WEBVTT

NOTE duration:"00:56:42"

NOTE recognizability:0.856

NOTE language:en-us

NOTE Confidence: 0.828136985

00:00:03.150 --> 00:00:04.290 Alright, let's.

NOTE Confidence: 0.855476307142857

00:00:12.390 --> 00:00:16.114 Excellent, we see some folks joining us.

NOTE Confidence: 0.855476307142857

00:00:16.120 --> 00:00:18.382 And so we'll give it another

NOTE Confidence: 0.855476307142857

00:00:18.382 --> 00:00:20.380 minute or two. Let's see.

NOTE Confidence: 0.639954345

00:00:22.550 --> 00:00:28.890 Doctor yagi doctor Corwin. Excellent.

NOTE Confidence: 0.8207009

00:00:31.060 --> 00:00:34.480 Alright, so I think as folks are

NOTE Confidence: 0.8207009

00:00:34.480 --> 00:00:35.860 joining we're gonna get started.

NOTE Confidence: 0.8207009

00:00:35.860 --> 00:00:37.024 Good afternoon everyone.

NOTE Confidence: 0.8207009

00:00:37.024 --> 00:00:40.448 My name is Andres it Rick and I welcome

NOTE Confidence: 0.8207009

00:00:40.448 --> 00:00:45.070 you to the Yale Sleep Center seminars.

NOTE Confidence: 0.8207009

00:00:45.070 --> 00:00:47.662 And just a few announcements before

NOTE Confidence: 0.8207009

00:00:47.662 --> 00:00:49.470 I introduce today's speakers,

NOTE Confidence: 0.8207009

00:00:49.470 --> 00:00:51.990 there are two first, please take a

NOTE Confidence: 0.8207009

1

00:00:51.990 --> 00:00:54.487 moment to ensure that you are muted.

NOTE Confidence: 0.8207009

00:00:54.490 --> 00:00:57.367 If you'd like to receive CME credit,

NOTE Confidence: 0.8207009

00:00:57.370 --> 00:00:59.064 please see the chat room for instructions

NOTE Confidence: 0.8207009

00:00:59.064 --> 00:01:00.530 that we posted there by Debbie.

NOTE Confidence: 0.8207009

00:01:00.530 --> 00:01:02.609 And if you're not registered with the

NOTE Confidence: 0.8207009

00:01:02.609 --> 00:01:05.169 LC any you will first need to do that

NOTE Confidence: 0.8207009

00:01:05.170 --> 00:01:07.588 and recording of this session will

NOTE Confidence: 0.8207009

00:01:07.588 --> 00:01:09.559 eventually be available within two

NOTE Confidence: 0.8207009

00:01:09.559 --> 00:01:11.927 weeks on the link provided in the chat.

NOTE Confidence: 0.8207009

00:01:11.930 --> 00:01:14.027 And if you do have questions during the talk,

NOTE Confidence: 0.8207009

00:01:14.030 --> 00:01:15.818 please make use of the chatroom

NOTE Confidence: 0.8207009

00:01:15.818 --> 00:01:17.799 throughout this hour I'll be moderating.

NOTE Confidence: 0.8207009

00:01:17.800 --> 00:01:19.900 So I'll be making sure that

NOTE Confidence: 0.8207009

00:01:19.900 --> 00:01:21.300 your questions are answered,

NOTE Confidence: 0.8207009

00:01:21.300 --> 00:01:24.268 and if you do wanna have answer.

NOTE Confidence: 0.8207009

00:01:24.270 --> 00:01:25.042 Ask a question person,

NOTE Confidence: 0.8207009

00:01:25.042 --> 00:01:26.729 let me know and I'll have you need it.

NOTE Confidence: 0.8207009

00:01:26.730 --> 00:01:28.706 So without further ado,

NOTE Confidence: 0.8207009

00:01:28.706 --> 00:01:32.139 I wanted to introduce today's speakers and

NOTE Confidence: 0.8207009

00:01:32.139 --> 00:01:35.187 we are pleased and honored to have two,

NOTE Confidence: 0.8207009

00:01:35.190 --> 00:01:39.420 not one doctors from the Yale.

