're confident is

NOTE Confidence: 0.9451833

00:23:47.585 --> 00:23:49.380 not a neuroendocrine tumor, because

NOTE Confidence: 0.9451833

00:23:49.380 --> 00:23:50.740 you might like what you

NOTE Confidence: 0.9451833

00:23:50.740 --> 00:23:51.240 find.

NOTE Confidence: 0.98502046

00:23:53.859 --> 00:23:55.619 Now the other critically important

NOTE Confidence: 0.98502046

00:23:55.619 --> 00:23:57.720 thing is grading neuroendocrine neoplasms.

NOTE Confidence: 0.9742797

00:23:58.500 --> 00:24:00.200 Grading is something we've implemented

NOTE Confidence: 0.9742797

00:24:00.340 --> 00:24:01.780 in the last fifteen or

NOTE Confidence: 0.9742797

00:24:01.780 --> 00:24:02.600 twenty years,

NOTE Confidence: 0.9976385

00:24:03.060 --> 00:24:04.200 and it's based

NOTE Confidence: 0.94291306

00:24:04.725 --> 00:24:06.565 entirely or largely on the

NOTE Confidence: 0.94291306

00:24:06.565 --> 00:24:08.505 proliferative rate measured by mitotic

NOTE Confidence: 0.94291306

00:24:08.645 --> 00:24:10.885 counting or the k sixty

NOTE Confidence: 0.94291306

00:24:10.885 --> 00:24:11.785 seven immunohistochemical

NOTE Confidence: 0.910722

00:24:12.244 --> 00:24:12.744 stain.

NOTE Confidence: 0.99685216

00:24:13.445 --> 00:24:14.345 The well differentiated  
NOTE Confidence: 0.98534703

00:24:14.645 --> 00:24:16.645 tumors can be either grade  
NOTE Confidence: 0.98534703

00:24:16.645 --> 00:24:18.244 one, grade two, or grade  
NOTE Confidence: 0.98534703

00:24:18.244 --> 00:24:18.744 three  
NOTE Confidence: 0.9523945

00:24:19.150 --> 00:24:20.670 depending upon the rate of  
NOTE Confidence: 0.9523945

00:24:20.670 --> 00:24:21.170 proliferation.  
NOTE Confidence: 0.9259768

00:24:21.950 --> 00:24:23.790 Whereas the neuroendocrine carcinomas are  
NOTE Confidence: 0.9259768

00:24:23.790 --> 00:24:25.390 by definition grade three all  
NOTE Confidence: 0.9259768

00:24:25.390 --> 00:24:25.970 the time.  
NOTE Confidence: 0.9898586

00:24:27.070 --> 00:24:29.070 Grading generally correlates very well  
NOTE Confidence: 0.9898586

00:24:29.070 --> 00:24:30.270 with prognosis, and this is  
NOTE Confidence: 0.9898586

00:24:30.270 --> 00:24:31.630 one of many studies showing  
NOTE Confidence: 0.9898586

00:24:31.630 --> 00:24:32.990 this. It's quite a dramatic  
NOTE Confidence: 0.9898586

00:24:32.990 --> 00:24:33.490 difference  
NOTE Confidence: 0.98249626

00:24:33.825 --> 00:24:35.984 in in in behavior based  
NOTE Confidence: 0.98249626

00:24:35.984 --> 00:24:36.804 on the grade.

NOTE Confidence: 0.9963914  
00:24:37.424 --> 00:24:39.184 But another important feature to  
NOTE Confidence: 0.9963914  
00:24:39.184 --> 00:24:40.304 keep in mind is that  
NOTE Confidence: 0.9963914  
00:24:40.304 --> 00:24:42.085 the grade of neuroendocrine tumors  
NOTE Confidence: 0.9963914  
00:24:42.304 --> 00:24:43.125 is dynamic.  
NOTE Confidence: 0.9936373  
00:24:44.225 --> 00:24:45.984 It can vary regionally within  
NOTE Confidence: 0.9936373  
00:24:45.984 --> 00:24:47.190 a neuroendocrine tumor.  
NOTE Confidence: 0.96019655  
00:24:47.830 --> 00:24:49.190 It can vary between different  
NOTE Confidence: 0.96019655  
00:24:49.190 --> 00:24:50.549 sites of disease. For instance,  
NOTE Confidence: 0.96019655  
00:24:50.549 --> 00:24:52.090 a primary versus a metastasis  
NOTE Confidence: 0.96019655  
00:24:52.309 --> 00:24:53.529 or two different metastases.  
NOTE Confidence: 0.9898277  
00:24:54.309 --> 00:24:55.590 And it can even change  
NOTE Confidence: 0.9898277  
00:24:55.590 --> 00:24:56.869 over the course of disease.  
NOTE Confidence: 0.9898277  
00:24:56.869 --> 00:24:57.830 So if you have a  
NOTE Confidence: 0.9898277  
00:24:57.830 --> 00:24:59.269 patient whose disease has been  
NOTE Confidence: 0.9898277  
00:24:59.269 --> 00:25:00.330 progressing slowly  
NOTE Confidence: 0.9871155

00:25:00.784 --> 00:25:02.144 and suddenly it starts to  
NOTE Confidence: 0.9871155

00:25:02.144 --> 00:25:03.664 grow more rapidly, it's likely  
NOTE Confidence: 0.9871155

00:25:03.664 --> 00:25:04.945 that it has become higher  
NOTE Confidence: 0.9871155

00:25:04.945 --> 00:25:05.445 grade.  
NOTE Confidence: 0.9979693

00:25:05.904 --> 00:25:07.184 And this argues that we  
NOTE Confidence: 0.9979693

00:25:07.184 --> 00:25:08.385 should really be assessing the  
NOTE Confidence: 0.9979693

00:25:08.385 --> 00:25:09.664 grade every time we have  
NOTE Confidence: 0.9979693

00:25:09.664 --> 00:25:10.804 a tissue sample  
NOTE Confidence: 0.98307693

00:25:11.105 --> 00:25:12.565 of a neuroendocrine tumor.  
NOTE Confidence: 0.9927027

00:25:14.369 --> 00:25:15.890 The criteria for this,  
NOTE Confidence: 0.9473069

00:25:16.290 --> 00:25:17.650 you know, again, throughout the  
NOTE Confidence: 0.9473069

00:25:17.650 --> 00:25:19.190 body, there's a little variability  
NOTE Confidence: 0.9473069

00:25:19.490 --> 00:25:20.290 in how we do this,  
NOTE Confidence: 0.9473069

00:25:20.290 --> 00:25:21.650 but the GI in pancreas  
NOTE Confidence: 0.9473069

00:25:21.650 --> 00:25:23.650 has been standardized. And this  
NOTE Confidence: 0.9473069

00:25:23.650 --> 00:25:24.150 was

NOTE Confidence: 0.70128316  
00:25:25.010 --> 00:25:25.830 twenty nineteen  
NOTE Confidence: 0.74481237  
00:25:26.930 --> 00:25:27.430 classification.  
NOTE Confidence: 0.99843925  
00:25:27.970 --> 00:25:28.950 It was just  
NOTE Confidence: 0.9765927  
00:25:30.175 --> 00:25:31.935 reassessed by the WHO and  
NOTE Confidence: 0.9765927  
00:25:31.935 --> 00:25:33.215 they haven't really changed it  
NOTE Confidence: 0.9765927  
00:25:33.215 --> 00:25:33.795 at all.  
NOTE Confidence: 0.96928686  
00:25:34.095 --> 00:25:34.975 And so you can see  
NOTE Confidence: 0.96928686  
00:25:34.975 --> 00:25:37.215 the the proliferative rate that  
NOTE Confidence: 0.96928686  
00:25:37.215 --> 00:25:39.375 distinguishes the three grades of  
NOTE Confidence: 0.96928686  
00:25:39.375 --> 00:25:40.595 neuroendocrine tumors,  
NOTE Confidence: 0.9507293  
00:25:42.095 --> 00:25:43.775 both by mitotic rate and  
NOTE Confidence: 0.9507293  
00:25:43.775 --> 00:25:44.994 key sixty seven.  
NOTE Confidence: 0.99644  
00:25:45.340 --> 00:25:46.300 And then you can also  
NOTE Confidence: 0.99644  
00:25:46.300 --> 00:25:47.900 see the higher proliferative rate  
NOTE Confidence: 0.99644  
00:25:47.900 --> 00:25:48.640 that characterizes  
NOTE Confidence: 0.99579114

00:25:49.180 --> 00:25:50.480 the neuroendocrine carcinomas.

NOTE Confidence: 0.9713902

00:25:51.500 --> 00:25:53.020 I would draw your attention

NOTE Confidence: 0.9713902

00:25:53.020 --> 00:25:54.300 to the fact that the

NOTE Confidence: 0.9713902

00:25:54.300 --> 00:25:56.400 proliferative rate threshold for neuroendocrine

NOTE Confidence: 0.9713902

00:25:56.540 --> 00:25:58.640 carcinoma is exactly the same

NOTE Confidence: 0.9713902

00:25:58.780 --> 00:25:59.820 as it is for g

NOTE Confidence: 0.9713902

00:25:59.820 --> 00:26:00.640 three nets.

NOTE Confidence: 0.9916826

00:26:01.005 --> 00:26:02.365 And so the distinction of

NOTE Confidence: 0.9916826

00:26:02.365 --> 00:26:03.805 these two has suddenly become

NOTE Confidence: 0.9916826

00:26:03.805 --> 00:26:04.845 a bit of a challenge

NOTE Confidence: 0.9916826

00:26:04.845 --> 00:26:05.725 for us, and we'll come

NOTE Confidence: 0.9916826

00:26:05.725 --> 00:26:06.605 back to that in a

NOTE Confidence: 0.9916826

00:26:06.605 --> 00:26:07.105 second.

NOTE Confidence: 0.93939626

00:26:07.645 --> 00:26:08.605 But this is what the

NOTE Confidence: 0.93939626

00:26:08.605 --> 00:26:10.205 mitotic figures look like in

NOTE Confidence: 0.93939626

00:26:10.205 --> 00:26:11.805 a in a intermediate grade

NOTE Confidence: 0.93939626

00:26:11.805 --> 00:26:13.484 neuroendocrine tumor. There are a

NOTE Confidence: 0.93939626

00:26:13.484 --> 00:26:14.385 few of them.

NOTE Confidence: 0.9277302

00:26:16.220 --> 00:26:18.060 It's probably easier to assess

NOTE Confidence: 0.9277302

00:26:18.060 --> 00:26:19.340 key sixty seven to be

NOTE Confidence: 0.9277302

00:26:19.340 --> 00:26:19.840 honest.

NOTE Confidence: 0.99801785

00:26:20.300 --> 00:26:21.500 And this has been pretty

NOTE Confidence: 0.99801785

00:26:21.500 --> 00:26:22.000 standardized.

NOTE Confidence: 0.98448765

00:26:22.460 --> 00:26:23.740 You see examples of low

NOTE Confidence: 0.98448765

00:26:23.740 --> 00:26:25.100 grade, intermediate grade, and high

NOTE Confidence: 0.98448765

00:26:25.100 --> 00:26:26.460 grade with a highly variable

NOTE Confidence: 0.98448765

00:26:26.460 --> 00:26:27.900 number of cells with nuclear

NOTE Confidence: 0.98448765

00:26:27.900 --> 00:26:28.400 staining.

NOTE Confidence: 0.9648175

00:26:29.535 --> 00:26:30.415 There are lots of ways

NOTE Confidence: 0.9648175

00:26:30.415 --> 00:26:31.615 to do this. The way

NOTE Confidence: 0.9648175

00:26:31.615 --> 00:26:32.415 we do it is we

NOTE Confidence: 0.9648175

00:26:32.415 --> 00:26:33.555 actually take a photograph  
NOTE Confidence: 0.9690297

00:26:33.855 --> 00:26:35.055 of the hot spot, the  
NOTE Confidence: 0.9690297

00:26:35.055 --> 00:26:37.055 highest labeling area, and then  
NOTE Confidence: 0.9690297

00:26:37.055 --> 00:26:38.735 count the positive cells versus  
NOTE Confidence: 0.9690297

00:26:38.735 --> 00:26:39.935 the negative cells, and you  
NOTE Confidence: 0.9690297

00:26:39.935 --> 00:26:41.955 can get an actual number,  
NOTE Confidence: 0.9690297

00:26:42.030 --> 00:26:43.230 sixty one positive out of  
NOTE Confidence: 0.9690297

00:26:43.230 --> 00:26:44.670 fourteen hundred and twenty one  
NOTE Confidence: 0.9690297

00:26:44.670 --> 00:26:46.510 cells counted. And this should  
NOTE Confidence: 0.9690297

00:26:46.510 --> 00:26:48.210 be included in all pathology  
NOTE Confidence: 0.9690297

00:26:48.270 --> 00:26:50.050 reports on neuroendocrine tumors.  
NOTE Confidence: 0.9718402

00:26:52.190 --> 00:26:53.550 Now since we've been using  
NOTE Confidence: 0.9718402

00:26:53.550 --> 00:26:55.810 this, there's been some feedback  
NOTE Confidence: 0.9718402

00:26:56.030 --> 00:26:57.490 about this grading scheme.  
NOTE Confidence: 0.9444997

00:26:58.085 --> 00:26:59.765 And in particular, the g  
NOTE Confidence: 0.9444997

00:26:59.765 --> 00:27:01.465 two category may be overly

NOTE Confidence: 0.9444997

00:27:01.525 --> 00:27:03.445 broad. You know, you have

NOTE Confidence: 0.9444997

00:27:03.445 --> 00:27:04.725 a three percent is g

NOTE Confidence: 0.9444997

00:27:04.725 --> 00:27:06.405 two, but also nineteen percent

NOTE Confidence: 0.9444997

00:27:06.405 --> 00:27:07.445 is g two. And many

NOTE Confidence: 0.9444997

00:27:07.445 --> 00:27:09.285 people have observed that those

NOTE Confidence: 0.9444997

00:27:09.285 --> 00:27:10.645 two tumors don't behave the

NOTE Confidence: 0.9444997

00:27:10.645 --> 00:27:11.145 same.

NOTE Confidence: 0.9821577

00:27:11.820 --> 00:27:13.100 There have been some proposals

NOTE Confidence: 0.9821577

00:27:13.100 --> 00:27:14.639 to raise that three percent

NOTE Confidence: 0.86666596

00:27:14.940 --> 00:27:15.679 cut point.

NOTE Confidence: 0.9977069

00:27:16.779 --> 00:27:18.380 That's not really gained any

NOTE Confidence: 0.9977069

00:27:18.380 --> 00:27:18.880 traction.

NOTE Confidence: 0.99673736

00:27:19.259 --> 00:27:21.100 A more appealing proposal is

NOTE Confidence: 0.99673736

00:27:21.100 --> 00:27:22.880 to divide g two into

NOTE Confidence: 0.9873744

00:27:23.259 --> 00:27:24.720 a and g two b

NOTE Confidence: 0.9873744

00:27:25.019 --> 00:27:26.480 based on ten percent.  
NOTE Confidence: 0.975994

00:27:27.225 --> 00:27:28.585 So g two a being  
NOTE Confidence: 0.975994

00:27:28.585 --> 00:27:30.345 three to ten and g  
NOTE Confidence: 0.975994

00:27:30.345 --> 00:27:32.345 two b being ten to  
NOTE Confidence: 0.975994

00:27:32.345 --> 00:27:32.845 twenty.  
NOTE Confidence: 0.98048985

00:27:33.145 --> 00:27:34.505 And there's actually a nice  
NOTE Confidence: 0.98048985

00:27:34.505 --> 00:27:35.945 paper that just came out  
NOTE Confidence: 0.98048985

00:27:35.945 --> 00:27:37.085 in an archive  
NOTE Confidence: 0.95596635

00:27:39.560 --> 00:27:41.080 from the Hopkins group looking  
NOTE Confidence: 0.95596635

00:27:41.080 --> 00:27:43.180 at forty years of pancreatic  
NOTE Confidence: 0.95596635

00:27:43.240 --> 00:27:44.520 neuroendocrine tumors. And you can  
NOTE Confidence: 0.95596635

00:27:44.520 --> 00:27:46.440 see with this grading scheme  
NOTE Confidence: 0.95596635

00:27:46.440 --> 00:27:48.280 the the dramatic difference in  
NOTE Confidence: 0.95596635

00:27:48.280 --> 00:27:50.460 outcome between G2a and G2b.  
NOTE Confidence: 0.99891067

00:27:51.080 --> 00:27:52.280 So I suspect that this  
NOTE Confidence: 0.99891067

00:27:52.280 --> 00:27:53.480 will work its way into

NOTE Confidence: 0.99891067  
00:27:53.480 --> 00:27:54.220 new proposals.  
NOTE Confidence: 0.9763196  
00:27:56.705 --> 00:27:58.144 So we have the concept  
NOTE Confidence: 0.9763196  
00:27:58.144 --> 00:27:59.684 of a neuroendocrine tumor  
NOTE Confidence: 0.9544492  
00:28:00.144 --> 00:28:01.284 being a low grade,  
NOTE Confidence: 0.99535054  
00:28:01.825 --> 00:28:03.904 tumor that can undergo grade  
NOTE Confidence: 0.99535054  
00:28:03.904 --> 00:28:04.404 progression  
NOTE Confidence: 0.99436796  
00:28:04.865 --> 00:28:06.085 to be high grade.  
NOTE Confidence: 0.9992268  
00:28:07.140 --> 00:28:08.040 And the concept  
NOTE Confidence: 0.9707801  
00:28:08.420 --> 00:28:11.000 of poorly differentiated neuroendocrine carcinoma  
NOTE Confidence: 0.9274748  
00:28:11.380 --> 00:28:12.820 being a carcinoma from the  
NOTE Confidence: 0.9274748  
00:28:12.820 --> 00:28:14.600 get go being high grade  
NOTE Confidence: 0.9311119  
00:28:15.619 --> 00:28:17.000 uh-uh throughout its course.  
NOTE Confidence: 0.99037975  
00:28:18.260 --> 00:28:19.940 Both of these pathways though  
NOTE Confidence: 0.99037975  
00:28:19.940 --> 00:28:20.760 give rise  
NOTE Confidence: 0.989889  
00:28:21.475 --> 00:28:23.494 to high grade neuroendocrine neoplasms.  
NOTE Confidence: 0.9837084

00:28:24.434 --> 00:28:25.475 And in fact, here we  
NOTE Confidence: 0.9837084

00:28:25.475 --> 00:28:26.375 see an example  
NOTE Confidence: 0.9960956

00:28:26.994 --> 00:28:27.494 of  
NOTE Confidence: 0.98894924

00:28:28.274 --> 00:28:30.695 a intermediate grade pancreatic neuroendocrine  
NOTE Confidence: 0.98894924

00:28:30.754 --> 00:28:32.674 tumor that has progressed within  
NOTE Confidence: 0.98894924

00:28:32.674 --> 00:28:34.320 the primary tumor. It has  
NOTE Confidence: 0.9417984

00:28:34.799 --> 00:28:35.759 at the lower right you  
NOTE Confidence: 0.9417984

00:28:35.759 --> 00:28:36.580 can see the  
NOTE Confidence: 0.9464677

00:28:36.880 --> 00:28:38.399 the intermediate grade areas and  
NOTE Confidence: 0.9464677

00:28:38.399 --> 00:28:39.360 in the upper right a  
NOTE Confidence: 0.9464677

00:28:39.360 --> 00:28:40.799 very high grade area. And  
NOTE Confidence: 0.9464677

00:28:40.799 --> 00:28:41.600 if we look at the  
NOTE Confidence: 0.9464677

00:28:41.600 --> 00:28:43.919 key sixty seven, it's nearly  
NOTE Confidence: 0.9464677

00:28:43.919 --> 00:28:45.600 a hundred percent in this  
NOTE Confidence: 0.9464677

00:28:45.600 --> 00:28:46.580 high grade area.  
NOTE Confidence: 0.9644439

00:28:47.200 --> 00:28:48.985 Which creates some problems because

NOTE Confidence: 0.9644439  
00:28:48.985 --> 00:28:49.865 if you didn't know about  
NOTE Confidence: 0.9644439  
00:28:49.865 --> 00:28:50.985 the low grade area, you  
NOTE Confidence: 0.9644439  
00:28:50.985 --> 00:28:52.265 would think this was a  
NOTE Confidence: 0.9644439  
00:28:52.265 --> 00:28:53.485 neuroendocrine carcinoma.  
NOTE Confidence: 0.94866365  
00:28:54.025 --> 00:28:55.625 And indeed what we've found  
NOTE Confidence: 0.94866365  
00:28:55.625 --> 00:28:57.145 now is that there's an  
NOTE Confidence: 0.94866365  
00:28:57.145 --> 00:28:57.645 overlap  
NOTE Confidence: 0.93923986  
00:28:58.105 --> 00:28:59.465 in the K sixty seven  
NOTE Confidence: 0.93923986  
00:28:59.465 --> 00:29:01.485 between the well differentiated NETs  
NOTE Confidence: 0.93923986  
00:29:01.700 --> 00:29:03.480 and the poorly differentiated neuroendocrine  
NOTE Confidence: 0.93923986  
00:29:03.540 --> 00:29:04.040 carcinomas.  
NOTE Confidence: 0.99328864  
00:29:04.740 --> 00:29:06.020 And we have this range  
NOTE Confidence: 0.99328864  
00:29:06.020 --> 00:29:07.960 of K sixty seven between  
NOTE Confidence: 0.90346944  
00:29:08.340 --> 00:29:10.420 around thirty to seventy where  
NOTE Confidence: 0.90346944  
00:29:10.420 --> 00:29:11.480 both can occur.  
NOTE Confidence: 0.9731069

00:29:12.100 --> 00:29:13.140 And so how are we  
NOTE Confidence: 0.9731069

00:29:13.140 --> 00:29:14.440 gonna tell these apart?  
NOTE Confidence: 0.9552774

00:29:15.365 --> 00:29:16.325 Well there can be some  
NOTE Confidence: 0.9552774

00:29:16.325 --> 00:29:17.305 clinical clues.  
NOTE Confidence: 0.97559667

00:29:17.925 --> 00:29:19.125 For instance, if the patient  
NOTE Confidence: 0.97559667

00:29:19.125 --> 00:29:20.265 had a lower grade  
NOTE Confidence: 0.92802143

00:29:20.645 --> 00:29:22.165 NET, then the high grade  
NOTE Confidence: 0.92802143

00:29:22.165 --> 00:29:23.625 tumor is also a NET.  
NOTE Confidence: 0.9800315

00:29:24.085 --> 00:29:25.625 If it's octreotide  
NOTE Confidence: 0.96419746

00:29:26.005 --> 00:29:27.125 or one of the other  
NOTE Confidence: 0.96419746

00:29:27.125 --> 00:29:27.625 somatostatin  
NOTE Confidence: 0.98392904

00:29:27.925 --> 00:29:30.220 based imaging scans positive, it's  
NOTE Confidence: 0.98392904

00:29:30.220 --> 00:29:31.440 probably well differentiated  
NOTE Confidence: 0.98134655

00:29:32.380 --> 00:29:34.299 NET. If it's FDG PET  
NOTE Confidence: 0.98134655

00:29:34.299 --> 00:29:35.740 positive, it's probably a poorly  
NOTE Confidence: 0.98134655

00:29:35.740 --> 00:29:36.240 differentiated

NOTE Confidence: 0.9988527

00:29:36.779 --> 00:29:37.279 carcinoma.

NOTE Confidence: 0.9746738

00:29:38.380 --> 00:29:39.820 And then by morphology, we

NOTE Confidence: 0.9746738

00:29:39.820 --> 00:29:40.860 can also look to see,

NOTE Confidence: 0.9746738

00:29:40.860 --> 00:29:41.740 is there a lower grade

NOTE Confidence: 0.9746738

00:29:41.740 --> 00:29:43.100 component like I just showed

NOTE Confidence: 0.9746738

00:29:43.100 --> 00:29:44.565 you? Is there a non

NOTE Confidence: 0.9746738

00:29:44.565 --> 00:29:46.505 neuroendocrine component like adenocarcinoma,

NOTE Confidence: 0.9757142

00:29:47.365 --> 00:29:48.725 which would mean that the

NOTE Confidence: 0.9757142

00:29:48.725 --> 00:29:49.225 neuroendocrine

NOTE Confidence: 0.99625254

00:29:49.845 --> 00:29:50.345 is

NOTE Confidence: 0.88525665

00:29:50.804 --> 00:29:51.785 poorly differentiated?

NOTE Confidence: 0.993951

00:29:52.885 --> 00:29:54.025 And then there are molecular

NOTE Confidence: 0.993951

00:29:54.085 --> 00:29:54.585 clues.

NOTE Confidence: 0.9784023

00:29:55.525 --> 00:29:56.965 This is for pancreas, but

NOTE Confidence: 0.9784023

00:29:56.965 --> 00:29:58.005 the same thing is true

NOTE Confidence: 0.9784023

00:29:58.005 --> 00:29:59.500 for other anatomic sites. There  
NOTE Confidence: 0.9784023

00:29:59.500 --> 00:30:00.880 are different types of mutations  
NOTE Confidence: 0.95305675

00:30:01.180 --> 00:30:02.540 in the well differentiated and  
NOTE Confidence: 0.95305675

00:30:02.540 --> 00:30:03.440 poorly differentiated,  
NOTE Confidence: 0.9990182

00:30:03.820 --> 00:30:05.040 and this persists  
NOTE Confidence: 0.9914795

00:30:05.500 --> 00:30:06.860 in general as the tumors  
NOTE Confidence: 0.9914795

00:30:06.860 --> 00:30:08.000 become higher grade.  
NOTE Confidence: 0.9800072

00:30:08.300 --> 00:30:09.180 So if you have a  
NOTE Confidence: 0.9800072

00:30:09.180 --> 00:30:10.240 g three net  
NOTE Confidence: 0.9842023

00:30:11.284 --> 00:30:13.284 that lacks RB and p  
NOTE Confidence: 0.9842023

00:30:13.284 --> 00:30:15.365 fifty three, that's reassuring that  
NOTE Confidence: 0.9842023

00:30:15.365 --> 00:30:16.804 it's still a net. If  
NOTE Confidence: 0.9842023

00:30:16.804 --> 00:30:18.025 it has those mutations,  
NOTE Confidence: 0.9960206

00:30:19.044 --> 00:30:20.404 it probably is a poorly  
NOTE Confidence: 0.9960206

00:30:20.404 --> 00:30:22.105 differentiated neuroendocrine carcinoma.  
NOTE Confidence: 0.98667735

00:30:23.059 --> 00:30:24.020 So this can be done

NOTE Confidence: 0.98667735

00:30:24.020 --> 00:30:25.540 now to help classify these

NOTE Confidence: 0.98667735

00:30:25.540 --> 00:30:27.220 high grade tumors which hopefully

NOTE Confidence: 0.98667735

00:30:27.220 --> 00:30:29.080 will point to appropriate therapy.

