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 nirnapine 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 RADIENT three and RADIENT

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 RADIENT three was for

NOTE Confidence: 0.9873029

00:10:48.554 --> 00:10:51.115 pancreatic NET. RADIENT 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 chromogranium

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 beast 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

00:47:47.609 --> 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

00:47:52.809 --> 00:47:54.250 So if a minimally invasive

NOTE Confidence: 0.99518055

00:47:54.250 --> 00:47:55.289 approach is thought to be

NOTE Confidence: 0.99518055

00:47:55.289 --> 00:47:57.069 appropriate, one thing we crucially

NOTE Confidence: 0.99518055

00:47:57.210 --> 00:47:58.349 must do as neuroendocrine

NOTE Confidence: 0.999408

00:47:58.890 --> 00:47:59.390 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 Spilberg 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 Spilberg 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.