NOTE Confidence: 0.8207009

00:01:39.420 --> 00:01:40.108 Surgical Department,

NOTE Confidence: 0.8207009

00:01:40.108 --> 00:01:42.172 division of auto Laryngologist in head

NOTE Confidence: 0.8207009

00:01:42.172 --> 00:01:44.785 and neck surgery and first speaker

NOTE Confidence: 0.8207009

00:01:44.785 --> 00:01:48.050 today is Doctor Bruno Cardoso and he

NOTE Confidence: 0.8207009

00:01:48.050 --> 00:01:50.640 is a UConn graduate with a degree

NOTE Confidence: 0.8207009

00:01:50.640 --> 00:01:53.550 in plant Sciences and where he also

NOTE Confidence: 0.8207009

00:01:53.550 --> 00:01:56.029 earned his RN and worked as a nurse.

NOTE Confidence: 0.8207009

00:01:56.030 --> 00:01:58.935 Prior to earning his MD at University

NOTE Confidence: 0.8207009

00:01:58.935 --> 00:02:01.270 of Vermont where he was also selected

NOTE Confidence: 0.8207009

00:02:01.270 --> 00:02:03.224 into the Gold humanism Art Societies

NOTE Confidence: 0.8207009

00:02:03.224 --> 00:02:05.169 which was the great accomplishment

NOTE Confidence: 0.8207009

00:02:05.169 --> 00:02:06.835 and I'm sure that alright experience

NOTE Confidence: 0.8207009

00:02:06.835 --> 00:02:08.632 was an incredible asset to him and

NOTE Confidence: 0.8207009

00:02:08.632 --> 00:02:09.807 those who worked with Burnell.

NOTE Confidence: 0.8207009

00:02:09.810 --> 00:02:12.267 As he completed his surgical residency and

NOTE Confidence: 0.8207009

00:02:12.267 --> 00:02:15.925 E NT at Yale and served as a chief resident.

NOTE Confidence: 0.8207009

00:02:15.930 --> 00:02:16.518 And so yeah,

NOTE Confidence: 0.8207009

00:02:16.518 --> 00:02:17.694 I was lucky enough to recruit.

NOTE Confidence: 0.8207009

00:02:17.700 --> 00:02:19.175 Brown was an assistant professor

NOTE Confidence: 0.8207009

00:02:19.175 --> 00:02:21.061 with areas of expertise that include

NOTE Confidence: 0.8207009

00:02:21.061 --> 00:02:22.836 surgery for obstructive sleep apnea,

NOTE Confidence: 0.8207009

00:02:22.840 --> 00:02:24.870 which will be the topic of today's

NOTE Confidence: 0.8207009

00:02:24.870 --> 00:02:26.584 discussion and so Bruno's published

NOTE Confidence: 0.8207009

00:02:26.584 --> 00:02:28.720 papers and journals such as cancer

NOTE Confidence: 0.8207009

00:02:28.782 --> 00:02:31.370 Medicine Laryngoscope and his partner

NOTE Confidence: 0.8207009

00:02:31.370 --> 00:02:34.010 crime today is Doctor Yang Lee,

4

NOTE Confidence: 0.8207009

00:02:34.010 --> 00:02:37.458 who is also an assistant professor at the.

NOTE Confidence: 0.8207009

00:02:37.460 --> 00:02:39.917 Of surgery at the yield division of

NOTE Confidence: 0.8207009

00:02:39.917 --> 00:02:42.586 oral head and neck surgery and Jen

NOTE Confidence: 0.8207009

00:02:42.586 --> 00:02:44.714 received her bachelor science in

NOTE Confidence: 0.8207009

00:02:44.714 --> 00:02:46.758 Biomedical Engineering from Colombia

NOTE Confidence: 0.8207009

00:02:46.760 --> 00:02:49.280 and then her MD from Penn State,

NOTE Confidence: 0.8207009

00:02:49.280 --> 00:02:51.576 and then she moved on to Aiken

NOTE Confidence: 0.8207009

00:02:51.576 --> 00:02:53.226 School of Medicine, Mount Sinai,

NOTE Confidence: 0.8207009

00:02:53.226 --> 00:02:55.224 where she completed her hand T

NOTE Confidence: 0.8207009

00:02:55.224 --> 00:02:57.675 residency and a fellowship and facial

NOTE Confidence: 0.8207009

00:02:57.675 --> 00:02:59.399 plastic and reconstructive surgery,

NOTE Confidence: 0.8207009

00:02:59.400 --> 00:03:01.724 and eventually she was recruited by Yale

NOTE Confidence: 0.8207009

00:03:01.724 --> 00:03:04.101 and has since been on faculty and fix

NOTE Confidence: 0.8207009

00:03:04.101 --> 00:03:06.470 since 2017 and is a gifted educator.