NOTE Confidence: 0.98369837

00:30:30.580 --> 00:30:32.179 So to summarize what we've

NOTE Confidence: 0.98369837

00:30:32.179 --> 00:30:32.679 discussed,

NOTE Confidence: 0.89773256

00:30:33.299 --> 00:30:34.820 important points here is that

NOTE Confidence: 0.89773256

00:30:34.820 --> 00:30:36.900 neuroendocrine neoplasms as a general

NOTE Confidence: 0.89773256

00:30:36.900 --> 00:30:38.465 category can be either poorly

NOTE Confidence: 0.89773256

00:30:38.465 --> 00:30:40.085 different I'm sorry, well differentiated

NOTE Confidence: 0.9544991

00:30:40.385 --> 00:30:40.885 NETs

NOTE Confidence: 0.9453718

00:30:41.425 --> 00:30:42.645 or poorly differentiated

NOTE Confidence: 0.9946745

00:30:43.105 --> 00:30:43.605 neuroendocrine

NOTE Confidence: 0.9948173

00:30:43.905 --> 00:30:44.405 carcinomas.

NOTE Confidence: 0.9956537

00:30:45.505 --> 00:30:46.965 The neuroendocrine differentiation

NOTE Confidence: 0.9703083

00:30:47.425 --> 00:30:48.865 should be demonstrated by immuno

NOTE Confidence: 0.9703083

00:30:48.865 --> 00:30:49.365 labeling.  
NOTE Confidence: 0.87696683

00:30:51.100 --> 00:30:52.320 Inappropriate pathological  
NOTE Confidence: 0.98183

00:30:52.779 --> 00:30:54.460 context, meaning don't stain things  
NOTE Confidence: 0.98183

00:30:54.460 --> 00:30:55.919 that don't look like neuroendocrine  
NOTE Confidence: 0.9981791

00:30:56.299 --> 00:30:57.759 tumors in the first place.  
NOTE Confidence: 0.99778736

00:30:59.100 --> 00:30:59.600 Grading  
NOTE Confidence: 0.8665745

00:31:00.139 --> 00:31:01.659 is based on a three  
NOTE Confidence: 0.8665745

00:31:01.659 --> 00:31:03.759 tier scheme, perhaps with subgrades  
NOTE Confidence: 0.8665745

00:31:03.899 --> 00:31:05.325 for g two based on  
NOTE Confidence: 0.8665745

00:31:05.325 --> 00:31:06.924 the t sixty seven and  
NOTE Confidence: 0.8665745

00:31:06.924 --> 00:31:07.585 the lactamics.  
NOTE Confidence: 0.47455373

00:31:08.284 --> 00:31:08.784 Whereas,  
NOTE Confidence: 0.91094023

00:31:09.405 --> 00:31:10.465 neuroendocrine carcinomas  
NOTE Confidence: 0.93778116

00:31:10.765 --> 00:31:11.725 are hard to read by  
NOTE Confidence: 0.93778116

00:31:11.725 --> 00:31:12.225 definition.  
NOTE Confidence: 0.9848213

00:31:13.164 --> 00:31:14.284 The grade can be a

NOTE Confidence: 0.9848213  
00:31:14.284 --> 00:31:15.804 dynamic feature of NETs, so  
NOTE Confidence: 0.9848213  
00:31:15.804 --> 00:31:16.684 you have to keep track  
NOTE Confidence: 0.9848213  
00:31:16.684 --> 00:31:18.125 of it as these tumors  
NOTE Confidence: 0.9848213  
00:31:18.125 --> 00:31:18.625 progress.  
NOTE Confidence: 0.993093  
00:31:19.220 --> 00:31:20.420 And finally, we have some  
NOTE Confidence: 0.993093  
00:31:20.420 --> 00:31:22.020 ways to tell g three  
NOTE Confidence: 0.993093  
00:31:22.020 --> 00:31:22.840 NETs from  
NOTE Confidence: 0.99838907  
00:31:23.300 --> 00:31:25.220 neuroendocrine carcinomas, but they can  
NOTE Confidence: 0.99838907  
00:31:25.220 --> 00:31:26.280 be quite challenging.  
NOTE Confidence: 0.9756657  
00:31:26.980 --> 00:31:28.100 So with that, I will,  
NOTE Confidence: 0.988627  
00:31:28.900 --> 00:31:31.140 stop and pass the, pass  
NOTE Confidence: 0.988627  
00:31:31.140 --> 00:31:32.500 the baton to our next  
NOTE Confidence: 0.988627  
00:31:32.500 --> 00:31:33.000 speaker.  
NOTE Confidence: 0.94996357  
00:31:34.465 --> 00:31:36.005 Great. Thanks, doctor Klimstra.  
NOTE Confidence: 0.958122  
00:31:36.865 --> 00:31:39.024 We'll have doctor Kuntzmann go  
NOTE Confidence: 0.958122

00:31:39.024 --> 00:31:39.524 next.  
NOTE Confidence: 0.996437

00:31:44.465 --> 00:31:45.765 Good evening, everybody.  
NOTE Confidence: 0.92135644

00:31:52.250 --> 00:31:53.310 All coming through?  
NOTE Confidence: 0.9400263

00:31:57.850 --> 00:31:58.970 Pam, you're muted, but you  
NOTE Confidence: 0.9400263

00:31:58.970 --> 00:32:00.090 looked like you said yes.  
NOTE Confidence: 0.9400263

00:32:00.090 --> 00:32:01.310 Yes. Sorry about that.  
NOTE Confidence: 0.92528236

00:32:01.770 --> 00:32:02.590 No problem.  
NOTE Confidence: 0.93810785

00:32:03.765 --> 00:32:04.965 Alright. Good evening, everybody. My  
NOTE Confidence: 0.93810785

00:32:04.965 --> 00:32:05.845 name is John Kunstmann. I'm  
NOTE Confidence: 0.93810785

00:32:05.845 --> 00:32:06.985 one of the surgical oncologists  
NOTE Confidence: 0.93810785

00:32:07.045 --> 00:32:07.705 at Yale.  
NOTE Confidence: 0.92882156

00:32:09.125 --> 00:32:10.405 And, you know, I co  
NOTE Confidence: 0.92882156

00:32:10.405 --> 00:32:11.845 lead the neuroendocrine tumor from  
NOTE Confidence: 0.92882156

00:32:11.845 --> 00:32:13.525 a program here with doctor  
NOTE Confidence: 0.92882156

00:32:13.525 --> 00:32:15.145 Coons from a surgeon's perspective.  
NOTE Confidence: 0.98937607

00:32:15.925 --> 00:32:16.725 So there'd be a few

NOTE Confidence: 0.98937607  
00:32:16.725 --> 00:32:17.685 things that I'll repeat that  
NOTE Confidence: 0.98937607  
00:32:17.685 --> 00:32:19.430 are particularly pertinent to the  
NOTE Confidence: 0.98937607  
00:32:19.430 --> 00:32:20.490 surgical management  
NOTE Confidence: 0.9504577  
00:32:21.030 --> 00:32:22.950 that, the excellent pathologic and  
NOTE Confidence: 0.9504577  
00:32:22.950 --> 00:32:24.170 general medical overview,  
NOTE Confidence: 0.90165144  
00:32:24.870 --> 00:32:25.690 already presented.  
NOTE Confidence: 0.9958017  
00:32:27.510 --> 00:32:28.470 But we'll try and move  
NOTE Confidence: 0.9958017  
00:32:28.470 --> 00:32:29.770 along fairly quickly.  
NOTE Confidence: 0.9976544  
00:32:30.470 --> 00:32:31.670 For my portion of the  
NOTE Confidence: 0.9976544  
00:32:31.670 --> 00:32:32.170 discussion,  
NOTE Confidence: 0.9830233  
00:32:32.470 --> 00:32:33.554 I really wanna convey what  
NOTE Confidence: 0.9830233  
00:32:33.554 --> 00:32:35.255 are the indications for surgery,  
NOTE Confidence: 0.99534595  
00:32:36.195 --> 00:32:37.715 and kind of emphasizing that  
NOTE Confidence: 0.99534595  
00:32:37.715 --> 00:32:38.995 each case really does need  
NOTE Confidence: 0.99534595  
00:32:38.995 --> 00:32:40.455 an individualized approach,  
NOTE Confidence: 0.93728405

00:32:41.475 --> 00:32:43.155 and what surgeries we can  
NOTE Confidence: 0.93728405

00:32:43.155 --> 00:32:45.315 do. We're kinda stick again  
NOTE Confidence: 0.93728405

00:32:45.315 --> 00:32:46.320 in the interest of time  
NOTE Confidence: 0.93728405

00:32:46.320 --> 00:32:47.140 to pancreatic,  
NOTE Confidence: 0.9362228

00:32:48.080 --> 00:32:50.260 and intestinal neuroendocrine tumors,  
NOTE Confidence: 0.97496563

00:32:51.200 --> 00:32:53.700 and, skip over neuroendocrine carcinomas  
NOTE Confidence: 0.97496563

00:32:53.760 --> 00:32:54.480 and some of the higher  
NOTE Confidence: 0.97496563

00:32:54.480 --> 00:32:55.220 grade lesions,  
NOTE Confidence: 0.96848553

00:32:56.960 --> 00:32:58.320 for which surgery has a  
NOTE Confidence: 0.96848553

00:32:58.320 --> 00:33:00.020 pretty minimal role anyways,  
NOTE Confidence: 0.98951954

00:33:00.695 --> 00:33:02.135 and then also briefly talk  
NOTE Confidence: 0.98951954

00:33:02.135 --> 00:33:03.515 about metastatic disease.  
NOTE Confidence: 0.95507944

00:33:03.815 --> 00:33:05.115 So, again, just to reiterate,  
NOTE Confidence: 0.91909397

00:33:05.495 --> 00:33:06.795 I'm gonna start with pancreatic  
NOTE Confidence: 0.91909397

00:33:06.855 --> 00:33:08.075 neuroendocrine tumors.  
NOTE Confidence: 0.9564689

00:33:09.175 --> 00:33:10.935 From a peanut standpoint, again,

NOTE Confidence: 0.9564689

00:33:10.935 --> 00:33:12.695 you know, historically, many were

NOTE Confidence: 0.9564689

00:33:12.695 --> 00:33:14.395 diagnosed because of hormone oversecretion.

NOTE Confidence: 0.89830065

00:33:15.970 --> 00:33:17.190 Those hormones that,

NOTE Confidence: 0.97991127

00:33:17.809 --> 00:33:19.730 are oversecreted by functional tumors

NOTE Confidence: 0.97991127

00:33:19.730 --> 00:33:21.010 can correlate with more or

NOTE Confidence: 0.97991127

00:33:21.010 --> 00:33:22.309 less aggressive disease.

NOTE Confidence: 0.95166254

00:33:22.929 --> 00:33:23.669 But nowadays,

NOTE Confidence: 0.94736344

00:33:23.970 --> 00:33:25.490 many are found in the

NOTE Confidence: 0.94736344

00:33:25.730 --> 00:33:26.850 most are found in the

NOTE Confidence: 0.94736344

00:33:26.850 --> 00:33:27.350 nonfunctional

NOTE Confidence: 0.7378579

00:33:27.650 --> 00:33:28.150 setting,

NOTE Confidence: 0.9089549

00:33:29.035 --> 00:33:29.995 and up to half the

NOTE Confidence: 0.9089549

00:33:29.995 --> 00:33:31.535 diagnoses are completely incidental,

NOTE Confidence: 0.9745677

00:33:32.395 --> 00:33:34.315 usually imaging findings. When they

NOTE Confidence: 0.9745677

00:33:34.315 --> 00:33:35.055 are symptomatic,

NOTE Confidence: 0.94610786

00:33:35.595 --> 00:33:37.515 generally, it's larger tumors, and

NOTE Confidence: 0.94610786

00:33:37.515 --> 00:33:39.275 it's caused those symptoms are

NOTE Confidence: 0.94610786

00:33:39.275 --> 00:33:40.475 caused by it pushing on

NOTE Confidence: 0.94610786

00:33:40.475 --> 00:33:40.975 something,

NOTE Confidence: 0.968672

00:33:42.075 --> 00:33:44.420 GI tract or bile ducts

NOTE Confidence: 0.968672

00:33:44.420 --> 00:33:45.700 or something like that that

NOTE Confidence: 0.968672

00:33:45.700 --> 00:33:47.080 leads to the presentation.

NOTE Confidence: 0.97928536

00:33:48.660 --> 00:33:50.420 You know, staging, again, already

NOTE Confidence: 0.97928536

00:33:50.420 --> 00:33:51.320 nicely summarized,

NOTE Confidence: 0.92346436

00:33:51.700 --> 00:33:53.380 by doctor Koons. But, you

NOTE Confidence: 0.92346436

00:33:53.380 --> 00:33:53.880 know,

NOTE Confidence: 0.9909894

00:33:54.180 --> 00:33:55.300 the biggest thing from a

NOTE Confidence: 0.9909894

00:33:55.300 --> 00:33:56.835 surgeon's perspective, of course,

NOTE Confidence: 0.9975249

00:33:57.715 --> 00:33:59.575 is understanding whether it's localized

NOTE Confidence: 0.9975249

00:33:59.715 --> 00:34:01.335 or metastatic disease.

NOTE Confidence: 0.95296067

00:34:02.115 --> 00:34:03.635 Regardless of stage, there are

NOTE Confidence: 0.95296067

00:34:03.635 --> 00:34:04.674 a number of options that

NOTE Confidence: 0.95296067

00:34:04.674 --> 00:34:06.515 exist as already discussed, and

NOTE Confidence: 0.95296067

00:34:06.515 --> 00:34:07.955 surgery is appropriate, in some

NOTE Confidence: 0.95296067

00:34:07.955 --> 00:34:09.395 cases, a stage four disease.

NOTE Confidence: 0.95296067

00:34:09.395 --> 00:34:10.250 But that,

NOTE Confidence: 0.9653607

00:34:10.890 --> 00:34:11.390 surgical

NOTE Confidence: 0.9315243

00:34:11.770 --> 00:34:12.829 treatment generally,

NOTE Confidence: 0.98145556

00:34:13.770 --> 00:34:15.290 the initial approach is gonna

NOTE Confidence: 0.98145556

00:34:15.290 --> 00:34:16.750 be surgery only in localized

NOTE Confidence: 0.98145556

00:34:16.969 --> 00:34:17.469 disease.

NOTE Confidence: 0.88079906

00:34:17.930 --> 00:34:19.849 For localized pancreatic or endocrine

NOTE Confidence: 0.88079906

00:34:19.849 --> 00:34:21.210 tumor surgery is the primary

NOTE Confidence: 0.88079906

00:34:21.210 --> 00:34:22.109 treatment modality.

NOTE Confidence: 0.95674264

00:34:23.325 --> 00:34:25.025 As, you know, general rules,

NOTE Confidence: 0.95674264

00:34:25.085 --> 00:34:26.065 functional peanuts,

NOTE Confidence: 0.98157454

00:34:26.605 --> 00:34:28.605 are almost all good surgical  
NOTE Confidence: 0.98157454

00:34:28.605 --> 00:34:29.985 candidates simply because,  
NOTE Confidence: 0.9674956

00:34:30.925 --> 00:34:33.005 oversecretion of hormones leads to,  
NOTE Confidence: 0.9674956

00:34:33.005 --> 00:34:34.785 you know, syndromic disease.  
NOTE Confidence: 0.8285195

00:34:36.600 --> 00:34:37.500 And nonfunctional  
NOTE Confidence: 0.97186327

00:34:37.800 --> 00:34:39.080 peanuts that are causing some  
NOTE Confidence: 0.97186327

00:34:39.080 --> 00:34:40.680 of those compressive symptoms like  
NOTE Confidence: 0.97186327

00:34:40.680 --> 00:34:41.739 jaundice or,  
NOTE Confidence: 0.99437493

00:34:42.520 --> 00:34:44.220 gastric outlet obstruction, etcetera.  
NOTE Confidence: 0.99889106

00:34:44.920 --> 00:34:46.140 We'll talk a little bit  
NOTE Confidence: 0.93893605

00:34:46.600 --> 00:34:47.420 down the road,  
NOTE Confidence: 0.9880534

00:34:47.960 --> 00:34:49.674 as I progress for locally  
NOTE Confidence: 0.9880534

00:34:49.674 --> 00:34:50.575 advanced tumors,  
NOTE Confidence: 0.99748945

00:34:51.035 --> 00:34:52.655 that could be considered unresectable.  
NOTE Confidence: 0.99874073

00:34:53.915 --> 00:34:55.434 As briefly mentioned, you know,  
NOTE Confidence: 0.99874073

00:34:55.434 --> 00:34:57.275 that that definition is changing.

NOTE Confidence: 0.99874073

00:34:57.275 --> 00:34:58.174 I think both

NOTE Confidence: 0.9977277

00:34:59.194 --> 00:34:59.694 improvements

NOTE Confidence: 0.9855428

00:34:59.994 --> 00:35:01.994 in surgical techniques, new approaches

NOTE Confidence: 0.9855428

00:35:01.994 --> 00:35:03.830 we've devised to operating in

NOTE Confidence: 0.9855428

00:35:03.830 --> 00:35:04.810 the case of nonmetastatic,

NOTE Confidence: 0.9736909

00:35:05.670 --> 00:35:07.670 especially pancreatic neuroendocrine tumors, has

NOTE Confidence: 0.9736909

00:35:07.670 --> 00:35:08.950 changed the definition of what's

NOTE Confidence: 0.9736909

00:35:08.950 --> 00:35:09.450 unresectable.

NOTE Confidence: 0.99481386

00:35:10.070 --> 00:35:11.989 Moreover, we now have effective

NOTE Confidence: 0.99481386

00:35:11.989 --> 00:35:13.690 systemic agents that can downstage

NOTE Confidence: 0.99481386

00:35:13.750 --> 00:35:14.730 some of these patients,

NOTE Confidence: 0.70344144

00:35:15.510 --> 00:35:16.010 to

NOTE Confidence: 0.6998663

00:35:16.434 --> 00:35:16.934 cases.

NOTE Confidence: 0.9183072

00:35:17.795 --> 00:35:19.234 I'm just gonna briefly mention,

NOTE Confidence: 0.9183072

00:35:19.234 --> 00:35:20.114 you know, peanuts that are

NOTE Confidence: 0.9183072

00:35:20.114 --> 00:35:21.795 associated with genetic syndromes most

NOTE Confidence: 0.9183072

00:35:21.795 --> 00:35:23.714 commonly, MEN1, but of course,

NOTE Confidence: 0.9183072

00:35:23.714 --> 00:35:25.815 others like tuberous sclerosis, etcetera.

NOTE Confidence: 0.9944779

00:35:26.594 --> 00:35:27.795 You know, in those cases,

NOTE Confidence: 0.9944779

00:35:27.795 --> 00:35:28.614 it's truly

NOTE Confidence: 0.9930798

00:35:29.140 --> 00:35:29.719 a multidisciplinary

NOTE Confidence: 0.97709674

00:35:30.180 --> 00:35:31.859 disease where decisions on when

NOTE Confidence: 0.97709674

00:35:31.859 --> 00:35:33.300 to operate have to take

NOTE Confidence: 0.97709674

00:35:33.300 --> 00:35:34.340 into account a number of

NOTE Confidence: 0.97709674

00:35:34.340 --> 00:35:35.859 other factors like patient age,

NOTE Confidence: 0.97709674

00:35:35.859 --> 00:35:36.600 their endocrinology,

NOTE Confidence: 0.99778616

00:35:37.780 --> 00:35:38.280 status,

NOTE Confidence: 0.9991242

00:35:38.900 --> 00:35:40.440 and what the future expectations

NOTE Confidence: 0.9993347

00:35:40.739 --> 00:35:40.995 are.

NOTE Confidence: 0.9513119

00:35:42.595 --> 00:35:44.615 So, again, talking about totally

NOTE Confidence: 0.9513119

00:35:44.675 --> 00:35:45.175 incidental

NOTE Confidence: 0.9523356  
00:35:45.635 --> 00:35:46.755 peanuts, which is what we  
NOTE Confidence: 0.9523356  
00:35:46.755 --> 00:35:48.295 see most often nowadays,  
NOTE Confidence: 0.9835747  
00:35:49.635 --> 00:35:51.635 as nicely summarized by doctor  
NOTE Confidence: 0.9835747  
00:35:51.635 --> 00:35:52.995 Klimstra, we wanna know as  
NOTE Confidence: 0.9835747  
00:35:52.995 --> 00:35:54.195 much as we can about  
NOTE Confidence: 0.9835747  
00:35:54.195 --> 00:35:55.015 how aggressive  
NOTE Confidence: 0.9497011  
00:35:55.410 --> 00:35:56.450 that disease is from a  
NOTE Confidence: 0.9497011  
00:35:56.450 --> 00:35:58.450 pathologic standpoint, k sixty seven  
NOTE Confidence: 0.9497011  
00:35:58.450 --> 00:35:59.910 being particularly important.  
NOTE Confidence: 0.99207413  
00:36:00.290 --> 00:36:01.170 But I'd also like to  
NOTE Confidence: 0.99207413  
00:36:01.170 --> 00:36:02.549 highlight regional spread.  
NOTE Confidence: 0.998246  
00:36:03.170 --> 00:36:04.630 You know, these are frequently  
NOTE Confidence: 0.9964624  
00:36:04.930 --> 00:36:05.430 lymphotropic  
NOTE Confidence: 0.8431666  
00:36:05.730 --> 00:36:06.230 tumors.  
NOTE Confidence: 0.9831901  
00:36:06.849 --> 00:36:07.730 And then, of course, the  
NOTE Confidence: 0.9831901

00:36:07.730 --> 00:36:09.170 tumor size relates to its  
NOTE Confidence: 0.9831901  
00:36:09.170 --> 00:36:09.670 resectability.  
NOTE Confidence: 0.93608826  
00:36:11.244 --> 00:36:12.765 Even for small low key  
NOTE Confidence: 0.93608826  
00:36:12.765 --> 00:36:13.905 sixty seven peanuts,  
NOTE Confidence: 0.9774965  
00:36:14.364 --> 00:36:15.565 they all have the potential  
NOTE Confidence: 0.9774965  
00:36:15.565 --> 00:36:16.605 to grow and spread. It's  
NOTE Confidence: 0.9774965  
00:36:16.605 --> 00:36:18.364 just some are are very  
NOTE Confidence: 0.9774965  
00:36:18.364 --> 00:36:19.905 unlikely to do so.  
NOTE Confidence: 0.97916406  
00:36:20.445 --> 00:36:21.484 One of the frequent things  
NOTE Confidence: 0.97916406  
00:36:21.484 --> 00:36:22.605 that occurs in in my  
NOTE Confidence: 0.97916406  
00:36:22.605 --> 00:36:23.724 clinic is a patient will  
NOTE Confidence: 0.97916406  
00:36:23.724 --> 00:36:24.765 come to us and, you  
NOTE Confidence: 0.97916406  
00:36:24.765 --> 00:36:25.984 know, they have a peanut,  
NOTE Confidence: 0.71039885  
00:36:26.310 --> 00:36:26.810 and  
NOTE Confidence: 0.9772393  
00:36:28.070 --> 00:36:29.510 they've been told that they  
NOTE Confidence: 0.9772393  
00:36:29.510 --> 00:36:30.650 do not have cancer,

NOTE Confidence: 0.9819837

00:36:31.830 --> 00:36:32.870 you know, which is always

NOTE Confidence: 0.9819837

00:36:32.870 --> 00:36:34.070 difficult to walk that back.

NOTE Confidence: 0.9819837

00:36:34.070 --> 00:36:35.190 And I and I totally

NOTE Confidence: 0.9819837

00:36:35.190 --> 00:36:35.690 understand

NOTE Confidence: 0.97881126

00:36:36.230 --> 00:36:37.190 the fact that they have

NOTE Confidence: 0.97881126

00:36:37.190 --> 00:36:38.630 a pancreatic lesion and it's

NOTE Confidence: 0.97881126

00:36:38.630 --> 00:36:39.450 not adenocarcinoma.

NOTE Confidence: 0.9595554

00:36:40.150 --> 00:36:41.875 It's a neuroendocrine tumor, obviously,

NOTE Confidence: 0.9595554

00:36:41.875 --> 00:36:43.395 that sets a completely different

NOTE Confidence: 0.9595554

00:36:43.395 --> 00:36:43.895 conversation.