NOTE Confidence: 0.8207009

00:03:06.470 --> 00:03:07.806 I haven't received a.

NOTE Confidence: 0.8207009

00:03:07.806 --> 00:03:08.808 Faculty teaching award.

NOTE Confidence: 0.8207009

00:03:08.810 --> 00:03:12.208 In section of Eulerian Colegi and

NOTE Confidence: 0.8207009

00:03:12.208 --> 00:03:13.996 so Jen conducts research and has

NOTE Confidence: 0.8207009

00:03:13.996 --> 00:03:15.690 over 30 original publications in

NOTE Confidence: 0.8207009

00:03:15.690 --> 00:03:17.545 the domains of facial reconstruction

NOTE Confidence: 0.8207009

00:03:17.545 --> 00:03:19.729 in trauma and medical education.

NOTE Confidence: 0.8207009

00:03:19.730 --> 00:03:21.956 In all Rangala G and has published

NOTE Confidence: 0.8207009

00:03:21.956 --> 00:03:24.337 in journals like JAMA Surgery and

NOTE Confidence: 0.8207009

00:03:24.337 --> 00:03:26.110 Laryngoscope and a personal note.

NOTE Confidence: 0.8207009

00:03:26.110 --> 00:03:28.090 Both Bruno and Jen are kind,

NOTE Confidence: 0.8207009

00:03:28.090 --> 00:03:29.845 funny and outstanding clinicians and

NOTE Confidence: 0.8207009

00:03:29.845 --> 00:03:32.038 they have been amazing partners in

NOTE Confidence: 0.8207009

00:03:32.038 --> 00:03:33.566 initiating collaborative upper airway

NOTE Confidence: 0.8207009

00:03:33.566 --> 00:03:35.476 stimulation program here at Yale.

NOTE Confidence: 0.782133515238095

00:03:35.480 --> 00:03:37.447 Where you have had some early successes

NOTE Confidence: 0.782133515238095

00:03:37.447 --> 00:03:39.100 and also important learnings for this

NOTE Confidence: 0.782133515238095

00:03:39.100 --> 00:03:41.110 therapy in OSA so that further do you.

NOTE Confidence: 0.782133515238095

00:03:41.110 --> 00:03:43.630 I'm going to hand the conference over to

NOTE Confidence: 0.782133515238095

00:03:43.630 --> 00:03:46.429 Jen and Bruno who will talk to us today

NOTE Confidence: 0.782133515238095

00:03:46.429 --> 00:03:48.384 about upper airway stimulation updates.

NOTE Confidence: 0.8829319

00:03:50.900 --> 00:03:52.760 Excellent, thanks, Andre.

NOTE Confidence: 0.8829319

00:03:52.760 --> 00:03:55.100 Thank you Andre. To your credit,

NOTE Confidence: 0.8829319

00:03:55.100 --> 00:03:59.070 if we we can't do this without you, so so.

NOTE Confidence: 0.8829319

00:03:59.070 --> 00:04:00.550 Thanks for the warm introduction.

NOTE Confidence: 0.8829319

00:04:00.550 --> 00:04:02.220 Alright, so let's move on.

NOTE Confidence: 0.8829319

00:04:02.220 --> 00:04:03.885 OK, so today what we want to talk about

NOTE Confidence: 0.8829319

00:04:03.885 --> 00:04:05.543 and we're going to tag team a little

NOTE Confidence: 0.8829319

00:04:05.543 --> 00:04:07.296 bit and switch back and forth so that

NOTE Confidence: 0.8829319

00:04:07.296 --> 00:04:09.090 we keep you guys entertained and not

NOTE Confidence: 0.8829319

00:04:09.090 --> 00:04:11.505 bored like like doctors in Chuck said.

NOTE Confidence: 0.8829319

00:04:11.510 --> 00:04:13.344 This is kind of in the lull

NOTE Confidence: 0.8829319

00:04:13.344 --> 00:04:15.310 of the sleep circadian rhythm,

NOTE Confidence: 0.8829319

00:04:15.310 --> 00:04:17.634 so we want to keep things energized.

NOTE Confidence: 0.8829319

00:04:17.640 --> 00:04:19.820 So we're talking about hypoglossal

NOTE Confidence: 0.8829319

00:04:19.820 --> 00:04:21.128 nerve stimulation today.

NOTE Confidence: 0.8829319

00:04:21.130 --> 00:04:23.386 And this is a surgical treatment

NOTE Confidence: 0.8829319

00:04:23.386 --> 00:04:25.837 that is possible for some patients

NOTE Confidence: 0.8829319

00:04:25.837 --> 00:04:27.585 when PAP isn't working.

NOTE Confidence: 0.8829319

00:04:27.590 --> 00:04:29.816 Today we'll talk a little bit we

NOTE Confidence: 0.8829319

00:04:29.816 --> 00:04:31.106 we understand completely that

NOTE Confidence: 0.8829319

00:04:31.106 --> 00:04:32.780 this is a Sleep Medicine talk,

NOTE Confidence: 0.8829319

00:04:32.780 --> 00:04:35.364 and so we're going to just briefly go

NOTE Confidence: 0.8829319

00:04:35.364 --> 00:04:37.262 over the diagnosis and epidemiology

NOTE Confidence: 0.8829319

00:04:37.262 --> 00:04:40.557 of OSA and really focus in on the

NOTE Confidence: 0.8829319

00:04:40.557 --> 00:04:42.897 advantages of hip nerve stimulation.

NOTE Confidence: 0.8829319

00:04:42.900 --> 00:04:44.412 We're going to talk about the

NOTE Confidence: 0.8829319

00:04:44.412 --> 00:04:45.776 history and the development and

NOTE Confidence: 0.8829319

00:04:45.776 --> 00:04:47.606 some of the evidence that supports

NOTE Confidence: 0.8829319

00:04:47.606 --> 00:04:48.521 hypoglossal nerve stimulation.

NOTE Confidence: 0.8829319

00:04:48.530 --> 00:04:49.349 And then lastly,

NOTE Confidence: 0.8829319

00:04:49.349 --> 00:04:50.714 we'll talk about the surgery,

NOTE Confidence: 0.8829319

00:04:50.720 --> 00:04:51.893 what it entails,

NOTE Confidence: 0.8829319

00:04:51.893 --> 00:04:54.630 and then of course the the criteria

NOTE Confidence: 0.8829319

00:04:54.713 --> 00:04:57.348 and the complications from surgery.

NOTE Confidence: 0.8829319

00:04:57.350 --> 00:04:59.384 Diagnosis of OSA can be through

NOTE Confidence: 0.8829319

00:04:59.384 --> 00:05:01.190 two different types of tests.

NOTE Confidence: 0.8829319

00:05:01.190 --> 00:05:03.458 As you know there's a polysomnography PSG

NOTE Confidence: 0.8829319

00:05:03.458 --> 00:05:05.997 and it could be a full or split night,

NOTE Confidence: 0.8829319

00:05:06.000 --> 00:05:07.568 or it could be a home sleep

NOTE Confidence: 0.8829319

00:05:07.568 --> 00:05:08.898 apnea test or an age sat,

NOTE Confidence: 0.8829319

00:05:08.900 --> 00:05:12.464 and so based on you know where you are,

NOTE Confidence: 0.8829319

00:05:12.470 --> 00:05:12.718 what,

NOTE Confidence: 0.8829319

00:05:12.718 --> 00:05:14.702 what types of numbers that you're looking at.

NOTE Confidence: 0.8829319

00:05:14.710 --> 00:05:17.766 You can have a calculation of an AHI,

NOTE Confidence: 0.8829319

00:05:17.770 --> 00:05:20.266 which is an apnea hypopnea index,

NOTE Confidence: 0.8829319

00:05:20.270 --> 00:05:21.800 or an RDIOK,

NOTE Confidence: 0.8829319

00:05:21.800 --> 00:05:24.860 which is the respiratory disturbance index.

NOTE Confidence: 0.8829319

00:05:24.860 --> 00:05:27.184 All these are our measurements of sleep.