NOTE Confidence: 0.98072934

00:36:45.715 --> 00:36:47.075 But oftentimes, we do have

NOTE Confidence: 0.98072934

00:36:47.075 --> 00:36:48.775 to characterize to, you know,

NOTE Confidence: 0.98072934

00:36:48.835 --> 00:36:50.835 recharacterize these lesions to patients

NOTE Confidence: 0.98072934

00:36:50.835 --> 00:36:52.035 if they've gotten the notion

NOTE Confidence: 0.98072934

00:36:52.035 --> 00:36:53.155 that, you know, there's not

NOTE Confidence: 0.98072934

00:36:53.155 --> 00:36:54.239 much to worry about.  
NOTE Confidence: 0.99719214

00:36:54.800 --> 00:36:56.500 That being said, you know,  
NOTE Confidence: 0.99719214

00:36:56.719 --> 00:36:58.000 as I alluded to, there  
NOTE Confidence: 0.99719214

00:36:58.000 --> 00:36:59.140 are a number of tumors  
NOTE Confidence: 0.99719214

00:36:59.280 --> 00:37:00.100 that are  
NOTE Confidence: 0.987019

00:37:00.640 --> 00:37:02.320 so unlikely to spread that  
NOTE Confidence: 0.987019

00:37:02.320 --> 00:37:02.820 observation  
NOTE Confidence: 0.9802284

00:37:03.280 --> 00:37:05.040 is a potential management strategy.  
NOTE Confidence: 0.9802284

00:37:05.040 --> 00:37:06.560 So this has been floating  
NOTE Confidence: 0.9802284

00:37:06.560 --> 00:37:07.665 about for about ten or  
NOTE Confidence: 0.9802284

00:37:07.745 --> 00:37:08.645 fifteen years now,  
NOTE Confidence: 0.9650501

00:37:09.265 --> 00:37:10.225 looking at a few studies.  
NOTE Confidence: 0.9650501

00:37:10.225 --> 00:37:10.785 You know, one of the  
NOTE Confidence: 0.9650501

00:37:10.785 --> 00:37:11.905 earliest studies came out of  
NOTE Confidence: 0.9650501

00:37:11.905 --> 00:37:13.265 the clinic, you know, Mayo  
NOTE Confidence: 0.9650501

00:37:13.265 --> 00:37:15.505 Clinic fifteen years ago, and

NOTE Confidence: 0.9650501  
00:37:15.505 --> 00:37:16.864 that observed that over a  
NOTE Confidence: 0.9650501  
00:37:16.864 --> 00:37:18.085 long period of time,  
NOTE Confidence: 0.9319853  
00:37:18.945 --> 00:37:20.864 patients with small asymptomatic p  
NOTE Confidence: 0.9319853  
00:37:20.864 --> 00:37:21.890 nets that were nonfunctional  
NOTE Confidence: 0.98275983  
00:37:22.510 --> 00:37:23.869 had the same survivorship as  
NOTE Confidence: 0.98275983  
00:37:23.869 --> 00:37:25.390 patients that underwent an initial  
NOTE Confidence: 0.98275983  
00:37:25.390 --> 00:37:25.890 resection.  
NOTE Confidence: 0.994126  
00:37:27.469 --> 00:37:29.390 This study was contradicted by  
NOTE Confidence: 0.994126  
00:37:29.390 --> 00:37:30.690 a study out of Duke  
NOTE Confidence: 0.9943402  
00:37:31.150 --> 00:37:33.069 that suggested patients that were  
NOTE Confidence: 0.9943402  
00:37:33.069 --> 00:37:33.569 observed  
NOTE Confidence: 0.99824524  
00:37:33.869 --> 00:37:34.930 did much worse.  
NOTE Confidence: 0.9879602  
00:37:35.755 --> 00:37:36.715 That being said, that was  
NOTE Confidence: 0.9879602  
00:37:36.715 --> 00:37:37.835 a database study. It was  
NOTE Confidence: 0.9879602  
00:37:37.835 --> 00:37:39.114 retrospective. It was subject to  
NOTE Confidence: 0.9879602

00:37:39.114 --> 00:37:40.494 a lot of selection bias.  
NOTE Confidence: 0.9523483

00:37:41.515 --> 00:37:43.035 You know, a study performed  
NOTE Confidence: 0.9523483

00:37:43.035 --> 00:37:44.155 here at Yale about the  
NOTE Confidence: 0.9523483

00:37:44.155 --> 00:37:44.895 same time,  
NOTE Confidence: 0.9955276

00:37:45.835 --> 00:37:46.955 it did show that patients  
NOTE Confidence: 0.9955276

00:37:46.955 --> 00:37:48.635 with small neuroendocrine tumors that  
NOTE Confidence: 0.9955276

00:37:48.635 --> 00:37:50.155 were observed that later underwent  
NOTE Confidence: 0.9955276

00:37:50.155 --> 00:37:50.655 resection  
NOTE Confidence: 0.9697505

00:37:51.170 --> 00:37:52.290 did have a very, very  
NOTE Confidence: 0.9697505

00:37:52.290 --> 00:37:53.830 favorable ten year survival.  
NOTE Confidence: 0.98031116

00:37:54.370 --> 00:37:55.730 Although some did have, you  
NOTE Confidence: 0.98031116

00:37:55.730 --> 00:37:56.930 know, regional spread at the  
NOTE Confidence: 0.98031116

00:37:56.930 --> 00:37:57.830 time of resection.  
NOTE Confidence: 0.9866457

00:37:59.090 --> 00:38:00.290 And then a large study  
NOTE Confidence: 0.9866457

00:38:00.290 --> 00:38:01.670 also out of, MSK  
NOTE Confidence: 0.95211166

00:38:02.370 --> 00:38:03.730 showed that if patients are

NOTE Confidence: 0.95211166  
00:38:03.730 --> 00:38:05.015 watched well, you know, about  
NOTE Confidence: 0.95211166  
00:38:05.015 --> 00:38:05.895 a quarter of them will  
NOTE Confidence: 0.95211166  
00:38:05.895 --> 00:38:07.175 convert to resection over a  
NOTE Confidence: 0.95211166  
00:38:07.175 --> 00:38:08.855 five year period. But, again,  
NOTE Confidence: 0.95211166  
00:38:08.855 --> 00:38:10.395 the survival is the same.  
NOTE Confidence: 0.9590134  
00:38:11.815 --> 00:38:13.655 Now what this boils down  
NOTE Confidence: 0.9590134  
00:38:13.655 --> 00:38:14.455 to, and there's been a  
NOTE Confidence: 0.9590134  
00:38:14.455 --> 00:38:15.575 number of other studies over  
NOTE Confidence: 0.9590134  
00:38:15.575 --> 00:38:17.415 the years that, mostly fall  
NOTE Confidence: 0.9590134  
00:38:17.415 --> 00:38:18.219 on the side that there  
NOTE Confidence: 0.9590134  
00:38:18.219 --> 00:38:19.420 is a population in whom  
NOTE Confidence: 0.9590134  
00:38:19.420 --> 00:38:20.780 it's safe to avoid surgery  
NOTE Confidence: 0.9590134  
00:38:20.780 --> 00:38:21.280 in.  
NOTE Confidence: 0.9646355  
00:38:22.300 --> 00:38:23.340 So the answer, I think,  
NOTE Confidence: 0.9646355  
00:38:23.340 --> 00:38:24.780 to the question posed here  
NOTE Confidence: 0.9646355

00:38:24.780 --> 00:38:25.900 that some peanuts may be  
NOTE Confidence: 0.9646355

00:38:25.900 --> 00:38:27.360 safe to observe is yes.  
NOTE Confidence: 0.9646355

00:38:27.580 --> 00:38:29.440 Who are those candidates? Again,  
NOTE Confidence: 0.9646355

00:38:29.660 --> 00:38:31.020 has to be nonfunctioning tumor,  
NOTE Confidence: 0.9646355

00:38:31.020 --> 00:38:32.000 has to be asymptomatic.  
NOTE Confidence: 0.9470431

00:38:33.535 --> 00:38:34.415 You know, this is a  
NOTE Confidence: 0.9470431

00:38:34.415 --> 00:38:36.035 little controversial, but essentially,  
NOTE Confidence: 0.99498546

00:38:36.815 --> 00:38:38.175 we here at Yale really  
NOTE Confidence: 0.99498546

00:38:38.175 --> 00:38:39.375 believe that if there's already  
NOTE Confidence: 0.99498546

00:38:39.375 --> 00:38:40.975 some evidence of regional spread  
NOTE Confidence: 0.99498546

00:38:40.975 --> 00:38:42.195 to lymph node involvement,  
NOTE Confidence: 0.9850709

00:38:43.135 --> 00:38:45.155 regardless of any other characteristic  
NOTE Confidence: 0.9850709

00:38:45.215 --> 00:38:46.755 that's an indication for surgery,  
NOTE Confidence: 0.953311

00:38:47.489 --> 00:38:48.450 we need to understand that  
NOTE Confidence: 0.953311

00:38:48.450 --> 00:38:49.350 it's well differentiated,  
NOTE Confidence: 0.9751737

00:38:50.130 --> 00:38:51.890 preferably small. The incidence of

NOTE Confidence: 0.9751737  
00:38:51.890 --> 00:38:53.750 both regional and metastatic spread  
NOTE Confidence: 0.9751737  
00:38:53.890 --> 00:38:55.570 starts to rise precipitously over  
NOTE Confidence: 0.9751737  
00:38:55.570 --> 00:38:56.310 two centimeters.  
NOTE Confidence: 0.965888  
00:38:57.090 --> 00:38:58.210 And then I think something  
NOTE Confidence: 0.965888  
00:38:58.210 --> 00:38:59.890 we often forget about but  
NOTE Confidence: 0.965888  
00:38:59.890 --> 00:39:01.454 is critically important, is the  
NOTE Confidence: 0.965888  
00:39:01.454 --> 00:39:02.575 patient has to be amenable  
NOTE Confidence: 0.965888  
00:39:02.575 --> 00:39:03.234 to follow-up.  
NOTE Confidence: 0.9692504  
00:39:04.094 --> 00:39:05.375 If this is somebody who  
NOTE Confidence: 0.9692504  
00:39:05.375 --> 00:39:05.875 either  
NOTE Confidence: 0.97303843  
00:39:06.335 --> 00:39:08.174 through, you know, anxiety will  
NOTE Confidence: 0.97303843  
00:39:08.174 --> 00:39:09.535 be unable to tolerate a  
NOTE Confidence: 0.97303843  
00:39:09.535 --> 00:39:10.914 surveillance based strategy,  
NOTE Confidence: 0.9735963  
00:39:11.535 --> 00:39:12.974 that's a genuine symptom as  
NOTE Confidence: 0.9735963  
00:39:12.974 --> 00:39:14.255 well, and sometimes that is  
NOTE Confidence: 0.9735963

00:39:14.255 --> 00:39:15.634 an indication for surgery.  
NOTE Confidence: 0.98335904

00:39:16.050 --> 00:39:17.090 Also, if it's a patient  
NOTE Confidence: 0.98335904

00:39:17.090 --> 00:39:18.290 that's not going to comply  
NOTE Confidence: 0.98335904

00:39:18.290 --> 00:39:19.510 with serial examinations  
NOTE Confidence: 0.9968451

00:39:19.810 --> 00:39:20.469 and follow-up,  
NOTE Confidence: 0.9676022

00:39:21.170 --> 00:39:22.050 you know, that may tilt  
NOTE Confidence: 0.9676022

00:39:22.050 --> 00:39:23.110 you towards surgery,  
NOTE Confidence: 0.99701905

00:39:23.810 --> 00:39:25.110 at an earlier phase.  
NOTE Confidence: 0.96772254

00:39:25.969 --> 00:39:27.170 So if we've made the  
NOTE Confidence: 0.96772254

00:39:27.170 --> 00:39:28.630 decision to go to surgery,  
NOTE Confidence: 0.96772254

00:39:28.844 --> 00:39:30.205 what are our goals? Obviously,  
NOTE Confidence: 0.96772254

00:39:30.205 --> 00:39:31.645 we wanna maximize the local  
NOTE Confidence: 0.96772254

00:39:31.645 --> 00:39:33.085 control with a margin negative  
NOTE Confidence: 0.96772254

00:39:33.085 --> 00:39:33.585 resection.  
NOTE Confidence: 0.98149157

00:39:34.765 --> 00:39:35.744 Regional lymphadenectomy  
NOTE Confidence: 0.9849059

00:39:36.045 --> 00:39:37.165 is considered standard of care.

NOTE Confidence: 0.9849059

00:39:37.165 --> 00:39:38.605 We wanna improve and prolong

NOTE Confidence: 0.9849059

00:39:38.605 --> 00:39:39.505 people's survivorship,

NOTE Confidence: 0.969663

00:39:40.364 --> 00:39:41.645 and then hopefully improve their

NOTE Confidence: 0.969663

00:39:41.645 --> 00:39:43.165 quality of life, particularly in

NOTE Confidence: 0.969663

00:39:43.165 --> 00:39:44.910 the case of hormonal syndrome

NOTE Confidence: 0.97311246

00:39:45.210 --> 00:39:46.670 or in metastatic disease.

NOTE Confidence: 0.9330584

00:39:48.650 --> 00:39:50.330 Secondary, but almost as important

NOTE Confidence: 0.9330584

00:39:50.330 --> 00:39:51.930 is we wanna minimize the

NOTE Confidence: 0.9330584

00:39:51.930 --> 00:39:53.690 complications and the morbidity of

NOTE Confidence: 0.9330584

00:39:53.690 --> 00:39:55.230 having a pancreatic resection.

NOTE Confidence: 0.9762523

00:39:55.610 --> 00:39:56.110 So

NOTE Confidence: 0.98536235

00:39:56.435 --> 00:39:57.395 in the short term, you

NOTE Confidence: 0.98536235

00:39:57.395 --> 00:39:58.994 know, that generally consists of

NOTE Confidence: 0.98536235

00:39:58.994 --> 00:40:01.335 infection related complications or pancreatic

NOTE Confidence: 0.98536235

00:40:01.395 --> 00:40:01.895 fistula.

NOTE Confidence: 0.9948638

00:40:02.275 --> 00:40:03.315 But in the long term,  
NOTE Confidence: 0.9948638

00:40:03.315 --> 00:40:04.515 you know, having some of  
NOTE Confidence: 0.9948638

00:40:04.515 --> 00:40:06.035 the pancreas resected can lead  
NOTE Confidence: 0.9948638

00:40:06.035 --> 00:40:07.815 to diabetes or exocrine insufficiency.  
NOTE Confidence: 0.99196076

00:40:08.400 --> 00:40:09.119 So, you know, a big  
NOTE Confidence: 0.99196076

00:40:09.119 --> 00:40:10.640 part of our pancreatic surgery  
NOTE Confidence: 0.99196076

00:40:10.640 --> 00:40:12.099 program here is the multidisciplinary  
NOTE Confidence: 0.98912555

00:40:12.559 --> 00:40:13.460 care from both,  
NOTE Confidence: 0.99479854

00:40:14.480 --> 00:40:14.980 nutritionists  
NOTE Confidence: 0.9657266

00:40:15.440 --> 00:40:16.180 and also,  
NOTE Confidence: 0.99827003

00:40:17.119 --> 00:40:18.660 the endocrine team. So  
NOTE Confidence: 0.9937289

00:40:19.039 --> 00:40:20.475 surgical approach and what kind  
NOTE Confidence: 0.9937289

00:40:20.555 --> 00:40:21.915 of procedure we do is  
NOTE Confidence: 0.9937289

00:40:21.915 --> 00:40:23.355 really dictated by what lymph  
NOTE Confidence: 0.9937289

00:40:23.355 --> 00:40:24.475 nodes need to be retrieved,  
NOTE Confidence: 0.9937289

00:40:24.475 --> 00:40:25.835 where is the tumor, and

NOTE Confidence: 0.9937289  
00:40:25.835 --> 00:40:27.675 what's the patient's tolerance for  
NOTE Confidence: 0.9937289  
00:40:27.675 --> 00:40:28.415 an operation.  
NOTE Confidence: 0.97721976  
00:40:29.755 --> 00:40:31.135 You know, less is oftentimes  
NOTE Confidence: 0.97721976  
00:40:31.275 --> 00:40:32.555 more with regards to surgery,  
NOTE Confidence: 0.97721976  
00:40:32.555 --> 00:40:33.535 but in this case,  
NOTE Confidence: 0.99784154  
00:40:33.969 --> 00:40:35.730 the tumor itself generally tells  
NOTE Confidence: 0.99784154  
00:40:35.730 --> 00:40:36.850 us what the right operation  
NOTE Confidence: 0.99784154  
00:40:36.850 --> 00:40:37.510 to do.  
NOTE Confidence: 0.99277216  
00:40:38.690 --> 00:40:39.670 You know, enucleation  
NOTE Confidence: 0.98288566  
00:40:40.290 --> 00:40:42.210 is a wonderful parenchymal sparing  
NOTE Confidence: 0.98288566  
00:40:42.210 --> 00:40:42.710 technique.  
NOTE Confidence: 0.9963914  
00:40:43.489 --> 00:40:44.790 The issues with enucleation  
NOTE Confidence: 0.92011416  
00:40:45.170 --> 00:40:46.230 are a higher rate  
NOTE Confidence: 0.9828819  
00:40:46.575 --> 00:40:48.255 of pancreatic fistula and no  
NOTE Confidence: 0.9828819  
00:40:48.255 --> 00:40:49.695 lymph node retrieval, but it's  
NOTE Confidence: 0.9828819

00:40:49.695 --> 00:40:51.375 the ideal operation for more  
NOTE Confidence: 0.9828819

00:40:51.375 --> 00:40:52.355 indolent tumors.  
NOTE Confidence: 0.9715382

00:40:52.655 --> 00:40:54.094 Frequently, you know, this is  
NOTE Confidence: 0.9715382

00:40:54.094 --> 00:40:54.755 for insulinoma.  
NOTE Confidence: 0.92691374

00:40:55.535 --> 00:40:56.335 You can see a case  
NOTE Confidence: 0.92691374

00:40:56.335 --> 00:40:57.135 there that we did a  
NOTE Confidence: 0.92691374

00:40:57.135 --> 00:40:57.450 few years ago. Really nicely  
NOTE Confidence: 0.92691374

00:40:57.450 --> 00:40:57.525 circumscribed tumor. We don't need  
NOTE Confidence: 0.92691374

00:40:57.525 --> 00:40:57.600 large margins. You know, this  
NOTE Confidence: 0.92691374

00:40:57.600 --> 00:40:58.114 is a  
NOTE Confidence: 0.9705884

00:40:59.855 --> 00:41:01.880 curative tumor. We don't need  
NOTE Confidence: 0.9705884

00:41:01.880 --> 00:41:03.400 large margins. You know, this  
NOTE Confidence: 0.9705884

00:41:03.400 --> 00:41:04.840 is a curative operation for  
NOTE Confidence: 0.9705884

00:41:04.840 --> 00:41:06.140 most patients with insulinoma.  
NOTE Confidence: 0.90776277

00:41:09.160 --> 00:41:11.080 For non insulinomas, essentially, where  
NOTE Confidence: 0.90776277

00:41:11.080 --> 00:41:12.600 enucleation is not a good

NOTE Confidence: 0.90776277  
00:41:12.600 --> 00:41:13.100 approach.  
NOTE Confidence: 0.9643499  
00:41:13.560 --> 00:41:15.080 Again, the tumor location is  
NOTE Confidence: 0.9643499  
00:41:15.080 --> 00:41:15.580 key.  
NOTE Confidence: 0.95918113  
00:41:16.305 --> 00:41:17.765 Tumors located in the pancreatic  
NOTE Confidence: 0.95918113  
00:41:17.825 --> 00:41:20.005 head oftentimes undergo Whipple procedure.  
NOTE Confidence: 0.9926322  
00:41:20.305 --> 00:41:21.585 Tumors located in the neck  
NOTE Confidence: 0.9926322  
00:41:21.585 --> 00:41:23.025 or body oftentimes undergo a  
NOTE Confidence: 0.9926322  
00:41:23.025 --> 00:41:23.925 distal pancreatectomy.  
NOTE Confidence: 0.99608564  
00:41:25.105 --> 00:41:25.844 I'm oversimplifying  
NOTE Confidence: 0.9483844  
00:41:26.385 --> 00:41:27.425 there. We do do a  
NOTE Confidence: 0.9483844  
00:41:27.425 --> 00:41:28.244 central pancreatectomy  
NOTE Confidence: 0.98376054  
00:41:28.625 --> 00:41:30.065 in some patients for tumors  
NOTE Confidence: 0.98376054  
00:41:30.065 --> 00:41:31.185 that are really directly in  
NOTE Confidence: 0.98376054  
00:41:31.185 --> 00:41:32.570 the neck. That's a good  
NOTE Confidence: 0.98376054  
00:41:32.570 --> 00:41:34.330 parenchymal sparing approach in many  
NOTE Confidence: 0.98376054

00:41:34.330 --> 00:41:34.830 patients.  
NOTE Confidence: 0.9725344

00:41:35.370 --> 00:41:37.370 Also, splenic preservation is a  
NOTE Confidence: 0.9725344

00:41:37.370 --> 00:41:38.570 possibility if we think the  
NOTE Confidence: 0.9725344

00:41:38.570 --> 00:41:40.250 chance for lymph node spread  
NOTE Confidence: 0.9725344

00:41:40.250 --> 00:41:41.310 is quite low.  
NOTE Confidence: 0.99691474

00:41:42.650 --> 00:41:44.570 You know, many patients and  
NOTE Confidence: 0.99691474

00:41:44.570 --> 00:41:45.870 many referring providers  
NOTE Confidence: 0.9915891

00:41:46.864 --> 00:41:48.385 still remember that old adage  
NOTE Confidence: 0.9915891

00:41:48.385 --> 00:41:49.105 you may have heard in  
NOTE Confidence: 0.9915891

00:41:49.105 --> 00:41:50.625 medical school about, you know,  
NOTE Confidence: 0.9915891

00:41:50.625 --> 00:41:52.225 how awful pancreatic surgery is.  
NOTE Confidence: 0.9915891

00:41:52.225 --> 00:41:53.105 You know, that is not  
NOTE Confidence: 0.9915891

00:41:53.105 --> 00:41:53.924 true anymore.  
NOTE Confidence: 0.9683777

00:41:54.464 --> 00:41:56.385 Pancreatic surgery is very safe,  
NOTE Confidence: 0.9683777

00:41:56.385 --> 00:41:58.165 especially in large volume experience  
NOTE Confidence: 0.9683777

00:41:58.224 --> 00:41:58.724 centers,

NOTE Confidence: 0.731236  
00:41:59.344 --> 00:42:00.085 and improperly  
NOTE Confidence: 0.98844385  
00:42:00.704 --> 00:42:01.605 selected patients.  
NOTE Confidence: 0.95941496  
00:42:01.980 --> 00:42:03.119 There's a very linear  
NOTE Confidence: 0.9998845  
00:42:03.500 --> 00:42:06.080 relationship between volume and experience  
NOTE Confidence: 0.9943379  
00:42:06.540 --> 00:42:08.140 with regards to surgical outcomes  
NOTE Confidence: 0.9943379  
00:42:08.140 --> 00:42:08.800 and quality.  
NOTE Confidence: 0.9787962  
00:42:10.780 --> 00:42:12.780 Some operations, that's very surgeon  
NOTE Confidence: 0.9787962  
00:42:12.780 --> 00:42:13.280 dependent.  
NOTE Confidence: 0.9237563  
00:42:13.580 --> 00:42:14.400 For a pancreatectomy,  
NOTE Confidence: 0.9992027  
00:42:14.859 --> 00:42:16.560 it is institution dependent  
NOTE Confidence: 0.96293485  
00:42:17.020 --> 00:42:18.355 because there's much more than  
NOTE Confidence: 0.96293485  
00:42:18.355 --> 00:42:19.795 just surgical expertise that goes  
NOTE Confidence: 0.96293485  
00:42:19.795 --> 00:42:21.735 into outcomes for this. Anesthesia,  
NOTE Confidence: 0.99916303  
00:42:22.035 --> 00:42:24.135 ICU care, interventional radiology,  
NOTE Confidence: 0.9815698  
00:42:24.435 --> 00:42:26.535 pathology, medical oncology colleagues,  
NOTE Confidence: 0.9992005

00:42:26.915 --> 00:42:28.055 all all critical.  
NOTE Confidence: 0.99449503  
00:42:29.235 --> 00:42:29.955 Just to,  
NOTE Confidence: 0.9864737  
00:42:30.275 --> 00:42:31.480 look at at our numbers  
NOTE Confidence: 0.9864737  
00:42:31.480 --> 00:42:32.440 here at Yale, you know,  
NOTE Confidence: 0.9864737  
00:42:32.440 --> 00:42:33.400 we do almost a hundred  
NOTE Confidence: 0.9864737  
00:42:33.400 --> 00:42:33.900 pancreatectomies  
NOTE Confidence: 0.9968866  
00:42:34.360 --> 00:42:35.020 a year.  
NOTE Confidence: 0.99780035  
00:42:35.640 --> 00:42:36.440 Many of these are done  
NOTE Confidence: 0.99780035  
00:42:36.440 --> 00:42:38.060 in a minimally invasive fashion.  
NOTE Confidence: 0.8935606  
00:42:38.600 --> 00:42:39.640 I'm just putting up some  
NOTE Confidence: 0.8935606  
00:42:39.640 --> 00:42:40.460 some statistics  
NOTE Confidence: 0.96436805  
00:42:41.000 --> 00:42:42.040 here and how they relate  
NOTE Confidence: 0.96436805  
00:42:42.040 --> 00:42:43.000 to us. You know, at  
NOTE Confidence: 0.96436805  
00:42:43.000 --> 00:42:43.500 Yale,  
NOTE Confidence: 0.9996655  
00:42:44.405 --> 00:42:44.984 our mortality  
NOTE Confidence: 0.9969283  
00:42:45.525 --> 00:42:46.965 is much lower than the

NOTE Confidence: 0.9969283

00:42:46.965 --> 00:42:48.984 national average. Our complication rate

NOTE Confidence: 0.9969283

00:42:49.125 --> 00:42:50.325 is better than the ninetieth

NOTE Confidence: 0.9969283

00:42:50.325 --> 00:42:52.005 percentile nationally for most of

NOTE Confidence: 0.9969283

00:42:52.005 --> 00:42:52.665 the morbidity

NOTE Confidence: 0.9916811

00:42:52.965 --> 00:42:54.005 that occurs, and our length

NOTE Confidence: 0.9916811

00:42:54.005 --> 00:42:55.045 of stay is also better

NOTE Confidence: 0.9916811

00:42:55.045 --> 00:42:56.344 than the national average.

NOTE Confidence: 0.98449564

00:42:56.960 --> 00:42:57.680 So I think we do

NOTE Confidence: 0.98449564

00:42:57.680 --> 00:42:59.039 it quite well here. Just

NOTE Confidence: 0.98449564

00:42:59.039 --> 00:43:01.119 to discuss briefly, you know,

NOTE Confidence: 0.98449564

00:43:01.119 --> 00:43:02.339 for a distal pancreatectomy,

NOTE Confidence: 0.9862179

00:43:03.279 --> 00:43:05.039 again, some tumors, mainly those

NOTE Confidence: 0.9862179

00:43:05.039 --> 00:43:06.339 that are locally advanced

NOTE Confidence: 0.9658017

00:43:06.719 --> 00:43:08.260 with vascular involvement,

NOTE Confidence: 0.97145456

00:43:08.719 --> 00:43:10.000 we still perform through an

NOTE Confidence: 0.97145456

00:43:10.000 --> 00:43:10.819 open approach,  
NOTE Confidence: 0.97309434

00:43:11.475 --> 00:43:12.435 but more often, it's a  
NOTE Confidence: 0.97309434

00:43:12.435 --> 00:43:14.535 minimally invasive approach, either laparoscopic  
NOTE Confidence: 0.97309434

00:43:14.675 --> 00:43:15.735 or robot assisted.  
NOTE Confidence: 0.9960349

00:43:16.595 --> 00:43:17.635 The decision to perform a  
NOTE Confidence: 0.9960349

00:43:17.635 --> 00:43:18.835 splenectomy is on a case  
NOTE Confidence: 0.9960349

00:43:18.835 --> 00:43:19.815 by case basis.  
NOTE Confidence: 0.98604006

00:43:20.835 --> 00:43:22.355 That being said, for most  
NOTE Confidence: 0.98604006

00:43:22.355 --> 00:43:23.795 of these tumors, since we  
NOTE Confidence: 0.98604006

00:43:23.795 --> 00:43:25.555 wait to perform the operation,  
NOTE Confidence: 0.98604006

00:43:25.555 --> 00:43:26.935 in other words, we observe  
NOTE Confidence: 0.98604006

00:43:27.210 --> 00:43:28.190 tumors that are,  
NOTE Confidence: 0.98297656

00:43:29.050 --> 00:43:30.810 less worrisome and less likely  
NOTE Confidence: 0.98297656

00:43:30.810 --> 00:43:32.330 to spread, many times by  
NOTE Confidence: 0.98297656

00:43:32.330 --> 00:43:33.290 the time they do go  
NOTE Confidence: 0.98297656

00:43:33.290 --> 00:43:34.670 to surgery for a PNET,

NOTE Confidence: 0.98903036

00:43:35.849 --> 00:43:37.230 splenectomy is indicated.

NOTE Confidence: 0.9868122

00:43:37.609 --> 00:43:38.730 And as I mentioned, central

NOTE Confidence: 0.9868122

00:43:38.730 --> 00:43:39.230 pancreatectomies

NOTE Confidence: 0.99173546

00:43:39.609 --> 00:43:40.570 are a good option for

NOTE Confidence: 0.99173546

00:43:40.570 --> 00:43:42.090 some patients if we're trying

NOTE Confidence: 0.99173546

00:43:42.090 --> 00:43:43.685 to maximize parenchymal preservation.

NOTE Confidence: 0.98026645

00:43:44.945 --> 00:43:45.905 I couldn't resist. I had

NOTE Confidence: 0.98026645

00:43:45.905 --> 00:43:46.625 to put one or two

NOTE Confidence: 0.98026645

00:43:46.625 --> 00:43:47.905 surgical photos. You know, here's

NOTE Confidence: 0.98026645

00:43:47.905 --> 00:43:48.965 a a video,

NOTE Confidence: 0.99639046

00:43:49.745 --> 00:43:50.965 of a distal pancreatectomy

NOTE Confidence: 0.99354625

00:43:51.265 --> 00:43:52.245 being done laparoscopically,

NOTE Confidence: 0.9835418

00:43:54.225 --> 00:43:55.825 somewhat sped up. We're entering

NOTE Confidence: 0.9835418

00:43:55.825 --> 00:43:57.105 the lesser sac here. The

NOTE Confidence: 0.9835418

00:43:57.105 --> 00:43:58.630 stomach's being lifted up. You

NOTE Confidence: 0.9835418

00:43:58.630 --> 00:43:59.670 can see the tumor right  
NOTE Confidence: 0.9835418

00:43:59.670 --> 00:44:00.790 there with the white arrow  
NOTE Confidence: 0.9835418

00:44:00.790 --> 00:44:01.450 on it,  
NOTE Confidence: 0.95842355

00:44:02.150 --> 00:44:03.270 you know, kind of pointing  
NOTE Confidence: 0.95842355

00:44:03.270 --> 00:44:04.070 to the tumor in the  
NOTE Confidence: 0.95842355

00:44:04.070 --> 00:44:04.810 mid body.  
NOTE Confidence: 0.9868867

00:44:05.590 --> 00:44:07.670 We're retracting some areas around  
NOTE Confidence: 0.9868867

00:44:07.670 --> 00:44:09.349 the pancreas, moving all of  
NOTE Confidence: 0.9868867

00:44:09.349 --> 00:44:10.969 the stomach, colon, retroperitoneum  
NOTE Confidence: 0.9850402

00:44:11.430 --> 00:44:12.410 out of our way.  
NOTE Confidence: 0.9836825

00:44:13.114 --> 00:44:14.635 We're creating that tunnel underneath  
NOTE Confidence: 0.9836825

00:44:14.635 --> 00:44:16.494 to mobilize the pancreas itself.  
NOTE Confidence: 0.9721793

00:44:16.795 --> 00:44:18.075 You can see here's the  
NOTE Confidence: 0.9721793

00:44:18.075 --> 00:44:19.915 pink, the splenic artery being  
NOTE Confidence: 0.9721793

00:44:19.915 --> 00:44:21.375 divided after it's dissected.  
NOTE Confidence: 0.9982451

00:44:22.155 --> 00:44:22.954 We then do the same

NOTE Confidence: 0.9982451

00:44:22.954 --> 00:44:24.494 thing with the splenic vein.

NOTE Confidence: 0.9886976

00:44:25.040 --> 00:44:25.920 In this case, both are

NOTE Confidence: 0.9886976

00:44:25.920 --> 00:44:27.619 being divided with surgical staplers,

NOTE Confidence: 0.9886976

00:44:27.680 --> 00:44:28.640 and then we divide the

NOTE Confidence: 0.9886976

00:44:28.640 --> 00:44:29.700 pancreas itself,

NOTE Confidence: 0.983802

00:44:30.560 --> 00:44:32.320 and remove the specimen and

NOTE Confidence: 0.983802

00:44:32.320 --> 00:44:33.440 send it off to doctor

NOTE Confidence: 0.983802

00:44:33.440 --> 00:44:35.040 Klimstra and his pals to,

NOTE Confidence: 0.983802

00:44:35.440 --> 00:44:36.099 to examine.

NOTE Confidence: 0.95665395

00:44:37.625 --> 00:44:39.385 Anyways, there it's retrieved in

NOTE Confidence: 0.95665395

00:44:39.385 --> 00:44:40.924 the in the specimen bag.

NOTE Confidence: 0.95665395

00:44:40.984 --> 00:44:42.344 So with regards to splenic

NOTE Confidence: 0.95665395

00:44:42.344 --> 00:44:42.844 preservation,

NOTE Confidence: 0.9798587

00:44:44.265 --> 00:44:46.045 we here do not perform

NOTE Confidence: 0.94186395

00:44:47.625 --> 00:44:49.885 splenic preservation without preserving,

NOTE Confidence: 0.9969878

00:44:50.739 --> 00:44:52.360 both the inflow and outflow.  
NOTE Confidence: 0.98660517

00:44:52.660 --> 00:44:53.940 It is possible to be  
NOTE Confidence: 0.98660517

00:44:53.940 --> 00:44:55.540 done without that, but this  
NOTE Confidence: 0.98660517

00:44:55.540 --> 00:44:56.260 is how we do it  
NOTE Confidence: 0.98660517

00:44:56.260 --> 00:44:57.540 at Yale. The outcomes are  
NOTE Confidence: 0.98660517

00:44:57.540 --> 00:44:58.500 so much better if you  
NOTE Confidence: 0.98660517

00:44:58.500 --> 00:44:59.780 do it that way. You  
NOTE Confidence: 0.98660517

00:44:59.780 --> 00:45:01.060 can see the anatomy there  
NOTE Confidence: 0.98660517

00:45:01.060 --> 00:45:01.940 and how it looks after  
NOTE Confidence: 0.98660517

00:45:01.940 --> 00:45:03.000 a minimally invasive,  
NOTE Confidence: 0.9862358

00:45:03.380 --> 00:45:04.280 spleen preserving,  
NOTE Confidence: 0.9969779

00:45:05.140 --> 00:45:05.960 distal pancreatectomy.  
NOTE Confidence: 0.9829409

00:45:07.265 --> 00:45:08.725 So just to summarize,  
NOTE Confidence: 0.96768725

00:45:09.985 --> 00:45:10.705 you know, what are the  
NOTE Confidence: 0.96768725

00:45:10.705 --> 00:45:12.325 goals from a peanut standpoint?  
NOTE Confidence: 0.96768725

00:45:12.385 --> 00:45:13.745 Obviously, we wanna control the

NOTE Confidence: 0.96768725  
00:45:13.745 --> 00:45:14.785 disease, and we wanna have  
NOTE Confidence: 0.96768725  
00:45:14.785 --> 00:45:15.265 minimal,  
NOTE Confidence: 0.9992139  
00:45:15.585 --> 00:45:16.085 morbidity.  
NOTE Confidence: 0.9962439  
00:45:17.185 --> 00:45:18.785 The operations to remove the  
NOTE Confidence: 0.9962439  
00:45:18.785 --> 00:45:19.905 peanut is really driven by  
NOTE Confidence: 0.9962439  
00:45:19.905 --> 00:45:21.469 the tumor itself, and the  
NOTE Confidence: 0.9962439  
00:45:21.469 --> 00:45:22.450 choice of operation  
NOTE Confidence: 0.9732345  
00:45:22.750 --> 00:45:24.109 kind of is dictated by  
NOTE Confidence: 0.9732345  
00:45:24.109 --> 00:45:25.410 the location of the tumor.  
NOTE Confidence: 0.9732345  
00:45:25.469 --> 00:45:26.210 And the outcomes,  
NOTE Confidence: 0.97330546  
00:45:26.670 --> 00:45:27.789 are excellent when done in  
NOTE Confidence: 0.97330546  
00:45:27.789 --> 00:45:28.849 high volume centers.  
NOTE Confidence: 0.97350657  
00:45:29.869 --> 00:45:31.869 Switching gears to surgery for  
NOTE Confidence: 0.97350657  
00:45:31.869 --> 00:45:34.130 enteric or intestinal neuroendocrine tumors,  
NOTE Confidence: 0.9529556  
00:45:35.405 --> 00:45:36.204 You know, I'm really gonna  
NOTE Confidence: 0.9529556

00:45:36.204 --> 00:45:38.045 focus on midgut tumors. Not  
NOTE Confidence: 0.9529556

00:45:38.045 --> 00:45:39.425 only are they quite common,  
NOTE Confidence: 0.9976435

00:45:39.885 --> 00:45:41.484 you know, stomach neuroendocrine tumors  
NOTE Confidence: 0.9976435

00:45:41.484 --> 00:45:42.605 are a little bit of  
NOTE Confidence: 0.9976435

00:45:42.605 --> 00:45:43.105 a  
NOTE Confidence: 0.91634285

00:45:43.565 --> 00:45:45.265 topic of discussion to themselves.  
NOTE Confidence: 0.95642316

00:45:46.045 --> 00:45:47.085 But as pointed out, and  
NOTE Confidence: 0.95642316

00:45:47.085 --> 00:45:48.045 I'm not gonna belabor the  
NOTE Confidence: 0.95642316

00:45:48.045 --> 00:45:49.585 point, the incidence is rising.  
NOTE Confidence: 0.8850296

00:45:50.050 --> 00:45:51.469 You know, mid gut tumors,  
NOTE Confidence: 0.95888996

00:45:53.050 --> 00:45:53.950 that are neuroendocrine  
NOTE Confidence: 0.96961015

00:45:54.250 --> 00:45:55.770 differentiation are the most common  
NOTE Confidence: 0.96961015

00:45:55.770 --> 00:45:56.810 small bowel tumors for at  
NOTE Confidence: 0.96961015

00:45:56.810 --> 00:45:58.350 least twenty five years now,  
NOTE Confidence: 0.96961015

00:45:58.489 --> 00:46:00.190 and these patients do sometimes  
NOTE Confidence: 0.96961015

00:46:00.250 --> 00:46:02.510 present with abdominal pain oftentimes

NOTE Confidence: 0.96961015  
00:46:02.650 --> 00:46:03.469 due to obstruction.  
NOTE Confidence: 0.57643574  
00:46:03.855 --> 00:46:04.355 You  
NOTE Confidence: 0.9874852  
00:46:04.734 --> 00:46:05.775 know, that's either from the  
NOTE Confidence: 0.9874852  
00:46:05.775 --> 00:46:07.875 primary tumor or a reaction  
NOTE Confidence: 0.9874852  
00:46:07.935 --> 00:46:08.835 to a mesenteric  
NOTE Confidence: 0.9454529  
00:46:09.135 --> 00:46:09.635 MET,  
NOTE Confidence: 0.99871683  
00:46:10.255 --> 00:46:11.775 of the neuroendocrine tumor that's  
NOTE Confidence: 0.99871683  
00:46:11.775 --> 00:46:12.835 causing an obstruction.  
NOTE Confidence: 0.9747794  
00:46:13.135 --> 00:46:14.415 There's an OR photo here.  
NOTE Confidence: 0.9747794  
00:46:14.415 --> 00:46:15.855 Again, just to be warned,  
NOTE Confidence: 0.9747794  
00:46:15.855 --> 00:46:16.755 here's an intussusception  
NOTE Confidence: 0.9757137  
00:46:17.135 --> 00:46:18.494 that's occurring in the small  
NOTE Confidence: 0.9757137  
00:46:18.494 --> 00:46:18.994 bowel,  
NOTE Confidence: 0.96077466  
00:46:19.719 --> 00:46:21.340 secondary to the primary neuroendocrine  
NOTE Confidence: 0.96077466  
00:46:21.560 --> 00:46:22.060 tumor.  
NOTE Confidence: 0.96076655

00:46:22.680 --> 00:46:23.480 And you can see why  
NOTE Confidence: 0.96076655

00:46:23.480 --> 00:46:24.440 that would cause a a  
NOTE Confidence: 0.96076655

00:46:24.440 --> 00:46:25.180 bowel obstruction.  
NOTE Confidence: 0.9532785

00:46:26.120 --> 00:46:27.820 The remainder are diagnosed incidentally.  
NOTE Confidence: 0.9532785

00:46:27.960 --> 00:46:29.080 Now, again, these are very  
NOTE Confidence: 0.9532785

00:46:29.080 --> 00:46:31.560 lymphotropic tumors, so oftentimes the  
NOTE Confidence: 0.9532785

00:46:31.560 --> 00:46:33.080 way they're diagnosed, because the  
NOTE Confidence: 0.9532785

00:46:33.080 --> 00:46:34.860 primary tumors are quite small,  
NOTE Confidence: 0.9966915

00:46:35.744 --> 00:46:37.424 is a regional metastasis to  
NOTE Confidence: 0.9966915

00:46:37.424 --> 00:46:38.085 the mesentery,  
NOTE Confidence: 0.9899643

00:46:38.545 --> 00:46:39.505 which can grow to be  
NOTE Confidence: 0.9899643

00:46:39.505 --> 00:46:40.785 quite large and be calcified  
NOTE Confidence: 0.9899643

00:46:40.785 --> 00:46:41.664 and stand out on a  
NOTE Confidence: 0.9899643

00:46:41.664 --> 00:46:42.625 scan even if it's a  
NOTE Confidence: 0.9899643

00:46:42.625 --> 00:46:44.085 completely incidental finding.  
NOTE Confidence: 0.9812763

00:46:45.184 --> 00:46:46.625 Same goals with regards to

NOTE Confidence: 0.9812763

00:46:46.625 --> 00:46:48.704 staging. Oftentimes, biopsies are not

NOTE Confidence: 0.9812763

00:46:48.704 --> 00:46:49.204 possible,

NOTE Confidence: 0.9075938

00:46:50.450 --> 00:46:52.210 but, frankly, oftentimes, they're not

NOTE Confidence: 0.9075938

00:46:52.210 --> 00:46:52.710 necessary.

NOTE Confidence: 0.9878967

00:46:53.410 --> 00:46:54.610 It is helpful if you

NOTE Confidence: 0.9878967

00:46:54.610 --> 00:46:56.390 suspect a neuroendocrine carcinoma.

NOTE Confidence: 0.9697042

00:46:57.250 --> 00:46:58.530 As mentioned by doctor Klimster,

NOTE Confidence: 0.9697042

00:46:58.530 --> 00:46:59.490 the role for surgery in

NOTE Confidence: 0.9697042

00:46:59.490 --> 00:47:01.270 those is is fairly limited.

NOTE Confidence: 0.9884053

00:47:01.890 --> 00:47:03.734 But a good high quality

NOTE Confidence: 0.9884053

00:47:03.734 --> 00:47:05.335 cross sectional imaging scan is

NOTE Confidence: 0.9884053

00:47:05.335 --> 00:47:06.875 critical to determine resectability

NOTE Confidence: 0.99820745

00:47:07.335 --> 00:47:08.714 and the degree of spread.

NOTE Confidence: 0.9979304

00:47:09.575 --> 00:47:10.855 You know, this is a

NOTE Confidence: 0.9979304

00:47:10.855 --> 00:47:12.055 scan of a patient of

NOTE Confidence: 0.9979304

00:47:12.055 --> 00:47:13.515 mine that was discovered incidentally

NOTE Confidence: 0.94906205

00:47:13.894 --> 00:47:14.855 where you can see just

NOTE Confidence: 0.94906205

00:47:14.855 --> 00:47:15.994 a small mesenteric

NOTE Confidence: 0.99872977

00:47:16.295 --> 00:47:16.795 nodule.

NOTE Confidence: 0.97720927

00:47:18.030 --> 00:47:19.150 This was performed on a

NOTE Confidence: 0.97720927

00:47:19.150 --> 00:47:19.969 CAT scan

NOTE Confidence: 0.9297824

00:47:20.270 --> 00:47:21.570 well before diagnosis,

NOTE Confidence: 0.97509

00:47:22.030 --> 00:47:23.230 but over time, you know,

NOTE Confidence: 0.97509

00:47:23.230 --> 00:47:24.670 looking back with retrospect, that

NOTE Confidence: 0.97509

00:47:24.670 --> 00:47:25.710 was there, but it wasn't

NOTE Confidence: 0.97509

00:47:25.710 --> 00:47:26.910 called. And then over time,

NOTE Confidence: 0.97509

00:47:26.910 --> 00:47:28.190 it progressed into this large

NOTE Confidence: 0.97509

00:47:28.190 --> 00:47:30.210 mesenteric mass with calcification.

NOTE Confidence: 0.9726837

00:47:32.385 --> 00:47:33.505 You know? And and when

NOTE Confidence: 0.9726837

00:47:33.505 --> 00:47:34.465 she got to me, this

NOTE Confidence: 0.9726837

00:47:34.465 --> 00:47:35.344 is how it looked,

NOTE Confidence: 0.978759  
00:47:35.665 --> 00:47:37.344 some years later. We were  
NOTE Confidence: 0.978759  
00:47:37.344 --> 00:47:39.105 able to resect her, you  
NOTE Confidence: 0.978759  
00:47:39.105 --> 00:47:40.225 know, doing very well at  
NOTE Confidence: 0.978759  
00:47:40.225 --> 00:47:42.225 this point. That being said,  
NOTE Confidence: 0.978759  
00:47:42.225 --> 00:47:44.065 oncologic goals, very similar in  
NOTE Confidence: 0.978759  
00:47:44.065 --> 00:47:45.185 the pancreas. You know? We  
NOTE Confidence: 0.978759  
00:47:45.185 --> 00:47:47.045 wanna clear the primary tumor.  
NOTE Confidence: 0.97880614  
00:47:47.045 --> 00:47:48.410 We have to keep in  
NOTE Confidence: 0.97880614  
00:47:48.410 --> 00:47:49.369 mind that a third of  
NOTE Confidence: 0.97880614  
00:47:49.369 --> 00:47:51.390 these cases have multifocal disease.  
NOTE Confidence: 0.99518055  
00:47:51.390 --> 00:47:52.809 So if a minimally invasive  
NOTE Confidence: 0.99518055  
00:47:52.809 --> 00:47:54.250 approach is thought to be  
NOTE Confidence: 0.99518055  
00:47:54.250 --> 00:47:55.289 appropriate, one thing we crucially  
NOTE Confidence: 0.99518055  
00:47:55.289 --> 00:47:57.069 must do as neuroendocrine  
NOTE Confidence: 0.999408  
00:47:57.069 --> 00:47:58.349 surgeons  
NOTE Confidence: 0.9959722

00:47:59.930 --> 00:48:01.130 is look at the entire  
NOTE Confidence: 0.9959722

00:48:01.130 --> 00:48:01.630 bowel.  
NOTE Confidence: 0.98351234

00:48:02.445 --> 00:48:03.725 That's possible in a minimally  
NOTE Confidence: 0.98351234

00:48:03.725 --> 00:48:04.765 invasive way, you know, with  
NOTE Confidence: 0.98351234

00:48:04.765 --> 00:48:05.805 some of the techniques we  
NOTE Confidence: 0.98351234

00:48:05.805 --> 00:48:06.545 have now.  
NOTE Confidence: 0.98226815

00:48:07.085 --> 00:48:07.965 But we always have to  
NOTE Confidence: 0.98226815

00:48:07.965 --> 00:48:09.325 look for that multifocal disease,  
NOTE Confidence: 0.98226815

00:48:09.325 --> 00:48:10.125 and then we have to  
NOTE Confidence: 0.98226815

00:48:10.125 --> 00:48:11.965 be very mindful of removing  
NOTE Confidence: 0.98226815

00:48:11.965 --> 00:48:13.905 the entire mesenteric nodal packet,  
NOTE Confidence: 0.9759727

00:48:14.930 --> 00:48:16.150 not just the big calcified  
NOTE Confidence: 0.9759727

00:48:16.210 --> 00:48:17.170 nodule, but all of the  
NOTE Confidence: 0.9759727

00:48:17.170 --> 00:48:18.210 lymph nodes in the area  
NOTE Confidence: 0.9759727

00:48:18.210 --> 00:48:19.650 because they are possible sites  
NOTE Confidence: 0.9759727

00:48:19.650 --> 00:48:21.270 of of persistent disease.

NOTE Confidence: 0.99465287

00:48:22.290 --> 00:48:23.110 In particular,

NOTE Confidence: 0.9812179

00:48:23.570 --> 00:48:24.690 many of these patients that

NOTE Confidence: 0.9812179

00:48:24.690 --> 00:48:26.530 present with bowel obstructions, both

NOTE Confidence: 0.9812179

00:48:26.530 --> 00:48:27.750 primarily and recurrent,

NOTE Confidence: 0.9528404

00:48:28.665 --> 00:48:30.105 an operation can really improve

NOTE Confidence: 0.9528404

00:48:30.105 --> 00:48:31.625 their quality of life even

NOTE Confidence: 0.9528404

00:48:31.625 --> 00:48:32.765 if it's not curative.

NOTE Confidence: 0.9977306

00:48:34.105 --> 00:48:35.885 With regards to minimizing morbidity,

NOTE Confidence: 0.9997342

00:48:36.344 --> 00:48:36.844 the

NOTE Confidence: 0.9984065

00:48:37.145 --> 00:48:39.005 length of gut that remains

NOTE Confidence: 0.9651475

00:48:39.305 --> 00:48:40.844 is the critically important,

NOTE Confidence: 0.98542506

00:48:42.770 --> 00:48:44.609 step in these operations, especially

NOTE Confidence: 0.98542506

00:48:44.609 --> 00:48:45.650 in patients that have had

NOTE Confidence: 0.98542506

00:48:45.650 --> 00:48:46.710 multiple operations.

NOTE Confidence: 0.95867294

00:48:47.570 --> 00:48:48.849 You know, personally, I have

NOTE Confidence: 0.95867294

00:48:48.849 --> 00:48:49.890 been the surgeon for a  
NOTE Confidence: 0.95867294

00:48:49.890 --> 00:48:51.349 patient who was their eleventh  
NOTE Confidence: 0.95867294

00:48:51.489 --> 00:48:51.989 operation,  
NOTE Confidence: 0.99907947

00:48:53.250 --> 00:48:55.170 after ten operations at other  
NOTE Confidence: 0.99907947

00:48:55.170 --> 00:48:55.670 institutions.  
NOTE Confidence: 0.9798348

00:48:56.825 --> 00:48:58.265 In those cases, you know,  
NOTE Confidence: 0.9798348

00:48:58.265 --> 00:49:00.505 length of guts, ischemia become  
NOTE Confidence: 0.9798348

00:49:00.505 --> 00:49:01.484 really, really important,  
NOTE Confidence: 0.94662964

00:49:02.424 --> 00:49:03.704 factors in term in terms  
NOTE Confidence: 0.94662964

00:49:03.704 --> 00:49:04.924 of planning the surgery.  
NOTE Confidence: 0.9504577

00:49:05.224 --> 00:49:06.265 All of these patients, I  
NOTE Confidence: 0.9504577

00:49:06.265 --> 00:49:07.805 think, should get a cholecystectomy  
NOTE Confidence: 0.99075

00:49:08.184 --> 00:49:09.305 because many of them will  
NOTE Confidence: 0.99075

00:49:09.305 --> 00:49:11.230 get a somatostatin analog at  
NOTE Confidence: 0.99075

00:49:11.230 --> 00:49:12.829 some point during their during  
NOTE Confidence: 0.99075

00:49:12.829 --> 00:49:14.130 the course of their care.

NOTE Confidence: 0.9671302  
00:49:15.469 --> 00:49:16.829 Again, a few surgical photos  
NOTE Confidence: 0.9671302  
00:49:16.829 --> 00:49:17.549 just to give you a  
NOTE Confidence: 0.9671302  
00:49:17.549 --> 00:49:18.670 quick heads up, not to  
NOTE Confidence: 0.9671302  
00:49:18.670 --> 00:49:19.489 surprise you.  
NOTE Confidence: 0.9910856  
00:49:20.430 --> 00:49:22.289 Here's a case with multifocal  
NOTE Confidence: 0.9910856  
00:49:22.430 --> 00:49:23.710 tumors marked with the blue  
NOTE Confidence: 0.9910856  
00:49:23.710 --> 00:49:24.775 arrows on the left so  
NOTE Confidence: 0.9910856  
00:49:24.775 --> 00:49:25.575 you can see what I'm  
NOTE Confidence: 0.9910856  
00:49:25.575 --> 00:49:26.935 talking about. You know, many  
NOTE Confidence: 0.9910856  
00:49:26.935 --> 00:49:28.215 of these are not visible  
NOTE Confidence: 0.9910856  
00:49:28.215 --> 00:49:28.875 on imaging.  
NOTE Confidence: 0.9624243  
00:49:29.975 --> 00:49:31.815 That's getting better now, thanks  
NOTE Confidence: 0.9624243  
00:49:31.815 --> 00:49:33.094 to doctor Spielberg and the  
NOTE Confidence: 0.9624243  
00:49:33.094 --> 00:49:35.175 functional imaging they can perform.  
NOTE Confidence: 0.9624243  
00:49:35.175 --> 00:49:35.975 Here you can see a  
NOTE Confidence: 0.9624243

00:49:35.975 --> 00:49:37.255 number of nodules in the  
NOTE Confidence: 0.9624243

00:49:37.255 --> 00:49:39.175 mesentery on the right. Again,  
NOTE Confidence: 0.9624243

00:49:39.175 --> 00:49:39.915 if you don't  
NOTE Confidence: 0.97486824

00:49:40.239 --> 00:49:41.200 look for them, you won't  
NOTE Confidence: 0.97486824

00:49:41.200 --> 00:49:41.840 find them.  
NOTE Confidence: 0.99443495

00:49:42.480 --> 00:49:43.940 And so that entire mesenteric  
NOTE Confidence: 0.99443495

00:49:44.080 --> 00:49:45.200 packet needs to be removed  
NOTE Confidence: 0.99443495

00:49:45.200 --> 00:49:46.340 to clear this disease.  
NOTE Confidence: 0.9699062

00:49:47.120 --> 00:49:48.400 You know, here's that picture  
NOTE Confidence: 0.9699062

00:49:48.400 --> 00:49:49.440 again just to show you  
NOTE Confidence: 0.9699062

00:49:49.440 --> 00:49:50.560 what it looks like after  
NOTE Confidence: 0.9699062

00:49:50.560 --> 00:49:52.260 clearing all of those vessels.  
NOTE Confidence: 0.9365795

00:49:53.675 --> 00:49:55.695 Never mind. Photo went away,  
NOTE Confidence: 0.9365795

00:49:55.835 --> 00:49:57.135 so we'll just move along.  
NOTE Confidence: 0.9952384

00:49:58.234 --> 00:49:59.594 I wanna touch briefly on  
NOTE Confidence: 0.9952384

00:49:59.594 --> 00:50:01.535 surgery and metastatic disease.

NOTE Confidence: 0.99782676

00:50:02.715 --> 00:50:04.815 Again, the indications for that

NOTE Confidence: 0.91989505

00:50:05.114 --> 00:50:07.055 from a cancer directed standpoint.

NOTE Confidence: 0.97366136

00:50:08.310 --> 00:50:09.750 For patients with large volume

NOTE Confidence: 0.97366136

00:50:09.750 --> 00:50:11.989 disease and hormonal oversecretion, whether

NOTE Confidence: 0.97366136

00:50:11.989 --> 00:50:13.130 that's pancreatic

NOTE Confidence: 0.9858551

00:50:13.430 --> 00:50:15.210 or from an intestinal neuroendocrine

NOTE Confidence: 0.9858551

00:50:15.270 --> 00:50:15.770 tumor,

NOTE Confidence: 0.995035

00:50:16.710 --> 00:50:18.969 debulking that disease can sometimes

NOTE Confidence: 0.995035

00:50:19.110 --> 00:50:20.710 improve their quality of life

NOTE Confidence: 0.995035

00:50:20.710 --> 00:50:22.570 by reducing hormone oversecretion.

NOTE Confidence: 0.9697221

00:50:24.135 --> 00:50:25.735 With regards to actual tumor

NOTE Confidence: 0.9697221

00:50:25.735 --> 00:50:26.235 control,

NOTE Confidence: 0.9993971

00:50:27.495 --> 00:50:29.915 debulking seems to have a

NOTE Confidence: 0.9993971

00:50:30.055 --> 00:50:30.555 survivorship

NOTE Confidence: 0.9963163

00:50:30.855 --> 00:50:31.355 benefit.

NOTE Confidence: 0.9984119

00:50:32.215 --> 00:50:34.235 The degree of debulking necessary

NOTE Confidence: 0.9984119

00:50:34.375 --> 00:50:35.755 and the amount of survivorship

NOTE Confidence: 0.9984119

00:50:36.055 --> 00:50:36.555 improvement

NOTE Confidence: 0.99656045

00:50:37.100 --> 00:50:38.780 is highly variable depending on

NOTE Confidence: 0.99656045

00:50:38.780 --> 00:50:40.080 the study that is read.