NOTE Confidence: 0.8829319

00:05:27.190 --> 00:05:28.972 Fragmentation as well as the number

NOTE Confidence: 0.8829319

00:05:28.972 --> 00:05:30.509 of times throughout the night

NOTE Confidence: 0.8829319

00:05:30.509 --> 00:05:31.979 that your oxygen level drops,

NOTE Confidence: 0.8829319

00:05:31.980 --> 00:05:34.620 or that the air flow decreases

NOTE Confidence: 0.8829319

00:05:34.620 --> 00:05:36.380 through the upper airway.

NOTE Confidence: 0.8829319

00:05:36.380 --> 00:05:38.150 For the home sleep apnea test,

NOTE Confidence: 0.8829319

00:05:38.150 --> 00:05:39.650 they measure similar things,

NOTE Confidence: 0.8829319

00:05:39.650 --> 00:05:41.900 but because they most hopes home

NOTE Confidence: 0.8829319

00:05:41.966 --> 00:05:44.130 sleep tests don't include an EEG,

NOTE Confidence: 0.8829319

00:05:44.130 --> 00:05:47.650 you can't actually have a total sleep time.

NOTE Confidence: 0.8829319

00:05:47.650 --> 00:05:48.516 In fact,

NOTE Confidence: 0.8829319

00:05:48.516 --> 00:05:51.547 they all of their respiratory events are

NOTE Confidence: 0.8829319

00:05:51.547 --> 00:05:54.747 measured and divided over the recording time.

NOTE Confidence: 0.8829319

00:05:54.750 --> 00:05:56.760 OK, so it's that's the denominator

NOTE Confidence: 0.8829319

00:05:56.760 --> 00:05:58.100 is different between the.

NOTE Confidence: 0.8829319

00:05:58.100 --> 00:05:58.465 Yes,

NOTE Confidence: 0.8829319

00:05:58.465 --> 00:06:00.655 she and the home state test

NOTE Confidence: 0.8829319

00:06:00.660 --> 00:06:05.200 essentially what's diagnostic of OSA.

NOTE Confidence: 0.8829319

00:06:05.200 --> 00:06:09.330 Is an HI or an Rd or REI?

NOTE Confidence: 0.8829319

00:06:09.330 --> 00:06:12.489 That's over 15 if you have no other symptoms,

NOTE Confidence: 0.8829319

00:06:12.490 --> 00:06:15.199 but if you have any symptoms like

NOTE Confidence: 0.8829319

00:06:15.199 --> 00:06:17.942 fatigue or headaches or any kind

NOTE Confidence: 0.8829319

00:06:17.942 --> 00:06:19.448 of cardiovascular comorbidity,

NOTE Confidence: 0.8829319

00:06:19.450 --> 00:06:22.636 then anything over 5 so 5 and over is

NOTE Confidence: 0.8829319

00:06:22.636 --> 00:06:25.129 diagnostic for obstructive sleep apnea.

NOTE Confidence: 0.8829319

00:06:25.130 --> 00:06:26.726 There are different criteria for mild,

NOTE Confidence: 0.8829319

00:06:26.730 --> 00:06:27.786 moderate and severe,

NOTE Confidence: 0.8829319

00:06:27.786 --> 00:06:30.250 but essentially it is 5 to 14

NOTE Confidence: 0.8829319

00:06:30.327 --> 00:06:32.087 would be considered mild.

NOTE Confidence: 0.8829319

00:06:32.090 --> 00:06:34.282 15 to 29 is moderate and then anything

NOTE Confidence: 0.8829319

00:06:34.282 --> 00:06:36.949 30 or above would be considered severe.

NOTE Confidence: 0.8829319

00:06:36.950 --> 00:06:38.720 OSA and I only mentioned these

NOTE Confidence: 0.8829319

00:06:38.720 --> 00:06:39.605 numbers because it's.

NOTE Confidence: 0.8829319

00:06:39.610 --> 00:06:41.590 Important for figuring out the criteria

NOTE Confidence: 0.8829319

00:06:41.590 --> 00:06:43.610 for patients when you're trying to

NOTE Confidence: 0.8829319

00:06:43.610 --> 00:06:45.554 figure out if they're good candidates

NOTE Confidence: 0.8829319

00:06:45.554 --> 00:06:47.190 for hypoglossal nerve stimulation.