NOTE Confidence: 0.99472916

00:50:40.380 --> 00:50:42.060 Generally, we prefer to debulk

NOTE Confidence: 0.99472916

00:50:42.060 --> 00:50:43.180 at least eighty to ninety

NOTE Confidence: 0.99472916

00:50:43.180 --> 00:50:44.940 percent, but seventy percent is

NOTE Confidence: 0.99472916

00:50:44.940 --> 00:50:46.300 sort of considered the limit

NOTE Confidence: 0.99472916

00:50:46.620 --> 00:50:47.980 lower limit of what might

NOTE Confidence: 0.99472916

00:50:47.980 --> 00:50:48.640 be helpful.

NOTE Confidence: 0.95621186

00:50:50.055 --> 00:50:51.335 It is important to note

NOTE Confidence: 0.95621186

00:50:51.335 --> 00:50:52.875 that especially in well differentiated,

NOTE Confidence: 0.9955588

00:50:53.415 --> 00:50:54.535 grade one or grade two

NOTE Confidence: 0.9955588

00:50:54.535 --> 00:50:55.035 disease,

NOTE Confidence: 0.9898855

00:50:55.734 --> 00:50:57.175 you can operate on people

NOTE Confidence: 0.9898855  
00:50:57.175 --> 00:50:58.775 from a metastatic standpoint with  
NOTE Confidence: 0.9898855  
00:50:58.775 --> 00:51:00.455 curative intent if you can  
NOTE Confidence: 0.9898855  
00:51:00.455 --> 00:51:01.835 clear all of the disease.  
NOTE Confidence: 0.96575874  
00:51:03.110 --> 00:51:04.630 There are also situations where  
NOTE Confidence: 0.96575874  
00:51:04.630 --> 00:51:06.090 palliation is very important,  
NOTE Confidence: 0.99944395  
00:51:06.469 --> 00:51:07.450 either for obstruction,  
NOTE Confidence: 0.9972656  
00:51:07.910 --> 00:51:09.530 biliary bypasses, etcetera.  
NOTE Confidence: 0.9552658  
00:51:10.310 --> 00:51:11.690 Lower grades will do better,  
NOTE Confidence: 0.99889034  
00:51:12.469 --> 00:51:13.590 but this always needs to  
NOTE Confidence: 0.99889034  
00:51:13.590 --> 00:51:14.790 be a decision taken with  
NOTE Confidence: 0.99889034  
00:51:14.790 --> 00:51:15.850 the entire team.  
NOTE Confidence: 0.9229125  
00:51:18.015 --> 00:51:19.535 So just deliver a section.  
NOTE Confidence: 0.9229125  
00:51:19.535 --> 00:51:20.434 Just to summarize,  
NOTE Confidence: 0.99624735  
00:51:20.734 --> 00:51:21.234 again,  
NOTE Confidence: 0.9991985  
00:51:21.855 --> 00:51:22.895 a theme of my entire  
NOTE Confidence: 0.9991985

00:51:22.895 --> 00:51:24.255 talk is that decisions for  
NOTE Confidence: 0.9991985

00:51:24.255 --> 00:51:25.454 surgery really need to happen  
NOTE Confidence: 0.9991985

00:51:25.454 --> 00:51:26.674 with the entire team.  
NOTE Confidence: 0.9907482

00:51:27.375 --> 00:51:29.055 Patients with resected tumors do  
NOTE Confidence: 0.9907482

00:51:29.055 --> 00:51:30.640 very, very well both in  
NOTE Confidence: 0.9907482

00:51:30.640 --> 00:51:32.660 pancreatic and small bowel neuroendocrine  
NOTE Confidence: 0.9907482

00:51:32.800 --> 00:51:34.560 tumors. With small bowel disease,  
NOTE Confidence: 0.9907482

00:51:34.560 --> 00:51:36.000 it's oftentimes better to go  
NOTE Confidence: 0.9907482

00:51:36.000 --> 00:51:37.119 in a little earlier rather  
NOTE Confidence: 0.9907482

00:51:37.119 --> 00:51:38.100 than a little later,  
NOTE Confidence: 0.9988414

00:51:39.119 --> 00:51:40.739 because it reduces later complications.  
NOTE Confidence: 0.97116166

00:51:42.422 --> 00:51:44.065 I I think future directions  
NOTE Confidence: 0.97116166

00:51:44.125 --> 00:51:45.484 that we're really excited about,  
NOTE Confidence: 0.97116166

00:51:45.484 --> 00:51:46.444 I think, you know, Pam  
NOTE Confidence: 0.97116166

00:51:46.444 --> 00:51:47.404 alluded to this a little  
NOTE Confidence: 0.97116166

00:51:47.404 --> 00:51:49.325 bit. You know, neoadjuvant approaches,

NOTE Confidence: 0.97116166  
00:51:49.325 --> 00:51:50.364 there's a number of trials  
NOTE Confidence: 0.97116166  
00:51:50.364 --> 00:51:51.645 that are now investigating this,  
NOTE Confidence: 0.97116166  
00:51:51.645 --> 00:51:53.105 both cytotoxic therapies  
NOTE Confidence: 0.9224529  
00:51:53.565 --> 00:51:54.305 and PRRT.  
NOTE Confidence: 0.9698454  
00:51:55.430 --> 00:51:57.190 Really, really, really exciting, from  
NOTE Confidence: 0.9698454  
00:51:57.190 --> 00:51:58.330 a surgical perspective.  
NOTE Confidence: 0.9758649  
00:51:58.950 --> 00:52:00.010 Also, the molecular  
NOTE Confidence: 0.9935967  
00:52:00.390 --> 00:52:01.510 guidance that we can get  
NOTE Confidence: 0.9935967  
00:52:01.510 --> 00:52:02.230 from some of the new  
NOTE Confidence: 0.9935967  
00:52:02.230 --> 00:52:03.930 pathologic and genetic testings,  
NOTE Confidence: 0.99748486  
00:52:04.870 --> 00:52:05.990 and we're looking forward to  
NOTE Confidence: 0.99748486  
00:52:05.990 --> 00:52:07.110 when we can sometimes use  
NOTE Confidence: 0.99748486  
00:52:07.110 --> 00:52:08.550 these technologies in the operating  
NOTE Confidence: 0.99748486  
00:52:08.550 --> 00:52:09.290 room too.  
NOTE Confidence: 0.96735716  
00:52:09.765 --> 00:52:10.805 So I'll stop there. These  
NOTE Confidence: 0.96735716

00:52:10.805 --> 00:52:11.924 are my partners as well  
NOTE Confidence: 0.96735716

00:52:11.924 --> 00:52:12.805 as a number of folks  
NOTE Confidence: 0.96735716

00:52:12.805 --> 00:52:13.765 that have done research in  
NOTE Confidence: 0.96735716

00:52:13.765 --> 00:52:15.765 the NET area or surgical  
NOTE Confidence: 0.96735716

00:52:15.765 --> 00:52:16.825 oncology area.  
NOTE Confidence: 0.9993808

00:52:17.364 --> 00:52:18.404 And I'm happy to stay  
NOTE Confidence: 0.9993808

00:52:18.404 --> 00:52:19.525 on for questions at the  
NOTE Confidence: 0.9993808

00:52:19.525 --> 00:52:20.025 end.  
NOTE Confidence: 0.99845546

00:52:22.480 --> 00:52:23.840 Thank you, John. That was  
NOTE Confidence: 0.99845546

00:52:23.840 --> 00:52:24.340 great.  
NOTE Confidence: 0.9843515

00:52:25.120 --> 00:52:27.040 So okay. Doctor Spielberg is  
NOTE Confidence: 0.9843515

00:52:27.040 --> 00:52:28.480 gonna help us wrap up  
NOTE Confidence: 0.9843515

00:52:28.480 --> 00:52:30.080 here with her talk on  
NOTE Confidence: 0.9843515

00:52:30.080 --> 00:52:30.580 theranostics.  
NOTE Confidence: 0.99832064

00:52:40.494 --> 00:52:41.395 One second.  
NOTE Confidence: 0.90961456

00:52:44.494 --> 00:52:45.795 Is it on presentation

NOTE Confidence: 0.99555975  
00:52:46.094 --> 00:52:47.715 mode? Yes. Looks great.  
NOTE Confidence: 0.95006514  
00:52:48.415 --> 00:52:48.915 Thanks.  
NOTE Confidence: 0.9552328  
00:52:49.940 --> 00:52:51.219 Good evening. Thank you so  
NOTE Confidence: 0.9552328  
00:52:51.219 --> 00:52:52.759 much for the kind invitation  
NOTE Confidence: 0.9997306  
00:52:53.059 --> 00:52:54.200 to be here tonight.  
NOTE Confidence: 0.8761882  
00:52:54.739 --> 00:52:56.359 Thanks everyone for,  
NOTE Confidence: 0.9142909  
00:52:57.539 --> 00:52:59.539 coming to watch this. I'm  
NOTE Confidence: 0.9142909  
00:52:59.539 --> 00:53:01.239 gonna talk about net ternostics  
NOTE Confidence: 0.72254145  
00:53:01.940 --> 00:53:02.339 and,  
NOTE Confidence: 0.9990805  
00:53:02.819 --> 00:53:04.099 this is really the work  
NOTE Confidence: 0.9990805  
00:53:04.099 --> 00:53:04.599 of  
NOTE Confidence: 0.8659323  
00:53:05.355 --> 00:53:07.535 an entire net team together,  
NOTE Confidence: 0.97492486  
00:53:08.635 --> 00:53:09.835 to make some of these  
NOTE Confidence: 0.97492486  
00:53:09.835 --> 00:53:10.335 work.  
NOTE Confidence: 0.9264233  
00:53:10.635 --> 00:53:11.755 With that I have no  
NOTE Confidence: 0.9264233

00:53:11.755 --> 00:53:12.255 relevant  
NOTE Confidence: 0.98877615

00:53:12.715 --> 00:53:13.215 disclosures.  
NOTE Confidence: 0.7438937

00:53:13.915 --> 00:53:14.815 So theranostics  
NOTE Confidence: 0.9691075

00:53:15.114 --> 00:53:16.875 is the contraction of two  
NOTE Confidence: 0.9691075

00:53:16.875 --> 00:53:18.895 words therapy and diagnostics  
NOTE Confidence: 0.7915004

00:53:19.770 --> 00:53:21.230 which use diagnostics.  
NOTE Confidence: 0.9961981

00:53:22.090 --> 00:53:24.010 And why is imaging so  
NOTE Confidence: 0.9961981

00:53:24.010 --> 00:53:24.510 important?  
NOTE Confidence: 0.98574746

00:53:25.290 --> 00:53:26.969 We can only treat what  
NOTE Confidence: 0.98574746

00:53:26.969 --> 00:53:28.170 we can see. If you  
NOTE Confidence: 0.98574746

00:53:28.170 --> 00:53:29.469 just looked at this,  
NOTE Confidence: 0.92601955

00:53:30.010 --> 00:53:31.930 chest c t and looked  
NOTE Confidence: 0.92601955

00:53:31.930 --> 00:53:33.230 at the bone structures,  
NOTE Confidence: 0.95772886

00:53:33.805 --> 00:53:35.005 If I was reading this,  
NOTE Confidence: 0.95772886

00:53:35.005 --> 00:53:36.125 I would have read this  
NOTE Confidence: 0.95772886

00:53:36.125 --> 00:53:36.864 as normal.

NOTE Confidence: 0.90875  
00:53:37.565 --> 00:53:39.965 However, this patient had a  
NOTE Confidence: 0.90875  
00:53:39.965 --> 00:53:41.425 DOTATATE PET CT  
NOTE Confidence: 0.9704405  
00:53:42.125 --> 00:53:43.825 and you can see that  
NOTE Confidence: 0.9704405  
00:53:43.965 --> 00:53:46.045 all these black areas and  
NOTE Confidence: 0.9704405  
00:53:46.045 --> 00:53:46.545 these  
NOTE Confidence: 0.98845464  
00:53:46.940 --> 00:53:49.100 areas of increased color in  
NOTE Confidence: 0.98845464  
00:53:49.100 --> 00:53:51.020 the spine here are areas  
NOTE Confidence: 0.98845464  
00:53:51.020 --> 00:53:51.840 of metastatic  
NOTE Confidence: 0.9386345  
00:53:52.140 --> 00:53:52.640 disease.  
NOTE Confidence: 0.97619987  
00:53:53.020 --> 00:53:54.540 So without this type of  
NOTE Confidence: 0.97619987  
00:53:54.540 --> 00:53:56.380 technique there is no way  
NOTE Confidence: 0.97619987  
00:53:56.380 --> 00:53:57.900 you would really see these  
NOTE Confidence: 0.97619987  
00:53:57.900 --> 00:53:58.400 lesions.  
NOTE Confidence: 0.9049895  
00:53:59.985 --> 00:54:00.485 Sometimes  
NOTE Confidence: 0.71679235  
00:54:01.025 --> 00:54:01.425 MRI can,  
NOTE Confidence: 0.9445336

00:54:02.545 --> 00:54:04.705 depict these but not always  
NOTE Confidence: 0.9445336

00:54:04.705 --> 00:54:07.105 this is routinely done or  
NOTE Confidence: 0.9445336

00:54:07.105 --> 00:54:09.665 sometimes the alterations are so  
NOTE Confidence: 0.9445336

00:54:09.665 --> 00:54:11.365 diffused that even on MRI  
NOTE Confidence: 0.9445336

00:54:11.585 --> 00:54:12.085 sometimes  
NOTE Confidence: 0.8618822

00:54:12.545 --> 00:54:14.645 is difficult. So really images  
NOTE Confidence: 0.9302669

00:54:15.030 --> 00:54:17.110 imaging drives management and that's  
NOTE Confidence: 0.9302669

00:54:17.110 --> 00:54:17.610 why  
NOTE Confidence: 0.96793425

00:54:17.910 --> 00:54:19.430 this is so important when  
NOTE Confidence: 0.96793425

00:54:19.430 --> 00:54:20.410 we talk ternostics.  
NOTE Confidence: 0.9678069

00:54:21.270 --> 00:54:23.050 And why is it challenging  
NOTE Confidence: 0.9678069

00:54:23.270 --> 00:54:24.570 to image nets?  
NOTE Confidence: 0.9253254

00:54:25.110 --> 00:54:27.110 Nets are a bucket. They're  
NOTE Confidence: 0.9253254

00:54:27.110 --> 00:54:28.090 a very heterogeneous  
NOTE Confidence: 0.7394848

00:54:28.550 --> 00:54:29.050 group.  
NOTE Confidence: 0.99481064

00:54:29.495 --> 00:54:30.855 And then the imaging presentation

NOTE Confidence: 0.99481064  
00:54:30.855 --> 00:54:31.355 will  
NOTE Confidence: 0.95504475  
00:54:32.855 --> 00:54:34.455 go along with that. So  
NOTE Confidence: 0.95504475  
00:54:34.455 --> 00:54:36.155 it's not a single imaging  
NOTE Confidence: 0.95504475  
00:54:36.215 --> 00:54:36.715 presentation.  
NOTE Confidence: 0.91269785  
00:54:37.335 --> 00:54:38.955 It's not a single appearance.  
NOTE Confidence: 0.91269785  
00:54:39.015 --> 00:54:40.855 And also sometimes the tumor  
NOTE Confidence: 0.91269785  
00:54:40.855 --> 00:54:42.555 sizes are very small,  
NOTE Confidence: 0.9932769  
00:54:42.950 --> 00:54:44.410 which are below the resolution  
NOTE Confidence: 0.9932769  
00:54:44.550 --> 00:54:45.530 of some modalities.  
NOTE Confidence: 0.9992826  
00:54:46.230 --> 00:54:47.610 And it really requires  
NOTE Confidence: 0.99970275  
00:54:47.910 --> 00:54:48.410 integration  
NOTE Confidence: 0.9525521  
00:54:48.790 --> 00:54:49.530 of multimodality  
NOTE Confidence: 0.96131027  
00:54:50.310 --> 00:54:52.410 imaging, meaning whoever is interpreting  
NOTE Confidence: 0.96131027  
00:54:52.630 --> 00:54:53.290 the study  
NOTE Confidence: 0.97904235  
00:54:53.670 --> 00:54:54.730 needs to understand  
NOTE Confidence: 0.975218

00:54:55.270 --> 00:54:57.130 all the imaging done previously

NOTE Confidence: 0.9121538

00:54:57.935 --> 00:54:59.295 and up to that point

NOTE Confidence: 0.9121538

00:54:59.295 --> 00:55:00.515 and make a history

NOTE Confidence: 0.9967045

00:55:01.215 --> 00:55:03.475 of all the findings together.

NOTE Confidence: 0.9967045

00:55:03.695 --> 00:55:05.614 So not always that comes

NOTE Confidence: 0.9967045

00:55:05.614 --> 00:55:06.114 together

NOTE Confidence: 0.9015962

00:55:06.895 --> 00:55:07.395 in,

NOTE Confidence: 0.97181016

00:55:08.655 --> 00:55:10.675 in a very easy way.

NOTE Confidence: 0.97181016

00:55:10.735 --> 00:55:12.300 So it really creates a

NOTE Confidence: 0.97181016

00:55:12.540 --> 00:55:14.380 challenge to bringing things all

NOTE Confidence: 0.97181016

00:55:14.380 --> 00:55:14.880 together

NOTE Confidence: 0.888884

00:55:15.500 --> 00:55:17.040 to make these diagnosis

NOTE Confidence: 0.99878716

00:55:17.420 --> 00:55:18.320 and interpretations.

NOTE Confidence: 0.960555

00:55:20.300 --> 00:55:21.760 Types of imaging modalities,

NOTE Confidence: 0.8578057

00:55:22.060 --> 00:55:24.160 we talk we talk generally

NOTE Confidence: 0.8578057

00:55:24.460 --> 00:55:24.960 about

NOTE Confidence: 0.94261134  
00:55:26.165 --> 00:55:26.665 CT,  
NOTE Confidence: 0.97208565  
00:55:27.205 --> 00:55:28.505 MRI, and ultrasound  
NOTE Confidence: 0.9826328  
00:55:28.805 --> 00:55:31.525 as conventional or anatomic imaging,  
NOTE Confidence: 0.9826328  
00:55:31.525 --> 00:55:32.565 which is a type of  
NOTE Confidence: 0.9826328  
00:55:32.565 --> 00:55:34.244 imaging where we're looking for  
NOTE Confidence: 0.9826328  
00:55:34.244 --> 00:55:34.985 the morphology  
NOTE Confidence: 0.99195504  
00:55:35.445 --> 00:55:37.525 appear or the appearance of  
NOTE Confidence: 0.99195504  
00:55:37.525 --> 00:55:38.825 the organs and  
NOTE Confidence: 0.99894387  
00:55:40.350 --> 00:55:40.850 structures  
NOTE Confidence: 0.86090654  
00:55:41.150 --> 00:55:42.770 or we talk about molecular  
NOTE Confidence: 0.86090654  
00:55:42.989 --> 00:55:43.489 imaging,  
NOTE Confidence: 0.99952304  
00:55:43.950 --> 00:55:44.450 which  
NOTE Confidence: 0.8669079  
00:55:44.910 --> 00:55:46.430 primarily we're talking about PET  
NOTE Confidence: 0.8669079  
00:55:46.430 --> 00:55:46.930 CT  
NOTE Confidence: 0.9285767  
00:55:47.310 --> 00:55:49.010 and maybe MIBG scintigraphy,  
NOTE Confidence: 0.9155003

00:55:50.910 --> 00:55:51.810 which is,  
NOTE Confidence: 0.9956321

00:55:52.590 --> 00:55:54.450 less than nowadays for  
NOTE Confidence: 0.9467883

00:55:55.545 --> 00:55:57.305 NETs, however, sometimes can be  
NOTE Confidence: 0.9467883

00:55:57.305 --> 00:55:57.805 useful.  
NOTE Confidence: 0.99395204

00:55:58.425 --> 00:55:59.545 And when we talk about  
NOTE Confidence: 0.99395204

00:55:59.545 --> 00:56:00.045 molecular  
NOTE Confidence: 0.95352185

00:56:00.344 --> 00:56:00.844 imaging,  
NOTE Confidence: 0.92584705

00:56:01.145 --> 00:56:01.645 predominantly,  
NOTE Confidence: 0.99541366

00:56:02.025 --> 00:56:03.805 we're talking about PET.  
NOTE Confidence: 0.8765323

00:56:04.265 --> 00:56:05.885 PET is positive on emission  
NOTE Confidence: 0.8765323

00:56:05.944 --> 00:56:06.444 tomography,  
NOTE Confidence: 0.9978576

00:56:06.825 --> 00:56:08.364 and this is the  
NOTE Confidence: 0.9019228

00:56:08.739 --> 00:56:10.020 PET image. It's a black  
NOTE Confidence: 0.9019228

00:56:10.020 --> 00:56:12.040 and white low resolution image.  
NOTE Confidence: 0.9342399

00:56:12.420 --> 00:56:13.880 And at the same time,  
NOTE Confidence: 0.9342399

00:56:13.940 --> 00:56:15.400 we acquire a CT.

NOTE Confidence: 0.9838322  
00:56:16.020 --> 00:56:17.540 And the PET image is  
NOTE Confidence: 0.9838322  
00:56:17.540 --> 00:56:19.620 overlaid over the CT and  
NOTE Confidence: 0.9838322  
00:56:19.620 --> 00:56:21.780 creates this color coded image  
NOTE Confidence: 0.9838322  
00:56:21.780 --> 00:56:22.280 here  
NOTE Confidence: 0.9195445  
00:56:22.605 --> 00:56:24.225 that people like looking.  
NOTE Confidence: 0.99745345  
00:56:25.085 --> 00:56:26.364 And I think it makes  
NOTE Confidence: 0.99745345  
00:56:26.364 --> 00:56:27.985 it easier to understand  
NOTE Confidence: 0.9459911  
00:56:28.445 --> 00:56:29.405 what these,  
NOTE Confidence: 0.9302249  
00:56:30.125 --> 00:56:30.945 two datasets  
NOTE Confidence: 0.9551662  
00:56:31.405 --> 00:56:33.905 mean together. But we're really,  
NOTE Confidence: 0.99895287  
00:56:34.364 --> 00:56:35.425 when we're interpreting  
NOTE Confidence: 0.94470257  
00:56:35.725 --> 00:56:37.619 these, we're looking at two  
NOTE Confidence: 0.94470257  
00:56:37.619 --> 00:56:39.480 datasets and the superposition  
NOTE Confidence: 0.9968907  
00:56:39.859 --> 00:56:41.880 of them to really understand  
NOTE Confidence: 0.9968907  
00:56:42.020 --> 00:56:42.920 what's happening.  
NOTE Confidence: 0.99746525

00:56:43.380 --> 00:56:45.460 And then molecular imaging is  
NOTE Confidence: 0.99746525

00:56:45.460 --> 00:56:46.200 really about  
NOTE Confidence: 0.9528235

00:56:47.140 --> 00:56:50.075 look into the small details  
NOTE Confidence: 0.99110764

00:56:50.695 --> 00:56:52.135 of what is happening at  
NOTE Confidence: 0.99110764

00:56:52.135 --> 00:56:54.375 the molecular and cellular level.  
NOTE Confidence: 0.99110764

00:56:54.375 --> 00:56:55.515 What are the processes  
NOTE Confidence: 0.983996

00:56:56.295 --> 00:56:57.435 which are happening  
NOTE Confidence: 0.9387974

00:56:58.055 --> 00:56:58.555 in,  
NOTE Confidence: 0.9813979

00:56:58.935 --> 00:57:00.555 a very specific location?  
NOTE Confidence: 0.998604

00:57:01.380 --> 00:57:03.400 And there are different strategies  
NOTE Confidence: 0.9537608

00:57:03.700 --> 00:57:05.160 for molecular imaging.  
NOTE Confidence: 0.8116082

00:57:06.980 --> 00:57:07.480 Odor,  
NOTE Confidence: 0.9952337

00:57:08.339 --> 00:57:09.719 which was initially  
NOTE Confidence: 0.9935336

00:57:10.260 --> 00:57:12.279 how molecular imaging was  
NOTE Confidence: 0.75626457

00:57:14.114 --> 00:57:14.614 started,  
NOTE Confidence: 0.8313694

00:57:15.155 --> 00:57:16.935 we did metabolic metabolism

NOTE Confidence: 0.9992823  
00:57:17.555 --> 00:57:18.055 assessment  
NOTE Confidence: 0.99444795  
00:57:18.435 --> 00:57:19.175 with a glucose  
NOTE Confidence: 0.7169572  
00:57:19.555 --> 00:57:20.055 analog,  
NOTE Confidence: 0.8978371  
00:57:20.755 --> 00:57:21.255 FDG.  
NOTE Confidence: 0.99927306  
00:57:22.035 --> 00:57:22.775 And then  
NOTE Confidence: 0.8953145  
00:57:23.075 --> 00:57:24.515 for and then a little  
NOTE Confidence: 0.8953145  
00:57:24.515 --> 00:57:25.015 after,  
NOTE Confidence: 0.9990907  
00:57:26.275 --> 00:57:26.775 somatostatin  
NOTE Confidence: 0.9998871  
00:57:27.315 --> 00:57:27.815 receptor  
NOTE Confidence: 0.9990934  
00:57:28.115 --> 00:57:28.615 expression  
NOTE Confidence: 0.9909432  
00:57:29.410 --> 00:57:31.090 became also a target for  
NOTE Confidence: 0.9909432  
00:57:31.090 --> 00:57:32.790 imaging. And because NETs  
NOTE Confidence: 0.7780358  
00:57:33.250 --> 00:57:33.750 overexpress  
NOTE Confidence: 0.9997966  
00:57:34.290 --> 00:57:34.790 somatostatin  
NOTE Confidence: 0.9023441  
00:57:36.610 --> 00:57:37.110 receptors,  
NOTE Confidence: 0.9883541

00:57:37.490 --> 00:57:39.510 most commonly type two,  
NOTE Confidence: 0.99887687

00:57:39.890 --> 00:57:41.590 this is a good target  
NOTE Confidence: 0.99887687

00:57:41.810 --> 00:57:43.270 for imaging these  
NOTE Confidence: 0.9865117

00:57:44.775 --> 00:57:45.275 tumors.  
NOTE Confidence: 0.9992863

00:57:45.895 --> 00:57:47.815 So when we're talking about  
NOTE Confidence: 0.9992863

00:57:47.815 --> 00:57:48.635 this assessment,  
NOTE Confidence: 0.99858016

00:57:49.575 --> 00:57:51.275 we have a couple of  
NOTE Confidence: 0.842847

00:57:52.055 --> 00:57:54.075 tracers or radio traces,  
NOTE Confidence: 0.9078579

00:57:54.454 --> 00:57:54.954 radionuclides.  
NOTE Confidence: 0.95392483

00:57:55.575 --> 00:57:57.255 These are very similar words  
NOTE Confidence: 0.95392483

00:57:57.255 --> 00:57:58.474 that are  
NOTE Confidence: 0.9995663

00:57:58.890 --> 00:57:59.630 almost interchangeably  
NOTE Confidence: 0.9850507

00:58:00.410 --> 00:58:00.910 used.  
NOTE Confidence: 0.97956836

00:58:02.490 --> 00:58:04.750 So you have a target,  
NOTE Confidence: 0.97956836

00:58:04.890 --> 00:58:06.329 you have a peptide, you  
NOTE Confidence: 0.97956836

00:58:06.329 --> 00:58:07.930 have a linker that links

NOTE Confidence: 0.97956836  
00:58:07.930 --> 00:58:08.910 these two.  
NOTE Confidence: 0.99352175  
00:58:09.289 --> 00:58:09.789 And  
NOTE Confidence: 0.98199826  
00:58:11.305 --> 00:58:12.585 when you look here, the  
NOTE Confidence: 0.98199826  
00:58:12.585 --> 00:58:13.085 radionuclide  
NOTE Confidence: 0.999336  
00:58:14.105 --> 00:58:15.085 can be exchanged  
NOTE Confidence: 0.9815408  
00:58:15.465 --> 00:58:17.225 into an imaging version or  
NOTE Confidence: 0.9815408  
00:58:17.225 --> 00:58:18.525 a treatment version.  
NOTE Confidence: 0.99764127  
00:58:18.985 --> 00:58:20.125 And that's why  
NOTE Confidence: 0.56473374  
00:58:20.585 --> 00:58:21.085 theranostics  
NOTE Confidence: 0.997954  
00:58:21.545 --> 00:58:22.365 is so  
NOTE Confidence: 0.9242116  
00:58:23.720 --> 00:58:25.480 impressive because for the first  
NOTE Confidence: 0.9242116  
00:58:25.480 --> 00:58:26.619 time, you're really  
NOTE Confidence: 0.9916675  
00:58:27.000 --> 00:58:29.319 imaging the exact location where  
NOTE Confidence: 0.9916675  
00:58:29.319 --> 00:58:31.240 you're delivering your drug. You  
NOTE Confidence: 0.9916675  
00:58:31.240 --> 00:58:31.740 know  
NOTE Confidence: 0.93115646

00:58:32.359 --> 00:58:34.539 the place that you image  
NOTE Confidence: 0.9138698

00:58:35.000 --> 00:58:37.079 is the exact same place  
NOTE Confidence: 0.9138698

00:58:37.079 --> 00:58:37.980 that you deliver  
NOTE Confidence: 0.99914

00:58:38.280 --> 00:58:38.780 your  
NOTE Confidence: 0.9869482

00:58:39.295 --> 00:58:39.795 treatment.  
NOTE Confidence: 0.9857991

00:58:40.495 --> 00:58:42.015 So when you're looking at  
NOTE Confidence: 0.9857991

00:58:42.015 --> 00:58:43.875 assessment for more aggressive  
NOTE Confidence: 0.99801564

00:58:44.175 --> 00:58:44.675 tumors,  
NOTE Confidence: 0.9948131

00:58:45.535 --> 00:58:47.795 they typically lose the somatostatin  
NOTE Confidence: 0.87776613

00:58:48.415 --> 00:58:49.555 receptor expression,  
NOTE Confidence: 0.9696598

00:58:50.415 --> 00:58:52.355 and they become more hypermetabolic,  
NOTE Confidence: 0.9654928

00:58:53.055 --> 00:58:54.735 and they're better assessed with  
NOTE Confidence: 0.9654928

00:58:54.735 --> 00:58:54.960 FTG.  
NOTE Confidence: 0.95212346

00:58:57.200 --> 00:58:57.700 FDG.  
NOTE Confidence: 0.92522854

00:58:58.000 --> 00:59:00.000 And for example, in this  
NOTE Confidence: 0.92522854

00:59:00.000 --> 00:59:01.440 case here, this is the

NOTE Confidence: 0.92522854  
00:59:01.440 --> 00:59:02.339 same patient,  
NOTE Confidence: 0.9531964  
00:59:02.880 --> 00:59:04.660 and this is an FDG  
NOTE Confidence: 0.9531964  
00:59:04.880 --> 00:59:06.000 PET and this is a  
NOTE Confidence: 0.9531964  
00:59:06.000 --> 00:59:07.700 DOTATATE, which is a somatostatin  
NOTE Confidence: 0.9942159  
00:59:08.400 --> 00:59:08.900 targeted  
NOTE Confidence: 0.9983525  
00:59:09.200 --> 00:59:09.700 PET.  
NOTE Confidence: 0.99323136  
00:59:10.295 --> 00:59:11.735 And when you're looking at  
NOTE Confidence: 0.99323136  
00:59:11.735 --> 00:59:12.235 these,  
NOTE Confidence: 0.99443096  
00:59:12.615 --> 00:59:13.675 these are basically  
NOTE Confidence: 0.9964277  
00:59:13.975 --> 00:59:15.995 images of in vivo  
NOTE Confidence: 0.99861836  
00:59:16.935 --> 00:59:17.435 expression  
NOTE Confidence: 0.9996938  
00:59:17.895 --> 00:59:18.635 of somatostatin  
NOTE Confidence: 0.791802  
00:59:19.255 --> 00:59:19.755 receptors.  
NOTE Confidence: 0.9987724  
00:59:20.295 --> 00:59:21.575 And this is the only  
NOTE Confidence: 0.9987724  
00:59:21.575 --> 00:59:23.115 way you can actually  
NOTE Confidence: 0.9991299

00:59:23.680 --> 00:59:26.500 image the entire disease burden

NOTE Confidence: 0.9915047

00:59:26.880 --> 00:59:28.800 without having to biopsy every

NOTE Confidence: 0.9915047

00:59:28.800 --> 00:59:29.780 single site.

NOTE Confidence: 0.9207593

00:59:30.240 --> 00:59:32.420 The you're imaging the heterogeneity

NOTE Confidence: 0.99909735

00:59:32.960 --> 00:59:33.860 of the tumor

NOTE Confidence: 0.8807936

00:59:34.400 --> 00:59:34.900 with,

NOTE Confidence: 0.9977988

00:59:36.115 --> 00:59:38.275 inside the patient without having

NOTE Confidence: 0.9977988

00:59:38.275 --> 00:59:39.095 to ever

NOTE Confidence: 0.99342984

00:59:39.955 --> 00:59:40.855 really sample

NOTE Confidence: 0.9881883

00:59:41.155 --> 00:59:43.155 these locations. So when you're

NOTE Confidence: 0.9881883

00:59:43.155 --> 00:59:43.655 doing

NOTE Confidence: 0.89486724

00:59:43.955 --> 00:59:45.635 what we call dual PET

NOTE Confidence: 0.89486724

00:59:45.635 --> 00:59:46.695 or multiplex

NOTE Confidence: 0.98581374

00:59:46.995 --> 00:59:48.935 PET, you're really evaluating

NOTE Confidence: 0.9996525

00:59:49.680 --> 00:59:50.180 the

NOTE Confidence: 0.89037687

00:59:51.760 --> 00:59:54.260 the extension of disease and

NOTE Confidence: 0.89037687  
00:59:54.400 --> 00:59:55.300 the heterogeneity  
NOTE Confidence: 0.76368546  
00:59:55.760 --> 00:59:56.260 of,  
NOTE Confidence: 0.99432623  
00:59:58.319 --> 00:59:59.140 that disease.  
NOTE Confidence: 0.96774954  
01:00:00.800 --> 01:00:02.559 So again, when you're doing  
NOTE Confidence: 0.96774954  
01:00:02.559 --> 01:00:04.880 targeted therapy, you really want  
NOTE Confidence: 0.96774954  
01:00:04.880 --> 01:00:06.335 to make sure that you're  
NOTE Confidence: 0.96774954  
01:00:06.335 --> 01:00:06.835 treating  
NOTE Confidence: 0.99317706  
01:00:07.375 --> 01:00:08.035 a target  
NOTE Confidence: 0.9393778  
01:00:08.494 --> 01:00:10.494 that it's really the drive  
NOTE Confidence: 0.9393778  
01:00:10.494 --> 01:00:12.174 of the progression. Because as  
NOTE Confidence: 0.9393778  
01:00:12.174 --> 01:00:13.555 nets are very heterogeneous,  
NOTE Confidence: 0.9959236  
01:00:14.335 --> 01:00:15.795 you really want to treat  
NOTE Confidence: 0.9959236  
01:00:15.934 --> 01:00:17.155 whatever is  
NOTE Confidence: 0.9171878  
01:00:18.510 --> 01:00:19.010 problematic  
NOTE Confidence: 0.9927103  
01:00:19.310 --> 01:00:20.290 for the patient  
NOTE Confidence: 0.7102891

01:00:20.910 --> 01:00:21.410 and,  
NOTE Confidence: 0.999577

01:00:22.350 --> 01:00:24.050 what's really going to be  
NOTE Confidence: 0.999577

01:00:24.110 --> 01:00:25.490 the fastest growing  
NOTE Confidence: 0.9771984

01:00:26.190 --> 01:00:27.950 side of the disease. So  
NOTE Confidence: 0.9771984

01:00:27.950 --> 01:00:29.150 how do you evaluate the  
NOTE Confidence: 0.9771984

01:00:29.150 --> 01:00:30.975 presence of a target without  
NOTE Confidence: 0.9771984

01:00:31.135 --> 01:00:33.135 sample bias from biopsies? Because  
NOTE Confidence: 0.9771984

01:00:33.135 --> 01:00:34.115 if you biopsy  
NOTE Confidence: 0.9931359

01:00:34.655 --> 01:00:36.095 and you have a sample  
NOTE Confidence: 0.9931359

01:00:36.095 --> 01:00:38.195 bias, how can you understand  
NOTE Confidence: 0.9980038

01:00:38.895 --> 01:00:40.195 that you're really treating  
NOTE Confidence: 0.9765282

01:00:40.655 --> 01:00:42.255 the problem of the patient?  
NOTE Confidence: 0.9765282

01:00:42.255 --> 01:00:43.455 And that's why the PET  
NOTE Confidence: 0.9765282

01:00:43.455 --> 01:00:44.355 is so important.  
NOTE Confidence: 0.9820283

01:00:46.010 --> 01:00:47.609 So when we're treating these  
NOTE Confidence: 0.9820283

01:00:47.609 --> 01:00:49.309 patients, once we identify

NOTE Confidence: 0.99836886  
01:00:49.609 --> 01:00:50.430 the target,  
NOTE Confidence: 0.9530705  
01:00:51.530 --> 01:00:53.690 the same molecule, the same  
NOTE Confidence: 0.9530705  
01:00:53.690 --> 01:00:55.390 ligand, and the same linker  
NOTE Confidence: 0.9530705  
01:00:55.530 --> 01:00:56.650 are used, and we just  
NOTE Confidence: 0.9530705  
01:00:56.650 --> 01:00:57.869 change the radionuclide.  
NOTE Confidence: 0.93593085  
01:00:58.890 --> 01:01:01.150 And currently, we use a  
NOTE Confidence: 0.6478289  
01:01:03.825 --> 01:01:04.325 radioactive  
NOTE Confidence: 0.9381426  
01:01:04.625 --> 01:01:06.945 particle called lutetium one seventy  
NOTE Confidence: 0.9381426  
01:01:06.945 --> 01:01:08.305 seven, which is a beta  
NOTE Confidence: 0.9381426  
01:01:08.305 --> 01:01:08.805 emitter.  
NOTE Confidence: 0.93588394  
01:01:09.345 --> 01:01:11.345 And the beta emission causes  
NOTE Confidence: 0.93588394  
01:01:11.345 --> 01:01:13.285 single strand DNA damage.  
NOTE Confidence: 0.9562628  
01:01:13.745 --> 01:01:15.505 And when the cell tries  
NOTE Confidence: 0.9562628  
01:01:15.505 --> 01:01:17.410 to replicate, it can't, so  
NOTE Confidence: 0.9562628  
01:01:17.410 --> 01:01:18.150 it dies.  
NOTE Confidence: 0.99176544

01:01:18.690 --> 01:01:20.690 So that's basically how this  
NOTE Confidence: 0.99176544

01:01:20.690 --> 01:01:21.830 treatment work.  
NOTE Confidence: 0.99971944

01:01:22.290 --> 01:01:22.790 So  
NOTE Confidence: 0.9992993

01:01:23.170 --> 01:01:23.670 the  
NOTE Confidence: 0.9997459

01:01:23.970 --> 01:01:24.470 approach  
NOTE Confidence: 0.9898298

01:01:24.770 --> 01:01:26.470 of getting to these treatments  
NOTE Confidence: 0.9898298

01:01:26.610 --> 01:01:27.670 is really multidisciplinary  
NOTE Confidence: 0.9987017

01:01:28.610 --> 01:01:30.070 for every single patient.  
NOTE Confidence: 0.9815434

01:01:30.575 --> 01:01:32.414 We review patients on tumor  
NOTE Confidence: 0.9815434

01:01:32.414 --> 01:01:34.414 board every week because it's  
NOTE Confidence: 0.9815434

01:01:34.414 --> 01:01:36.015 really about bringing all the  
NOTE Confidence: 0.9815434

01:01:36.015 --> 01:01:37.694 information together in the same  
NOTE Confidence: 0.9815434

01:01:37.694 --> 01:01:38.194 place  
NOTE Confidence: 0.98259807

01:01:38.815 --> 01:01:40.194 and having everyone  
NOTE Confidence: 0.99971783

01:01:40.734 --> 01:01:41.795 on the same page.  
NOTE Confidence: 0.97076833

01:01:42.174 --> 01:01:44.540 Patient selection is critical because

NOTE Confidence: 0.97076833  
01:01:44.600 --> 01:01:45.960 if you don't have the  
NOTE Confidence: 0.97076833  
01:01:45.960 --> 01:01:47.560 target as the drive of  
NOTE Confidence: 0.97076833  
01:01:47.560 --> 01:01:48.220 the progression,  
NOTE Confidence: 0.88874084  
01:01:49.080 --> 01:01:50.940 then it's pointless to treat  
NOTE Confidence: 0.88874084  
01:01:51.000 --> 01:01:52.780 a specific patient.  
NOTE Confidence: 0.99919987  
01:01:53.480 --> 01:01:55.340 And this is very important  
NOTE Confidence: 0.99928916  
01:01:55.720 --> 01:01:56.460 to understand.  
NOTE Confidence: 0.99336815  
01:01:57.335 --> 01:01:59.335 Once the drug finds the  
NOTE Confidence: 0.99336815  
01:01:59.335 --> 01:02:01.095 target, it binds to the  
NOTE Confidence: 0.99336815  
01:02:01.095 --> 01:02:01.994 cell surface  
NOTE Confidence: 0.90108967  
01:02:02.375 --> 01:02:03.515 and it's internalized.  
NOTE Confidence: 0.9565638  
01:02:04.055 --> 01:02:05.255 And then that's when the  
NOTE Confidence: 0.9565638  
01:02:05.255 --> 01:02:07.095 bad emission happens and it  
NOTE Confidence: 0.9565638  
01:02:07.095 --> 01:02:09.434 causes single strand DNA damage.  
NOTE Confidence: 0.9978254  
01:02:10.110 --> 01:02:11.550 And when we're using this  
NOTE Confidence: 0.9978254

01:02:11.550 --> 01:02:13.150 type of therapy, we're doing  
NOTE Confidence: 0.9978254

01:02:13.150 --> 01:02:14.050 four cycles  
NOTE Confidence: 0.8306168

01:02:14.830 --> 01:02:15.330 approximately  
NOTE Confidence: 0.94535094

01:02:15.630 --> 01:02:17.790 eight weeks apart and the  
NOTE Confidence: 0.94535094

01:02:17.790 --> 01:02:19.570 dose of two hundred millicuries  
NOTE Confidence: 0.97312844

01:02:20.110 --> 01:02:20.690 is fixed  
NOTE Confidence: 0.9762709

01:02:21.070 --> 01:02:21.810 in general.  
NOTE Confidence: 0.955166

01:02:23.315 --> 01:02:25.414 And again, this has emerged  
NOTE Confidence: 0.955166

01:02:25.555 --> 01:02:26.914 as a new image, a  
NOTE Confidence: 0.955166

01:02:26.914 --> 01:02:28.214 new treatment modality  
NOTE Confidence: 0.8394157

01:02:29.075 --> 01:02:30.535 just like chemotherapy,  
NOTE Confidence: 0.9002717

01:02:30.994 --> 01:02:31.494 brachytherapy.  
NOTE Confidence: 0.9982327

01:02:32.434 --> 01:02:34.275 We're really talking about this  
NOTE Confidence: 0.9982327

01:02:34.275 --> 01:02:35.335 as a new paradigm.  
NOTE Confidence: 0.917662

01:02:36.869 --> 01:02:38.069 So this a patient we  
NOTE Confidence: 0.917662

01:02:38.069 --> 01:02:39.849 treated this was the initial

NOTE Confidence: 0.917662  
01:02:39.910 --> 01:02:40.410 scan  
NOTE Confidence: 0.97585243  
01:02:40.789 --> 01:02:42.710 then the patient progressed as  
NOTE Confidence: 0.97585243  
01:02:42.710 --> 01:02:43.829 you can see all these  
NOTE Confidence: 0.97585243  
01:02:43.829 --> 01:02:45.190 little dots here in the  
NOTE Confidence: 0.97585243  
01:02:45.190 --> 01:02:45.690 liver  
NOTE Confidence: 0.93655  
01:02:45.990 --> 01:02:47.369 and here in the protonium  
NOTE Confidence: 0.9326375  
01:02:47.670 --> 01:02:48.809 these are implants  
NOTE Confidence: 0.9943748  
01:02:49.385 --> 01:02:50.665 and then this is when  
NOTE Confidence: 0.9943748  
01:02:50.665 --> 01:02:52.505 we started treating the patient  
NOTE Confidence: 0.9943748  
01:02:52.505 --> 01:02:53.484 and this is  
NOTE Confidence: 0.9961572  
01:02:53.865 --> 01:02:55.224 was at the end of  
NOTE Confidence: 0.9961572  
01:02:55.224 --> 01:02:55.724 treatment.  
NOTE Confidence: 0.67697555  
01:02:57.545 --> 01:02:58.045 Beta  
NOTE Confidence: 0.9968907  
01:02:58.345 --> 01:02:59.805 emission is not  
NOTE Confidence: 0.927877  
01:03:00.184 --> 01:03:00.684 curative.  
NOTE Confidence: 0.9990673

01:03:01.224 --> 01:03:02.025 We always have  
NOTE Confidence: 0.9901394

01:03:04.230 --> 01:03:06.170 we always expect to  
NOTE Confidence: 0.8628552

01:03:06.550 --> 01:03:07.530 hold progression.  
NOTE Confidence: 0.94889987

01:03:09.190 --> 01:03:10.650 But there's a lot of,  
NOTE Confidence: 0.97409344

01:03:11.350 --> 01:03:13.030 research and work being done  
NOTE Confidence: 0.97409344

01:03:13.030 --> 01:03:14.810 into other types of particles  
NOTE Confidence: 0.958972

01:03:15.350 --> 01:03:17.050 or combination therapies  
NOTE Confidence: 0.75732416

01:03:17.350 --> 01:03:17.850 to  
NOTE Confidence: 0.74157405

01:03:19.585 --> 01:03:20.645 optimize that.  
NOTE Confidence: 0.88312405

01:03:22.305 --> 01:03:23.905 And then this is another  
NOTE Confidence: 0.88312405

01:03:23.905 --> 01:03:25.025 case which I think it's  
NOTE Confidence: 0.88312405

01:03:25.025 --> 01:03:26.305 interesting. This is a patient  
NOTE Confidence: 0.88312405

01:03:26.305 --> 01:03:27.445 who had a  
NOTE Confidence: 0.78037596

01:03:27.905 --> 01:03:29.542 high grade mixed s inner  
NOTE Confidence: 0.78037596

01:03:29.542 --> 01:03:29.729 cell neuroendocrine carcinoma of the  
NOTE Confidence: 0.78037596

01:03:29.729 --> 01:03:29.915 pancreas and this is an

NOTE Confidence: 0.78037596  
01:03:29.915 --> 01:03:30.225 fdg PET and you see  
NOTE Confidence: 0.78037596  
01:03:30.225 --> 01:03:30.725 that  
NOTE Confidence: 0.9154671  
01:03:31.329 --> 01:03:32.770 neuroendocrine carcinoma of the pancreas  
NOTE Confidence: 0.9154671  
01:03:32.770 --> 01:03:33.730 and this is an f  
NOTE Confidence: 0.9154671  
01:03:33.730 --> 01:03:34.770 d g PET and you  
NOTE Confidence: 0.9154671  
01:03:34.770 --> 01:03:36.849 see that the pancreatic lesion  
NOTE Confidence: 0.9154671  
01:03:36.849 --> 01:03:38.530 is hot and then there  
NOTE Confidence: 0.9154671  
01:03:38.530 --> 01:03:40.130 was a growing liver lesion  
NOTE Confidence: 0.9154671  
01:03:40.130 --> 01:03:40.950 on the MRI  
NOTE Confidence: 0.87692773  
01:03:41.650 --> 01:03:43.589 and a DOTATATE was obtained.  
NOTE Confidence: 0.97472286  
01:03:44.275 --> 01:03:45.795 And in the DOTATATE, you  
NOTE Confidence: 0.97472286  
01:03:45.795 --> 01:03:47.235 can see that this lesion  
NOTE Confidence: 0.97472286  
01:03:47.235 --> 01:03:49.575 is cold. There's relative photopenia,  
NOTE Confidence: 0.99823934  
01:03:50.275 --> 01:03:51.715 which means this is high  
NOTE Confidence: 0.99823934  
01:03:51.715 --> 01:03:53.395 grade. There is no point  
NOTE Confidence: 0.99823934

01:03:53.395 --> 01:03:54.935 in treating this patient  
NOTE Confidence: 0.98098505

01:03:55.475 --> 01:03:55.975 with,  
NOTE Confidence: 0.9645696

01:03:56.595 --> 01:03:57.095 radioligand  
NOTE Confidence: 0.9896638

01:03:57.475 --> 01:03:59.235 therapy as there is no  
NOTE Confidence: 0.9896638

01:03:59.235 --> 01:03:59.735 binding  
NOTE Confidence: 0.9629111

01:04:00.170 --> 01:04:01.790 of this in this location.  
NOTE Confidence: 0.8737385

01:04:02.330 --> 01:04:03.530 This patient went on to  
NOTE Confidence: 0.8737385

01:04:03.530 --> 01:04:04.910 let have a hepatectomy,  
NOTE Confidence: 0.9350276

01:04:05.370 --> 01:04:06.270 a left hepatectomy.  
NOTE Confidence: 0.96338224

01:04:07.210 --> 01:04:08.830 And it's really,  
NOTE Confidence: 0.99903584

01:04:10.170 --> 01:04:10.670 about  
NOTE Confidence: 0.99801135

01:04:11.450 --> 01:04:11.950 the  
NOTE Confidence: 0.98754394

01:04:13.035 --> 01:04:15.214 imaging and the histology. Right?  
NOTE Confidence: 0.98754394

01:04:15.355 --> 01:04:16.494 The high grade  
NOTE Confidence: 0.97001636

01:04:17.194 --> 01:04:19.674 generates relative photopenia because of  
NOTE Confidence: 0.97001636

01:04:19.674 --> 01:04:21.295 the loss of the somatostatin

NOTE Confidence: 0.9357731  
01:04:21.915 --> 01:04:23.835 receptors. And this patient is  
NOTE Confidence: 0.9357731  
01:04:23.835 --> 01:04:26.095 really better staged with FDGPAT.  
NOTE Confidence: 0.9996789  
01:04:26.960 --> 01:04:28.480 And this patient would never  
NOTE Confidence: 0.9996789  
01:04:28.480 --> 01:04:30.259 be a good candidate for  
NOTE Confidence: 0.7805843  
01:04:30.720 --> 01:04:32.339 lutetium dota date.  
NOTE Confidence: 0.97002596  
01:04:32.960 --> 01:04:34.240 And when we're doing these  
NOTE Confidence: 0.97002596  
01:04:34.240 --> 01:04:36.339 treatments these are highly complex  
NOTE Confidence: 0.97002596  
01:04:36.559 --> 01:04:37.299 so that  
NOTE Confidence: 0.98579204  
01:04:37.599 --> 01:04:38.880 you have an idea this  
NOTE Confidence: 0.98579204  
01:04:38.880 --> 01:04:40.500 is an infusion suite  
NOTE Confidence: 0.96252584  
01:04:41.025 --> 01:04:42.484 because of the high radioactivity.  
NOTE Confidence: 0.98026407  
01:04:43.105 --> 01:04:44.645 All the floors are covered.  
NOTE Confidence: 0.9882994  
01:04:45.184 --> 01:04:47.105 The bathrooms are enclosed in  
NOTE Confidence: 0.9882994  
01:04:47.105 --> 01:04:48.244 the infusion suite  
NOTE Confidence: 0.9101944  
01:04:48.704 --> 01:04:49.924 where there's higher,  
NOTE Confidence: 0.99528867

01:04:50.385 --> 01:04:52.405 chance of leaking and contamination.

NOTE Confidence: 0.99839175

01:04:52.944 --> 01:04:54.165 The floors are all

NOTE Confidence: 0.8263731

01:04:54.630 --> 01:04:56.710 extra covered. They are in

NOTE Confidence: 0.8263731

01:04:56.710 --> 01:04:57.930 the end of a day

NOTE Confidence: 0.8263731

01:04:57.990 --> 01:04:59.849 all essay then evaluated

NOTE Confidence: 0.98117197

01:05:00.150 --> 01:05:01.049 for contaminations

NOTE Confidence: 0.95516074

01:05:01.430 --> 01:05:02.650 and things like that.

NOTE Confidence: 0.9778312

01:05:03.029 --> 01:05:04.069 And this is,

NOTE Confidence: 0.9854443

01:05:04.390 --> 01:05:06.410 done for each single patient.

NOTE Confidence: 0.9854443

01:05:06.470 --> 01:05:08.010 So there's prep before

NOTE Confidence: 0.90404165

01:05:08.585 --> 01:05:10.444 then there's cleaning after,

NOTE Confidence: 0.99444556

01:05:11.065 --> 01:05:11.885 each infusion.

NOTE Confidence: 0.9979861

01:05:12.904 --> 01:05:13.404 So

NOTE Confidence: 0.99461174

01:05:13.865 --> 01:05:15.005 take home points

NOTE Confidence: 0.9172811

01:05:15.704 --> 01:05:16.525 for imaging.

NOTE Confidence: 0.9973364

01:05:18.105 --> 01:05:19.325 When we're assessing

NOTE Confidence: 0.9447365  
01:05:19.704 --> 01:05:21.404 patients with well differentiated  
NOTE Confidence: 0.750908  
01:05:21.865 --> 01:05:22.765 net somatostatin  
NOTE Confidence: 0.9997794  
01:05:23.385 --> 01:05:23.885 receptor  
NOTE Confidence: 0.6373558  
01:05:25.200 --> 01:05:25.700 targeted  
NOTE Confidence: 0.8463695  
01:05:26.080 --> 01:05:27.619 PET is a great  
NOTE Confidence: 0.9858408  
01:05:28.080 --> 01:05:28.580 exam.  
NOTE Confidence: 0.90285754  
01:05:30.160 --> 01:05:31.380 I did not mention  
NOTE Confidence: 0.9482548  
01:05:31.760 --> 01:05:33.440 extend too much into the  
NOTE Confidence: 0.9482548  
01:05:33.440 --> 01:05:33.940 SUVs  
NOTE Confidence: 0.957536  
01:05:34.880 --> 01:05:36.320 but I wanted to make  
NOTE Confidence: 0.957536  
01:05:36.320 --> 01:05:37.380 sure that this  
NOTE Confidence: 0.9030202  
01:05:37.840 --> 01:05:39.280 went out because this is  
NOTE Confidence: 0.9030202  
01:05:39.280 --> 01:05:39.860 a very  
NOTE Confidence: 0.9002783  
01:05:41.545 --> 01:05:43.705 common factor of confusion. The  
NOTE Confidence: 0.9002783  
01:05:43.705 --> 01:05:45.885 SUV max, which is a  
NOTE Confidence: 0.87499166

01:05:46.585 --> 01:05:47.485 semi quantitative  
NOTE Confidence: 0.9962567

01:05:47.865 --> 01:05:48.365 measurement  
NOTE Confidence: 0.90057087

01:05:49.385 --> 01:05:50.665 that we use in PET  
NOTE Confidence: 0.90057087

01:05:50.665 --> 01:05:52.205 when we use an FDG  
NOTE Confidence: 0.90057087

01:05:52.425 --> 01:05:53.885 for metabolic imaging  
NOTE Confidence: 0.9298704

01:05:54.320 --> 01:05:55.220 has a meaning,  
NOTE Confidence: 0.99680555

01:05:55.520 --> 01:05:56.960 which is very different when  
NOTE Confidence: 0.99680555

01:05:56.960 --> 01:05:59.040 we're looking at density of  
NOTE Confidence: 0.99680555

01:05:59.040 --> 01:06:00.580 expression of a receptor.  
NOTE Confidence: 0.9464172

01:06:01.200 --> 01:06:03.220 So because there are variations,  
NOTE Confidence: 0.9942754

01:06:03.920 --> 01:06:04.420 physiological  
NOTE Confidence: 0.93918455

01:06:04.880 --> 01:06:06.820 variations between time points,  
NOTE Confidence: 0.86050755

01:06:07.455 --> 01:06:08.815 changes in s u v  
NOTE Confidence: 0.86050755

01:06:08.815 --> 01:06:10.735 max for dota data or  
NOTE Confidence: 0.86050755

01:06:10.735 --> 01:06:11.555 for somatostatin  
NOTE Confidence: 0.9974759

01:06:12.015 --> 01:06:12.515 targeted

NOTE Confidence: 0.47850707  
01:06:13.695 --> 01:06:14.195 receptor  
NOTE Confidence: 0.9019642  
01:06:14.495 --> 01:06:16.335 pad between time points are  
NOTE Confidence: 0.9019642  
01:06:16.335 --> 01:06:16.835 unreliable  
NOTE Confidence: 0.9921562  
01:06:17.455 --> 01:06:19.315 for any assessment of response.  
NOTE Confidence: 0.8749789  
01:06:20.655 --> 01:06:21.955 F d g is usually  
NOTE Confidence: 0.98180306  
01:06:22.500 --> 01:06:23.000 great  
NOTE Confidence: 0.98941237  
01:06:23.380 --> 01:06:24.920 for high grade nets  
NOTE Confidence: 0.962279  
01:06:25.540 --> 01:06:27.000 and to look for heterogeneity  
NOTE Confidence: 0.47109032  
01:06:27.860 --> 01:06:28.360 and  
NOTE Confidence: 0.99637777  
01:06:29.060 --> 01:06:30.280 the imaging modalities  
NOTE Confidence: 0.9331284  
01:06:30.900 --> 01:06:32.040 are always complementary.  
NOTE Confidence: 0.9835472  
01:06:32.980 --> 01:06:34.340 The liver should always be  
NOTE Confidence: 0.9835472  
01:06:34.340 --> 01:06:34.840 evaluated  
NOTE Confidence: 0.9701898  
01:06:35.375 --> 01:06:37.375 separately, especially when you don't  
NOTE Confidence: 0.9701898  
01:06:37.375 --> 01:06:38.675 see a CT correlate  
NOTE Confidence: 0.79873073

01:06:39.375 --> 01:06:40.734 on the pet or an  
NOTE Confidence: 0.79873073

01:06:40.734 --> 01:06:42.675 an non contrast CT.  
NOTE Confidence: 0.99966025

01:06:43.214 --> 01:06:44.835 You should never measure  
NOTE Confidence: 0.9928232

01:06:45.375 --> 01:06:47.214 the amount of uptake or  
NOTE Confidence: 0.9928232

01:06:47.214 --> 01:06:48.494 the size of the uptake  
NOTE Confidence: 0.9928232

01:06:48.494 --> 01:06:50.515 because that's a window setting.  
NOTE Confidence: 0.99723953

01:06:51.119 --> 01:06:52.559 So if you cannot really  
NOTE Confidence: 0.99723953

01:06:52.559 --> 01:06:54.339 measure, you need a  
NOTE Confidence: 0.8818724

01:06:54.640 --> 01:06:55.140 multiphasic  
NOTE Confidence: 0.91319585

01:06:55.599 --> 01:06:56.099 study,  
NOTE Confidence: 0.9345352

01:06:56.640 --> 01:06:58.640 either CT or MRI to  
NOTE Confidence: 0.9345352

01:06:58.640 --> 01:06:59.619 really characterize  
NOTE Confidence: 0.9948369

01:07:00.000 --> 01:07:00.819 these lesions.  
NOTE Confidence: 0.9783441

01:07:01.599 --> 01:07:02.819 Otherwise, you're  
NOTE Confidence: 0.99980134

01:07:03.135 --> 01:07:04.355 not really evaluating  
NOTE Confidence: 0.95544714

01:07:04.735 --> 01:07:06.895 changes over time. That's really

NOTE Confidence: 0.95544714  
01:07:06.895 --> 01:07:07.395 key  
NOTE Confidence: 0.86622334  
01:07:07.855 --> 01:07:09.455 and then for treatment you  
NOTE Confidence: 0.86622334  
01:07:09.455 --> 01:07:11.075 really need a multi disciplinary  
NOTE Confidence: 0.9419751  
01:07:11.455 --> 01:07:12.975 team as this is so  
NOTE Confidence: 0.9419751  
01:07:12.975 --> 01:07:13.715 sub specialized  
NOTE Confidence: 0.99261856  
01:07:14.735 --> 01:07:17.235 and things are so individualized  
NOTE Confidence: 0.99928206  
01:07:17.615 --> 01:07:18.675 for each patient  
NOTE Confidence: 0.98286164  
01:07:19.110 --> 01:07:20.870 and again the patient selection  
NOTE Confidence: 0.98286164  
01:07:20.870 --> 01:07:21.930 is really critical  
NOTE Confidence: 0.99946624  
01:07:22.470 --> 01:07:23.290 for identifying  
NOTE Confidence: 0.9994019  
01:07:23.590 --> 01:07:25.750 the patients who are most  
NOTE Confidence: 0.9994019  
01:07:25.750 --> 01:07:27.290 likely to have a response  
NOTE Confidence: 0.93176305  
01:07:28.070 --> 01:07:29.350 as this is an image  
NOTE Confidence: 0.93176305  
01:07:29.350 --> 01:07:31.350 guided therapy this is really  
NOTE Confidence: 0.93176305  
01:07:31.350 --> 01:07:31.850 key.  
NOTE Confidence: 0.98688006

01:07:33.494 --> 01:07:34.855 And then things that are  
NOTE Confidence: 0.98688006

01:07:34.855 --> 01:07:37.335 coming down the pipe is  
NOTE Confidence: 0.98688006

01:07:37.335 --> 01:07:39.575 new types of particles with  
NOTE Confidence: 0.98688006

01:07:39.575 --> 01:07:41.734 alpha emission or alpha plus  
NOTE Confidence: 0.98688006

01:07:41.734 --> 01:07:42.234 beta  
NOTE Confidence: 0.7436314

01:07:42.855 --> 01:07:43.355 combinations  
NOTE Confidence: 0.96939003

01:07:43.655 --> 01:07:44.555 or synergistic  
NOTE Confidence: 0.9439338

01:07:45.095 --> 01:07:46.555 approaches with immunotherapy,  
NOTE Confidence: 0.62431014

01:07:47.335 --> 01:07:48.470 targeted the therapy,  
NOTE Confidence: 0.946956

01:07:49.410 --> 01:07:51.430 new targets and new binding  
NOTE Confidence: 0.946956

01:07:51.570 --> 01:07:52.070 mechanisms,  
NOTE Confidence: 0.85492706

01:07:52.850 --> 01:07:53.350 antibodies,  
NOTE Confidence: 0.9026021

01:07:53.890 --> 01:07:54.630 small molecules,  
NOTE Confidence: 0.964355

01:07:55.330 --> 01:07:57.109 and new imaging technology.  
NOTE Confidence: 0.9672735

01:07:57.490 --> 01:07:58.550 The imaging technologies  
NOTE Confidence: 0.9427359

01:07:59.250 --> 01:08:01.330 has really advanced with something

NOTE Confidence: 0.9427359  
01:08:01.330 --> 01:08:02.950 called total body PET  
NOTE Confidence: 0.99725896  
01:08:03.315 --> 01:08:05.155 where you acquire head to  
NOTE Confidence: 0.99725896  
01:08:05.155 --> 01:08:05.655 toe  
NOTE Confidence: 0.54972214  
01:08:06.595 --> 01:08:07.095 simultaneously  
NOTE Confidence: 0.9904312  
01:08:07.555 --> 01:08:09.255 instead of having to acquire  
NOTE Confidence: 0.96418256  
01:08:10.195 --> 01:08:11.954 pieces of the patient at  
NOTE Confidence: 0.96418256  
01:08:11.954 --> 01:08:13.815 the time and that generates  
NOTE Confidence: 0.96418256  
01:08:13.954 --> 01:08:15.494 a much higher resolution,  
NOTE Confidence: 0.8884228  
01:08:15.795 --> 01:08:18.055 faster acquisition and lower radiation.  
NOTE Confidence: 0.9940147  
01:08:18.920 --> 01:08:19.420 Multiplex  
NOTE Confidence: 0.86675215  
01:08:19.720 --> 01:08:21.820 imaging when you're imaging multiple  
NOTE Confidence: 0.90839356  
01:08:22.520 --> 01:08:24.220 targets like FDG  
NOTE Confidence: 0.9624428  
01:08:24.760 --> 01:08:25.260 and,  
NOTE Confidence: 0.940855  
01:08:25.960 --> 01:08:26.700 for metabolism  
NOTE Confidence: 0.7811887  
01:08:27.720 --> 01:08:28.220 and,  
NOTE Confidence: 0.6697021

01:08:28.920 --> 01:08:29.979 dote and,  
NOTE Confidence: 0.88496995

01:08:31.175 --> 01:08:31.675 somatostatin  
NOTE Confidence: 0.9934995

01:08:32.775 --> 01:08:33.275 targeting  
NOTE Confidence: 0.99722064

01:08:33.655 --> 01:08:34.155 for  
NOTE Confidence: 0.99829024

01:08:35.415 --> 01:08:35.915 receptor  
NOTE Confidence: 0.763887

01:08:36.455 --> 01:08:38.635 and then personalized those symmetry  
NOTE Confidence: 0.763887

01:08:38.695 --> 01:08:40.715 who currently deliver these therapies  
NOTE Confidence: 0.763887

01:08:40.775 --> 01:08:41.595 as standard,  
NOTE Confidence: 0.7950869

01:08:42.854 --> 01:08:43.735 those, but,  
NOTE Confidence: 0.9604843

01:08:44.780 --> 01:08:45.900 there's a lot of work  
NOTE Confidence: 0.9604843

01:08:45.900 --> 01:08:48.160 ongoing and to understanding those  
NOTE Confidence: 0.9604843

01:08:48.460 --> 01:08:48.960 effect.  
NOTE Confidence: 0.9989102

01:08:49.420 --> 01:08:49.920 So  
NOTE Confidence: 0.99224496

01:08:50.940 --> 01:08:52.240 thank you very much.  
NOTE Confidence: 0.95389473

01:08:54.460 --> 01:08:55.840 Thank you, doctor Spielberg.  
NOTE Confidence: 0.99896765

01:08:56.460 --> 01:08:58.080 Alright. Well, I'll ask my

NOTE Confidence: 0.99896765  
01:08:58.220 --> 01:08:58.720 my  
NOTE Confidence: 0.99241483  
01:08:59.805 --> 01:09:01.325 co presenters to put on  
NOTE Confidence: 0.99241483  
01:09:01.325 --> 01:09:03.805 their camera, and, we'll certainly  
NOTE Confidence: 0.99241483  
01:09:03.805 --> 01:09:05.805 take some questions. Maybe I'll  
NOTE Confidence: 0.99241483  
01:09:05.805 --> 01:09:07.265 I'll kick us all off.  
NOTE Confidence: 0.9909266  
01:09:07.805 --> 01:09:08.205 So,  
NOTE Confidence: 0.9878835  
01:09:08.925 --> 01:09:10.125 maybe I'll start with doctor  
NOTE Confidence: 0.9878835  
01:09:10.125 --> 01:09:10.625 Klimstra.  
NOTE Confidence: 0.97110236  
01:09:11.580 --> 01:09:13.179 So is there such thing  
NOTE Confidence: 0.97110236  
01:09:13.179 --> 01:09:15.360 as grade evolution in neuroendocrine  
NOTE Confidence: 0.97110236  
01:09:15.580 --> 01:09:16.080 tumors?  
NOTE Confidence: 0.982234  
01:09:16.460 --> 01:09:17.659 I get patients will ask,  
NOTE Confidence: 0.982234  
01:09:17.659 --> 01:09:19.260 can my grade change over  
NOTE Confidence: 0.982234  
01:09:19.260 --> 01:09:19.760 time?  
NOTE Confidence: 0.99833816  
01:09:20.219 --> 01:09:21.099 I know that this has  
NOTE Confidence: 0.99833816

01:09:21.099 --> 01:09:22.380 been sort of an evolving  
NOTE Confidence: 0.99833816  
01:09:22.380 --> 01:09:22.880 field.  
NOTE Confidence: 0.9380873  
01:09:23.595 --> 01:09:25.595 Definitely. Yeah. There definitely is.  
NOTE Confidence: 0.9380873  
01:09:25.595 --> 01:09:26.875 And and we didn't use  
NOTE Confidence: 0.9380873  
01:09:26.875 --> 01:09:28.875 to understand that partly because  
NOTE Confidence: 0.9380873  
01:09:28.875 --> 01:09:30.155 we didn't see the tumors  
NOTE Confidence: 0.9380873  
01:09:30.155 --> 01:09:31.375 at different time points.  
NOTE Confidence: 0.9382946  
01:09:32.235 --> 01:09:33.595 But but now we do.  
NOTE Confidence: 0.9382946  
01:09:33.595 --> 01:09:35.035 And at Yale, we actually  
NOTE Confidence: 0.9382946  
01:09:35.035 --> 01:09:36.255 rebiopsy these,  
NOTE Confidence: 0.9949907  
01:09:36.920 --> 01:09:38.840 when they start growing. And  
NOTE Confidence: 0.9949907  
01:09:38.840 --> 01:09:39.420 I think,  
NOTE Confidence: 0.881747  
01:09:40.360 --> 01:09:41.719 you know, doctor Spielberg just  
NOTE Confidence: 0.881747  
01:09:41.719 --> 01:09:43.320 mentioned the the possibility of  
NOTE Confidence: 0.881747  
01:09:43.320 --> 01:09:43.820 even,  
NOTE Confidence: 0.987074  
01:09:44.280 --> 01:09:46.939 acquiring FDG positivity. I think,

NOTE Confidence: 0.987074  
01:09:47.159 --> 01:09:47.900 you know,  
NOTE Confidence: 0.9855768  
01:09:48.280 --> 01:09:49.485 we we can we see  
NOTE Confidence: 0.9855768  
01:09:49.485 --> 01:09:50.844 some that go all the  
NOTE Confidence: 0.9855768  
01:09:50.844 --> 01:09:52.125 way from g one to  
NOTE Confidence: 0.9855768  
01:09:52.125 --> 01:09:53.485 g three, and it wouldn't  
NOTE Confidence: 0.9855768  
01:09:53.485 --> 01:09:54.844 shock me if if those  
NOTE Confidence: 0.9855768  
01:09:54.844 --> 01:09:56.625 highly proliferative tumors had,  
NOTE Confidence: 0.94918174  
01:09:57.005 --> 01:09:57.745 an FTG  
NOTE Confidence: 0.7726759  
01:09:58.364 --> 01:09:59.425 positive appearance.  
NOTE Confidence: 0.9985914  
01:10:00.364 --> 01:10:01.665 Yep. Thank you.  
NOTE Confidence: 0.76551  
01:10:03.110 --> 01:10:04.010 Doctor Kunstman,  
NOTE Confidence: 0.99002004  
01:10:04.550 --> 01:10:06.229 question for you. So we  
NOTE Confidence: 0.99002004  
01:10:06.229 --> 01:10:07.510 have shared a number of  
NOTE Confidence: 0.99002004  
01:10:07.510 --> 01:10:08.010 patients,  
NOTE Confidence: 0.92547494  
01:10:08.950 --> 01:10:09.830 for per I'll give an  
NOTE Confidence: 0.92547494

01:10:09.830 --> 01:10:11.030 example of a patient with  
NOTE Confidence: 0.92547494

01:10:11.030 --> 01:10:11.610 a metastatic  
NOTE Confidence: 0.9467295

01:10:11.910 --> 01:10:13.430 small bowel net who maybe  
NOTE Confidence: 0.9467295

01:10:13.430 --> 01:10:14.915 still has their primary in  
NOTE Confidence: 0.96271807

01:10:15.295 --> 01:10:15.535 place.  
NOTE Confidence: 0.9973535

01:10:16.415 --> 01:10:17.375 When would you like to  
NOTE Confidence: 0.9973535

01:10:17.375 --> 01:10:19.075 see those patients for consideration  
NOTE Confidence: 0.9973535

01:10:19.215 --> 01:10:20.835 of resection of their primary?  
NOTE Confidence: 0.9973535

01:10:21.055 --> 01:10:22.095 Like, when when is it  
NOTE Confidence: 0.9973535

01:10:22.095 --> 01:10:22.835 too late?  
NOTE Confidence: 0.98978406

01:10:23.695 --> 01:10:24.895 When do you think, like,  
NOTE Confidence: 0.98978406

01:10:24.895 --> 01:10:26.675 a surgical referral is appropriate?  
NOTE Confidence: 0.99952346

01:10:28.530 --> 01:10:29.570 Well, I don't think it's  
NOTE Confidence: 0.99952346

01:10:29.570 --> 01:10:30.470 ever too late.  
NOTE Confidence: 0.9973275

01:10:31.490 --> 01:10:32.370 You know, it may not  
NOTE Confidence: 0.9973275

01:10:32.370 --> 01:10:33.590 be the right decision

NOTE Confidence: 0.9787727  
01:10:34.290 --> 01:10:35.330 at that point in their  
NOTE Confidence: 0.9787727  
01:10:35.330 --> 01:10:35.830 care.  
NOTE Confidence: 0.99737525  
01:10:37.970 --> 01:10:39.090 But, you know, I think  
NOTE Confidence: 0.99737525  
01:10:39.090 --> 01:10:40.070 one of the things  
NOTE Confidence: 0.99981046  
01:10:40.370 --> 01:10:41.570 that I was hoping to  
NOTE Confidence: 0.99981046  
01:10:41.570 --> 01:10:42.070 convey  
NOTE Confidence: 0.9954632  
01:10:42.695 --> 01:10:43.815 is that for all of  
NOTE Confidence: 0.9954632  
01:10:43.815 --> 01:10:44.555 these patients  
NOTE Confidence: 0.9503897  
01:10:44.855 --> 01:10:46.455 from the get go, a  
NOTE Confidence: 0.9503897  
01:10:46.455 --> 01:10:46.955 multidisciplinary  
NOTE Confidence: 0.99126875  
01:10:47.575 --> 01:10:49.355 approach is really, really important.  
NOTE Confidence: 0.9864815  
01:10:51.175 --> 01:10:52.155 You know, I think  
NOTE Confidence: 0.9717276  
01:10:52.935 --> 01:10:54.475 from a surgeon's standpoint,  
NOTE Confidence: 0.9763113  
01:10:55.360 --> 01:10:56.800 obviously, we want to do  
NOTE Confidence: 0.9763113  
01:10:56.800 --> 01:10:57.780 the right operation.  
NOTE Confidence: 0.992131

01:10:58.160 --> 01:11:00.000 But as just alluded to  
NOTE Confidence: 0.992131

01:11:00.000 --> 01:11:01.520 by doctor Klimstra, you know,  
NOTE Confidence: 0.992131

01:11:01.520 --> 01:11:02.800 many of these patients have  
NOTE Confidence: 0.992131

01:11:02.800 --> 01:11:04.420 courses measured in the decades  
NOTE Confidence: 0.992131

01:11:04.479 --> 01:11:04.979 now.  
NOTE Confidence: 0.99297535

01:11:06.400 --> 01:11:07.140 You know,  
NOTE Confidence: 0.999675

01:11:07.795 --> 01:11:09.155 each operation gets a little  
NOTE Confidence: 0.999675

01:11:09.155 --> 01:11:10.054 bit more challenging  
NOTE Confidence: 0.99365187

01:11:10.354 --> 01:11:10.854 for  
NOTE Confidence: 0.8701431

01:11:11.235 --> 01:11:12.375 variety of reasons,  
NOTE Confidence: 0.9795978

01:11:12.994 --> 01:11:14.354 even in the minimally invasive  
NOTE Confidence: 0.9795978

01:11:14.354 --> 01:11:15.474 era. So I think it's  
NOTE Confidence: 0.9795978

01:11:15.474 --> 01:11:16.755 really important to have a  
NOTE Confidence: 0.9795978

01:11:16.755 --> 01:11:18.914 surgeon involved quite early even  
NOTE Confidence: 0.9795978

01:11:18.914 --> 01:11:20.375 in the metastatic setting.  
NOTE Confidence: 0.9746242

01:11:22.150 --> 01:11:23.830 You know, oftentimes, you know,

NOTE Confidence: 0.9746242  
01:11:23.830 --> 01:11:25.030 just to use your example,  
NOTE Confidence: 0.9746242  
01:11:25.030 --> 01:11:26.790 we we agree, but sometimes  
NOTE Confidence: 0.9746242  
01:11:26.790 --> 01:11:27.750 we don't. And and, you  
NOTE Confidence: 0.9746242  
01:11:27.750 --> 01:11:28.870 know, I think we value  
NOTE Confidence: 0.9746242  
01:11:28.870 --> 01:11:29.610 that diversity,  
NOTE Confidence: 0.94153315  
01:11:30.550 --> 01:11:32.070 of opinions in managing these  
NOTE Confidence: 0.94153315  
01:11:32.070 --> 01:11:33.510 patients because it it can  
NOTE Confidence: 0.94153315  
01:11:33.510 --> 01:11:34.835 be a little bit complicated,  
NOTE Confidence: 0.94153315  
01:11:34.895 --> 01:11:35.935 and it can go on  
NOTE Confidence: 0.94153315  
01:11:35.935 --> 01:11:37.375 again for many, many, many  
NOTE Confidence: 0.94153315  
01:11:37.375 --> 01:11:37.875 years.  
NOTE Confidence: 0.9943142  
01:11:38.175 --> 01:11:38.975 And you have to be  
NOTE Confidence: 0.9943142  
01:11:38.975 --> 01:11:40.175 very thoughtful about when you're  
NOTE Confidence: 0.9943142  
01:11:40.175 --> 01:11:41.135 gonna pull the trigger on  
NOTE Confidence: 0.9943142  
01:11:41.135 --> 01:11:41.955 an operation.  
NOTE Confidence: 0.99924564

01:11:43.215 --> 01:11:44.655 I certainly prefer to see  
NOTE Confidence: 0.99924564

01:11:44.655 --> 01:11:45.155 patients  
NOTE Confidence: 0.993152

01:11:45.775 --> 01:11:46.515 right away.  
NOTE Confidence: 0.9638857

01:11:48.100 --> 01:11:49.140 You know, obviously, I can  
NOTE Confidence: 0.9638857

01:11:49.140 --> 01:11:50.660 only speak for myself, but,  
NOTE Confidence: 0.9638857

01:11:50.979 --> 01:11:51.860 you know, coming to see  
NOTE Confidence: 0.9638857

01:11:51.860 --> 01:11:53.000 a surgical oncologist,  
NOTE Confidence: 0.99019307

01:11:53.700 --> 01:11:54.660 at least at Yale, is  
NOTE Confidence: 0.99019307

01:11:54.660 --> 01:11:55.380 not like going to the  
NOTE Confidence: 0.99019307

01:11:55.380 --> 01:11:56.500 barber. You're not going to  
NOTE Confidence: 0.99019307

01:11:56.500 --> 01:11:57.240 get a haircut.  
NOTE Confidence: 0.8832489

01:11:57.860 --> 01:11:58.600 You know?  
NOTE Confidence: 0.98361224

01:11:59.620 --> 01:12:00.820 There are many patients I  
NOTE Confidence: 0.98361224

01:12:00.820 --> 01:12:02.120 see, and the answer is  
NOTE Confidence: 0.9541027

01:12:02.555 --> 01:12:03.675 no. It's not right or  
NOTE Confidence: 0.9541027

01:12:03.675 --> 01:12:04.655 no. Not yet.

NOTE Confidence: 0.99105823  
01:12:05.115 --> 01:12:06.155 But that being said, I  
NOTE Confidence: 0.99105823  
01:12:06.155 --> 01:12:07.435 think we can't weigh in  
NOTE Confidence: 0.99105823  
01:12:07.435 --> 01:12:08.155 if we're not part of  
NOTE Confidence: 0.99105823  
01:12:08.155 --> 01:12:09.435 the conversation. So so I  
NOTE Confidence: 0.99105823  
01:12:09.435 --> 01:12:10.795 do think an early referral  
NOTE Confidence: 0.99105823  
01:12:10.795 --> 01:12:11.854 is a great idea.  
NOTE Confidence: 0.97310674  
01:12:12.155 --> 01:12:13.675 Generally, patients like that as  
NOTE Confidence: 0.97310674  
01:12:13.675 --> 01:12:14.955 well so they can hear  
NOTE Confidence: 0.97310674  
01:12:14.955 --> 01:12:16.075 maybe about what's coming down  
NOTE Confidence: 0.97310674  
01:12:16.075 --> 01:12:16.735 the pike.  
NOTE Confidence: 0.9810634  
01:12:17.515 --> 01:12:19.189 Yep. Yep. Totally agree.  
NOTE Confidence: 0.8839518  
01:12:20.050 --> 01:12:20.950 Doctor Spielberg,  
NOTE Confidence: 0.99043876  
01:12:21.489 --> 01:12:23.030 what are you most excited  
NOTE Confidence: 0.99043876  
01:12:23.090 --> 01:12:25.010 about in the treatment area  
NOTE Confidence: 0.99043876  
01:12:25.010 --> 01:12:25.750 of theranostics?  
NOTE Confidence: 0.98731476

01:12:27.410 --> 01:12:28.469 I think that,  
NOTE Confidence: 0.90750724

01:12:29.650 --> 01:12:30.150 dosimetry  
NOTE Confidence: 0.99967706

01:12:30.610 --> 01:12:32.469 has not been fully  
NOTE Confidence: 0.98528236

01:12:34.485 --> 01:12:35.864 used at its  
NOTE Confidence: 0.831601

01:12:36.885 --> 01:12:37.385 potential.  
NOTE Confidence: 0.832252

01:12:37.685 --> 01:12:39.784 I think we currently do  
NOTE Confidence: 0.832252

01:12:40.005 --> 01:12:42.165 standard dosing for all patients  
NOTE Confidence: 0.832252

01:12:42.165 --> 01:12:43.685 and I think define those  
NOTE Confidence: 0.832252

01:12:43.685 --> 01:12:45.304 symmetry for the audience?  
NOTE Confidence: 0.90202343

01:12:45.844 --> 01:12:47.945 Sorry. So those symmetry, basically,  
NOTE Confidence: 0.90202343

01:12:48.165 --> 01:12:50.409 you calculate the burden of  
NOTE Confidence: 0.90202343

01:12:50.409 --> 01:12:52.270 disease that the patient has.  
NOTE Confidence: 0.9860212

01:12:52.969 --> 01:12:54.250 And one of the ways  
NOTE Confidence: 0.9860212

01:12:54.250 --> 01:12:55.210 you can do it is  
NOTE Confidence: 0.9860212

01:12:55.210 --> 01:12:55.869 you deliver  
NOTE Confidence: 0.95871997

01:12:56.250 --> 01:12:58.250 one cycle and then you

NOTE Confidence: 0.95871997  
01:12:58.250 --> 01:12:59.630 image at multiple  
NOTE Confidence: 0.97541076  
01:13:00.090 --> 01:13:01.469 time points after  
NOTE Confidence: 0.9040958  
01:13:01.770 --> 01:13:03.469 you image the drug itself.  
NOTE Confidence: 0.99822456  
01:13:04.525 --> 01:13:05.585 The drug itself  
NOTE Confidence: 0.84503776  
01:13:06.285 --> 01:13:07.425 after you treat  
NOTE Confidence: 0.9536322  
01:13:08.045 --> 01:13:10.045 has gamma emission and you  
NOTE Confidence: 0.9536322  
01:13:10.045 --> 01:13:11.265 can image that.  
NOTE Confidence: 0.8544846  
01:13:11.645 --> 01:13:12.785 So it can actually  
NOTE Confidence: 0.99671555  
01:13:13.325 --> 01:13:13.825 image  
NOTE Confidence: 0.9926485  
01:13:14.285 --> 01:13:16.465 the drug at its target  
NOTE Confidence: 0.9996616  
01:13:17.010 --> 01:13:17.909 and then calculate  
NOTE Confidence: 0.9750702  
01:13:19.650 --> 01:13:20.789 how does that,  
NOTE Confidence: 0.9647679  
01:13:21.809 --> 01:13:23.489 what's the overall burden of  
NOTE Confidence: 0.9647679  
01:13:23.489 --> 01:13:24.229 the patient  
NOTE Confidence: 0.8938188  
01:13:24.769 --> 01:13:26.150 and how does that,  
NOTE Confidence: 0.94957334

01:13:26.610 --> 01:13:27.670 leave the patient.  
NOTE Confidence: 0.999337

01:13:28.369 --> 01:13:30.385 And these things help us  
NOTE Confidence: 0.999337

01:13:30.385 --> 01:13:30.885 understand  
NOTE Confidence: 0.9678926

01:13:31.585 --> 01:13:33.104 what is the patient's own  
NOTE Confidence: 0.9678926

01:13:33.104 --> 01:13:34.625 kinetics because we have an  
NOTE Confidence: 0.9678926

01:13:34.625 --> 01:13:36.784 idea from trials of what  
NOTE Confidence: 0.9678926

01:13:36.784 --> 01:13:37.284 is  
NOTE Confidence: 0.96563053

01:13:37.985 --> 01:13:39.905 in in general, but all  
NOTE Confidence: 0.96563053

01:13:39.905 --> 01:13:41.125 patients are different.  
NOTE Confidence: 0.96168435

01:13:41.770 --> 01:13:43.610 So their renal function, their  
NOTE Confidence: 0.96168435

01:13:43.610 --> 01:13:44.510 liver function.  
NOTE Confidence: 0.9933391

01:13:44.889 --> 01:13:46.090 And I think once we  
NOTE Confidence: 0.9933391

01:13:46.090 --> 01:13:48.590 understand that, we can optimize  
NOTE Confidence: 0.9933391

01:13:48.729 --> 01:13:49.550 the doses  
NOTE Confidence: 0.99886334

01:13:50.250 --> 01:13:50.750 to  
NOTE Confidence: 0.9968412

01:13:51.449 --> 01:13:51.929 more

NOTE Confidence: 0.959723  
01:13:52.570 --> 01:13:54.830 give a higher dose upfront  
NOTE Confidence: 0.959723  
01:13:54.969 --> 01:13:56.489 or a lower dose to  
NOTE Confidence: 0.959723  
01:13:56.489 --> 01:13:57.469 certain patients,  
NOTE Confidence: 0.9993561  
01:13:57.825 --> 01:13:58.945 which is going to be  
NOTE Confidence: 0.9993561  
01:13:58.945 --> 01:13:59.445 helpful  
NOTE Confidence: 0.9830487  
01:14:00.064 --> 01:14:00.564 into  
NOTE Confidence: 0.9616121  
01:14:00.945 --> 01:14:03.125 optimizing this therapy into,  
NOTE Confidence: 0.7783173  
01:14:04.465 --> 01:14:04.625 more,  
NOTE Confidence: 0.99694663  
01:14:06.864 --> 01:14:08.325 specific for each  
NOTE Confidence: 0.93487716  
01:14:08.705 --> 01:14:09.205 scenario.  
NOTE Confidence: 0.99783367  
01:14:10.689 --> 01:14:11.969 Yep. No. I I agree.  
NOTE Confidence: 0.99783367  
01:14:11.969 --> 01:14:13.090 I'm looking forward to that  
NOTE Confidence: 0.99783367  
01:14:13.090 --> 01:14:14.530 also in terms of tailoring  
NOTE Confidence: 0.99783367  
01:14:14.530 --> 01:14:15.030 treatments.  
NOTE Confidence: 0.9979422  
01:14:16.210 --> 01:14:18.050 I'll maybe mention something that  
NOTE Confidence: 0.9979422

01:14:18.050 --> 01:14:19.250 I think about in terms  
NOTE Confidence: 0.9979422

01:14:19.250 --> 01:14:20.389 of systemic treatment.  
NOTE Confidence: 0.9869132

01:14:21.489 --> 01:14:22.210 You know, I think as  
NOTE Confidence: 0.9869132

01:14:22.210 --> 01:14:23.824 our patients do better and  
NOTE Confidence: 0.9869132

01:14:23.824 --> 01:14:24.564 live longer,  
NOTE Confidence: 0.9944859

01:14:25.104 --> 01:14:26.304 we also wanna be thinking  
NOTE Confidence: 0.9944859

01:14:26.304 --> 01:14:28.064 about side effects and thinking  
NOTE Confidence: 0.9944859

01:14:28.064 --> 01:14:29.425 about kind of risk benefit  
NOTE Confidence: 0.9944859

01:14:29.425 --> 01:14:29.925 ratio.  
NOTE Confidence: 0.9952304

01:14:30.304 --> 01:14:31.925 For our patients with pancreatic  
NOTE Confidence: 0.9952304

01:14:32.064 --> 01:14:33.665 neuroendocrine tumors, many of them  
NOTE Confidence: 0.9952304

01:14:33.665 --> 01:14:34.324 will receive  
NOTE Confidence: 0.96853185

01:14:35.000 --> 01:14:36.840 both an alkylating agent like  
NOTE Confidence: 0.96853185

01:14:36.840 --> 01:14:37.340 temozolomide  
NOTE Confidence: 0.9540213

01:14:37.800 --> 01:14:38.840 and will go on to  
NOTE Confidence: 0.9540213

01:14:38.840 --> 01:14:39.240 receive,

NOTE Confidence: 0.87984055  
01:14:40.760 --> 01:14:41.740 lutetium dotatate,  
NOTE Confidence: 0.93984  
01:14:42.520 --> 01:14:43.960 both of which carry some  
NOTE Confidence: 0.93984  
01:14:43.960 --> 01:14:44.460 risk  
NOTE Confidence: 0.98620266  
01:14:44.760 --> 01:14:46.300 for secondary myelodysplastic  
NOTE Confidence: 0.9996971  
01:14:46.760 --> 01:14:47.260 syndrome.  
NOTE Confidence: 0.99091524  
01:14:47.640 --> 01:14:48.945 I get asked this both  
NOTE Confidence: 0.99091524  
01:14:48.945 --> 01:14:50.704 by patients and by treating  
NOTE Confidence: 0.99091524  
01:14:50.704 --> 01:14:52.545 physicians of sort of how  
NOTE Confidence: 0.99091524  
01:14:52.545 --> 01:14:54.165 how real is that risk.  
NOTE Confidence: 0.99091524  
01:14:54.465 --> 01:14:55.844 I think both independently  
NOTE Confidence: 0.96228886  
01:14:56.145 --> 01:14:57.425 carry about a two to  
NOTE Confidence: 0.96228886  
01:14:57.425 --> 01:14:58.645 three percent risk.  
NOTE Confidence: 0.9404087  
01:14:59.025 --> 01:14:59.525 But,  
NOTE Confidence: 0.9708487  
01:15:00.625 --> 01:15:02.704 sequentially and cumulatively, that risk  
NOTE Confidence: 0.9708487  
01:15:02.704 --> 01:15:03.750 may actually be higher, and  
NOTE Confidence: 0.9708487

01:15:03.750 --> 01:15:04.869 I think we really need  
NOTE Confidence: 0.9708487

01:15:04.869 --> 01:15:06.229 better predictors of that  
NOTE Confidence: 0.9954029

01:15:07.030 --> 01:15:07.829 of who may be at  
NOTE Confidence: 0.9954029

01:15:07.829 --> 01:15:08.710 risk for that. I don't  
NOTE Confidence: 0.9954029

01:15:08.710 --> 01:15:10.150 know, Gabby, if you have  
NOTE Confidence: 0.9954029

01:15:10.150 --> 01:15:11.210 any thoughts on that.  
NOTE Confidence: 0.9991747

01:15:12.150 --> 01:15:13.909 Yeah. No. I definitely agree.  
NOTE Confidence: 0.9991747

01:15:13.909 --> 01:15:16.150 I think we currently don't  
NOTE Confidence: 0.9991747

01:15:16.150 --> 01:15:16.650 have  
NOTE Confidence: 0.99868

01:15:17.215 --> 01:15:17.875 a great  
NOTE Confidence: 0.9994129

01:15:18.415 --> 01:15:18.915 biomarker  
NOTE Confidence: 0.95965546

01:15:19.375 --> 01:15:20.975 that predicts who are the  
NOTE Confidence: 0.95965546

01:15:20.975 --> 01:15:22.515 patients at higher risk,  
NOTE Confidence: 0.96766883

01:15:22.895 --> 01:15:25.074 and we probably should be  
NOTE Confidence: 0.96766883

01:15:25.135 --> 01:15:26.495 starting to look to look  
NOTE Confidence: 0.96766883

01:15:26.495 --> 01:15:27.235 at genetics

NOTE Confidence: 0.9846074  
01:15:27.535 --> 01:15:28.195 to see  
NOTE Confidence: 0.967802  
01:15:28.655 --> 01:15:30.849 patients who have some alteration  
NOTE Confidence: 0.967802  
01:15:31.070 --> 01:15:31.809 or something  
NOTE Confidence: 0.9982501  
01:15:32.349 --> 01:15:34.130 that could make them  
NOTE Confidence: 0.98264664  
01:15:34.670 --> 01:15:36.590 more likely for that. And  
NOTE Confidence: 0.98264664  
01:15:36.590 --> 01:15:37.790 even though they don't have  
NOTE Confidence: 0.98264664  
01:15:37.790 --> 01:15:39.329 any symptoms or any,  
NOTE Confidence: 0.83900064  
01:15:40.590 --> 01:15:42.349 exhibit any changes yet, the  
NOTE Confidence: 0.83900064  
01:15:42.349 --> 01:15:43.780 sequential link for those specific  
NOTE Confidence: 0.83900064  
01:15:43.780 --> 01:15:45.125 patients may be more  
NOTE Confidence: 0.88826954  
01:15:46.385 --> 01:15:46.885 risky,  
NOTE Confidence: 0.9066014  
01:15:47.185 --> 01:15:48.385 and I don't think we  
NOTE Confidence: 0.9066014  
01:15:48.385 --> 01:15:49.505 have that data. I think  
NOTE Confidence: 0.9066014  
01:15:49.505 --> 01:15:51.205 that's definitely to come.  
NOTE Confidence: 0.99917257  
01:15:51.585 --> 01:15:52.085 Great.  
NOTE Confidence: 0.95399934

01:15:52.465 --> 01:15:53.685 Well, I'll ask our audience  
NOTE Confidence: 0.95399934

01:15:53.905 --> 01:15:55.185 to pose us questions. But  
NOTE Confidence: 0.95399934

01:15:55.185 --> 01:15:56.305 if in the absence of  
NOTE Confidence: 0.95399934

01:15:56.305 --> 01:15:57.345 those, I'll do one round  
NOTE Confidence: 0.95399934

01:15:57.345 --> 01:15:58.840 of sort of a final  
NOTE Confidence: 0.95399934

01:15:58.840 --> 01:16:00.860 forward thinking question for everybody.  
NOTE Confidence: 0.95399934

01:16:00.920 --> 01:16:02.360 Maybe we'll go kind of  
NOTE Confidence: 0.95399934

01:16:02.360 --> 01:16:03.479 in the same order that  
NOTE Confidence: 0.95399934

01:16:03.479 --> 01:16:05.020 we, gave presentations.  
NOTE Confidence: 0.99324864

01:16:05.320 --> 01:16:05.820 So,  
NOTE Confidence: 0.8866608

01:16:06.280 --> 01:16:07.260 so doctor Klimstra,  
NOTE Confidence: 0.95648384

01:16:08.120 --> 01:16:09.740 are you what what either  
NOTE Confidence: 0.95648384

01:16:09.960 --> 01:16:11.240 are you hopeful for in  
NOTE Confidence: 0.95648384

01:16:11.240 --> 01:16:12.200 the field or if there's  
NOTE Confidence: 0.95648384

01:16:12.200 --> 01:16:13.640 an unanswered question you'd be  
NOTE Confidence: 0.95648384

01:16:13.640 --> 01:16:15.155 really excited to look at?

NOTE Confidence: 0.9718524

01:16:15.854 --> 01:16:16.895 Yeah. That's a it's a

NOTE Confidence: 0.9718524

01:16:16.895 --> 01:16:17.635 great question.

NOTE Confidence: 0.96546984

01:16:18.735 --> 01:16:19.934 You know, the and we've

NOTE Confidence: 0.96546984

01:16:19.934 --> 01:16:21.375 talked about this privately. I

NOTE Confidence: 0.96546984

01:16:21.375 --> 01:16:22.335 think one of the,

NOTE Confidence: 0.9950167

01:16:22.895 --> 01:16:24.735 great advances that you showed

NOTE Confidence: 0.9950167

01:16:24.735 --> 01:16:26.195 in your talk is the,

NOTE Confidence: 0.9800112

01:16:26.735 --> 01:16:28.655 plethora of different therapeutic options

NOTE Confidence: 0.9800112

01:16:28.655 --> 01:16:29.635 that now exist,

NOTE Confidence: 0.9443271

01:16:30.079 --> 01:16:31.760 particularly for pancreas, but for

NOTE Confidence: 0.9443271

01:16:31.760 --> 01:16:32.659 for all NETs.

NOTE Confidence: 0.9788117

01:16:33.760 --> 01:16:34.960 And, you know, most of

NOTE Confidence: 0.9788117

01:16:34.960 --> 01:16:37.199 these patients will receive multiple

NOTE Confidence: 0.9788117

01:16:37.199 --> 01:16:38.479 different agents over the course

NOTE Confidence: 0.9788117

01:16:38.479 --> 01:16:39.380 of their disease.

NOTE Confidence: 0.95612484

01:16:39.760 --> 01:16:41.199 And it remains an open  
NOTE Confidence: 0.95612484

01:16:41.199 --> 01:16:42.500 question how to,  
NOTE Confidence: 0.99157715

01:16:44.400 --> 01:16:44.900 strategize  
NOTE Confidence: 0.9668689

01:16:45.855 --> 01:16:47.455 and how to stage these,  
NOTE Confidence: 0.9953996

01:16:47.935 --> 01:16:49.535 based on what patients are  
NOTE Confidence: 0.9953996

01:16:49.535 --> 01:16:50.915 likely to respond to.  
NOTE Confidence: 0.998645

01:16:51.215 --> 01:16:53.055 Unfortunately, we really don't have  
NOTE Confidence: 0.998645

01:16:53.055 --> 01:16:53.955 great biomarkers  
NOTE Confidence: 0.97746795

01:16:54.255 --> 01:16:56.095 for these agents. Even some  
NOTE Confidence: 0.97746795

01:16:56.095 --> 01:16:58.255 of the somewhat targeted agents  
NOTE Confidence: 0.97746795

01:16:58.255 --> 01:16:59.455 where you could intuit a  
NOTE Confidence: 0.97746795

01:16:59.455 --> 01:16:59.955 biomarker,  
NOTE Confidence: 0.9953723

01:17:00.439 --> 01:17:01.639 it hasn't been developed to  
NOTE Confidence: 0.9953723

01:17:01.639 --> 01:17:02.920 the point where it's clinically  
NOTE Confidence: 0.9953723

01:17:02.920 --> 01:17:04.139 useful. So for me,  
NOTE Confidence: 0.9992113

01:17:04.600 --> 01:17:05.800 what would be an exciting

NOTE Confidence: 0.9992113  
01:17:05.800 --> 01:17:08.119 problem to address is to  
NOTE Confidence: 0.9992113  
01:17:08.119 --> 01:17:08.619 identify  
NOTE Confidence: 0.81798863  
01:17:08.920 --> 01:17:09.420 therapeutic,  
NOTE Confidence: 0.9945326  
01:17:09.880 --> 01:17:11.420 biomarkers that we can test,  
NOTE Confidence: 0.9906326  
01:17:12.040 --> 01:17:13.719 in the tumor tissue by  
NOTE Confidence: 0.9906326  
01:17:13.719 --> 01:17:15.420 genetic sequencing or immunohistochemistry  
NOTE Confidence: 0.9861001  
01:17:15.960 --> 01:17:17.075 or even  
NOTE Confidence: 0.9905666  
01:17:17.535 --> 01:17:18.035 AI.  
NOTE Confidence: 0.92814463  
01:17:19.215 --> 01:17:21.314 Sounds good. Alright. Doctor Kunstman,  
NOTE Confidence: 0.9418289  
01:17:21.695 --> 01:17:23.635 on to you. Same question.  
NOTE Confidence: 0.9672438  
01:17:24.495 --> 01:17:26.415 Yeah. I mean, I'm very  
NOTE Confidence: 0.9672438  
01:17:26.415 --> 01:17:28.814 excited about the availability of  
NOTE Confidence: 0.9672438  
01:17:28.814 --> 01:17:30.335 the neoadjuvant approach for these  
NOTE Confidence: 0.9672438  
01:17:30.335 --> 01:17:30.835 tumors.  
NOTE Confidence: 0.96744967  
01:17:32.360 --> 01:17:33.479 You know, if we can  
NOTE Confidence: 0.96744967

01:17:33.479 --> 01:17:35.320 clear these patients surgically of  
NOTE Confidence: 0.96744967

01:17:35.320 --> 01:17:36.679 their disease to r zero,  
NOTE Confidence: 0.96744967

01:17:36.679 --> 01:17:38.219 they do incredibly well.  
NOTE Confidence: 0.9815712

01:17:39.800 --> 01:17:40.460 You know,  
NOTE Confidence: 0.9857011

01:17:41.479 --> 01:17:43.099 even for particularly  
NOTE Confidence: 0.9886243

01:17:43.960 --> 01:17:45.639 innovative surgeons, there are just  
NOTE Confidence: 0.9886243

01:17:45.639 --> 01:17:47.260 tumors that we need cytoreduction  
NOTE Confidence: 0.9886243

01:17:47.535 --> 01:17:49.155 to enable that to happen.  
NOTE Confidence: 0.8525924

01:17:51.215 --> 01:17:51.875 You know,  
NOTE Confidence: 0.8776781

01:17:52.335 --> 01:17:53.395 and and I think  
NOTE Confidence: 0.9569192

01:17:53.854 --> 01:17:54.895 in the future, in the  
NOTE Confidence: 0.9569192

01:17:54.895 --> 01:17:56.095 next, you know, in the  
NOTE Confidence: 0.9569192

01:17:56.095 --> 01:17:57.215 present and in the next  
NOTE Confidence: 0.9569192

01:17:57.215 --> 01:17:58.354 few years in particular,  
NOTE Confidence: 0.9592863

01:17:59.055 --> 01:18:00.515 we're gonna have the opportunity  
NOTE Confidence: 0.9592863

01:18:00.814 --> 01:18:03.080 to offer curative approaches to

NOTE Confidence: 0.9592863

01:18:03.080 --> 01:18:04.200 patients that in the past

NOTE Confidence: 0.9592863

01:18:04.200 --> 01:18:05.320 we never would have considered

NOTE Confidence: 0.9592863

01:18:05.320 --> 01:18:05.820 it.

NOTE Confidence: 0.9703588

01:18:07.400 --> 01:18:08.520 You know, I think part

NOTE Confidence: 0.9703588

01:18:08.520 --> 01:18:09.100 of that,

NOTE Confidence: 0.9908222

01:18:10.680 --> 01:18:11.960 one of the downsides is

NOTE Confidence: 0.9908222

01:18:11.960 --> 01:18:13.500 that means there's increasing complexity

NOTE Confidence: 0.9811961

01:18:13.815 --> 01:18:15.575 because there's such heterogeneity both

NOTE Confidence: 0.9811961

01:18:15.575 --> 01:18:16.535 in these tumors and the

NOTE Confidence: 0.9811961

01:18:16.535 --> 01:18:18.695 therapeutic options. It creates some

NOTE Confidence: 0.9811961

01:18:18.695 --> 01:18:20.155 some challenges because

NOTE Confidence: 0.99754363

01:18:20.535 --> 01:18:22.635 sequencing of treatments really matters,

NOTE Confidence: 0.9403878

01:18:23.655 --> 01:18:24.715 in these patients.

NOTE Confidence: 0.9918985

01:18:25.495 --> 01:18:26.535 But I think that's really

NOTE Confidence: 0.9918985

01:18:26.535 --> 01:18:27.655 exciting because a lot of

NOTE Confidence: 0.9918985

01:18:27.655 --> 01:18:28.620 patients, we sort of had  
NOTE Confidence: 0.9918985

01:18:28.620 --> 01:18:30.060 to relegate them to chronic  
NOTE Confidence: 0.9918985

01:18:30.060 --> 01:18:31.040 disease status.  
NOTE Confidence: 0.989919

01:18:31.580 --> 01:18:32.300 We might be able to  
NOTE Confidence: 0.989919

01:18:32.300 --> 01:18:33.740 offer a curative option with  
NOTE Confidence: 0.989919

01:18:33.740 --> 01:18:34.400 a combination  
NOTE Confidence: 0.841397

01:18:34.860 --> 01:18:36.460 of of treatments, both they're  
NOTE Confidence: 0.841397

01:18:36.460 --> 01:18:39.680 anoxic, surgical, medical, cytotoxic, etcetera.  
NOTE Confidence: 0.9403614

01:18:40.854 --> 01:18:43.175 Yep. Yep. Totally agree. Alright.  
NOTE Confidence: 0.9403614

01:18:43.175 --> 01:18:44.074 Doctor Spielberg.  
NOTE Confidence: 0.9841794

01:18:45.655 --> 01:18:46.235 I think,  
NOTE Confidence: 0.999485

01:18:47.494 --> 01:18:48.235 the combination  
NOTE Confidence: 0.7150836

01:18:48.614 --> 01:18:49.114 approaches  
NOTE Confidence: 0.88857436

01:18:49.814 --> 01:18:50.795 either with  
NOTE Confidence: 0.9907353

01:18:51.255 --> 01:18:52.314 different particles  
NOTE Confidence: 0.9778667

01:18:53.030 --> 01:18:55.350 or different drugs and moving

NOTE Confidence: 0.9778667  
01:18:55.350 --> 01:18:56.650 from a palliative,  
NOTE Confidence: 0.9894458  
01:18:58.469 --> 01:19:00.729 setting into a curative setting.  
NOTE Confidence: 0.9431459  
01:19:01.189 --> 01:19:02.390 I think when we talk  
NOTE Confidence: 0.9431459  
01:19:02.390 --> 01:19:03.910 about other types of,  
NOTE Confidence: 0.9739713  
01:19:05.364 --> 01:19:07.445 radiation particles, we may be  
NOTE Confidence: 0.9739713  
01:19:07.445 --> 01:19:10.585 able to get different effects.  
NOTE Confidence: 0.9739713  
01:19:10.885 --> 01:19:11.625 And then,  
NOTE Confidence: 0.98889077  
01:19:12.965 --> 01:19:14.165 as we move into this  
NOTE Confidence: 0.98889077  
01:19:14.165 --> 01:19:16.344 field, hopefully, we'll get into  
NOTE Confidence: 0.9970577  
01:19:16.965 --> 01:19:17.465 curative  
NOTE Confidence: 0.97420883  
01:19:18.030 --> 01:19:20.189 rather than just palliation, which  
NOTE Confidence: 0.97420883  
01:19:20.189 --> 01:19:21.250 is really the goal.  
NOTE Confidence: 0.94614446  
01:19:21.870 --> 01:19:22.370 Yep.  
NOTE Confidence: 0.98579  
01:19:23.150 --> 01:19:24.670 Well, I wanna thank all  
NOTE Confidence: 0.98579  
01:19:24.670 --> 01:19:25.550 of you for,  
NOTE Confidence: 0.9739521

01:19:25.950 --> 01:19:27.229 joining me this evening for  
NOTE Confidence: 0.9739521

01:19:27.229 --> 01:19:28.210 a really great  
NOTE Confidence: 0.95711285

01:19:28.590 --> 01:19:30.705 great presentations and great discussion.  
NOTE Confidence: 0.95711285

01:19:30.705 --> 01:19:32.005 I share your enthusiasm  
NOTE Confidence: 0.9988745

01:19:32.305 --> 01:19:33.505 about the future, and I'm  
NOTE Confidence: 0.9988745

01:19:33.505 --> 01:19:35.025 really excited about the questions  
NOTE Confidence: 0.9988745

01:19:35.025 --> 01:19:36.245 that we can ask together.  
NOTE Confidence: 0.98568124

01:19:37.185 --> 01:19:37.685 So,  
NOTE Confidence: 0.9924792

01:19:38.225 --> 01:19:39.345 thank you to the audience  
NOTE Confidence: 0.9924792

01:19:39.345 --> 01:19:40.405 for listening tonight,  
NOTE Confidence: 0.9863167

01:19:40.945 --> 01:19:41.425 and,  
NOTE Confidence: 0.98652804

01:19:41.905 --> 01:19:42.785 we will see you next  
NOTE Confidence: 0.98652804

01:19:42.785 --> 01:19:44.005 time. Thanks, everybody.