NOTE Confidence: 0.88873878

00:06:49.010 --> 00:06:51.076 So in terms of epidemiology

NOTE Confidence: 0.88873878

00:06:51.076 --> 00:06:52.924 for obstructive sleep apnea,

NOTE Confidence: 0.92348406375

00:06:52.930 --> 00:06:55.130 we know that it's a very common disease.

NOTE Confidence: 0.92348406375

00:06:55.130 --> 00:06:58.386 We know that it's on the rise overtime.

NOTE Confidence: 0.92348406375

00:06:58.390 --> 00:07:00.620 Several population based studies have

NOTE Confidence: 0.92348406375

00:07:00.620 --> 00:07:03.826 shown prevalence of HI over 5 in the

NOTE Confidence: 0.92348406375

00:07:03.826 --> 00:07:06.303 population to be anywhere from 9 to 38%,

NOTE Confidence: 0.92348406375

00:07:06.303 --> 00:07:09.207 and differences in that number and that the

NOTE Confidence: 0.92348406375

00:07:09.207 --> 00:07:11.634 variability in that number can be related

NOTE Confidence: 0.92348406375

00:07:11.634 --> 00:07:14.118 to the diagnostic testing that was employed.

NOTE Confidence: 0.92348406375

00:07:14.120 --> 00:07:16.682 The definitions of OSA used in the

NOTE Confidence: 0.92348406375

00:07:16.682 --> 00:07:19.580 studies and also population demographics.

NOTE Confidence: 0.92348406375

00:07:19.580 --> 00:07:21.425 Prevalence studies have also shown

NOTE Confidence: 0.92348406375

00:07:21.425 --> 00:07:24.318 that the HI over 15 in a population

NOTE Confidence: 0.92348406375

00:07:24.318 --> 00:07:26.691 could be anywhere from 6 to 17%,

NOTE Confidence: 0.92348406375

00:07:26.691 --> 00:07:29.157 so just taking a conservative number,

NOTE Confidence: 0.92348406375

00:07:29.160 --> 00:07:31.896 say 10% of the population with an H,

NOTE Confidence: 0.92348406375

00:07:31.900 --> 00:07:34.410 I / 15% in the US would be about 33

NOTE Confidence: 0.92348406375

00:07:34.490 --> 00:07:37.080 million people in Connecticut alone,

NOTE Confidence: 0.92348406375

00:07:37.080 --> 00:07:39.284 about 350,000 people,

NOTE Confidence: 0.92348406375

00:07:39.284 --> 00:07:42.868 so quite a significant number of patients.

NOTE Confidence: 0.92348406375

00:07:42.870 --> 00:07:45.010 Prevalence increases with older age

NOTE Confidence: 0.92348406375

00:07:45.010 --> 00:07:48.029 in male gender and with higher BMI.

NOTE Confidence: 0.92348406375

00:07:48.030 --> 00:07:50.102 I just want to highlight the

NOTE Confidence: 0.92348406375

00:07:50.102 --> 00:07:51.750 older age factor here.

NOTE Confidence: 0.92348406375

00:07:51.750 --> 00:07:55.522 The prevalence really seems to go up

NOTE Confidence: 0.92348406375

00:07:55.522 --> 00:07:58.138 significantly after the age of 60,

NOTE Confidence: 0.92348406375

00:07:58.140 --> 00:08:00.960 with some studies showing patients in

NOTE Confidence: 0.92348406375

00:08:00.960 --> 00:08:04.160 this age range with an HI over 5 to

NOTE Confidence: 0.92348406375

00:08:04.160 --> 00:08:07.062 be 90% in males and up to 78% females,

NOTE Confidence: 0.92348406375

00:08:07.062 --> 00:08:09.414 and the risk of obstructive sleep apnea

NOTE Confidence: 0.92348406375

00:08:09.414 --> 00:08:11.274 and females increases significantly

NOTE Confidence: 0.92348406375

00:08:11.274 --> 00:08:13.226 in women after menopause.

NOTE Confidence: 0.8773388

00:08:15.400 --> 00:08:17.296 This slide is a little busy,

NOTE Confidence: 0.8773388

00:08:17.300 --> 00:08:19.532 but once I explain the colors I think it

NOTE Confidence: 0.8773388

00:08:19.532 --> 00:08:21.923 will start to make a little bit more sense.

NOTE Confidence: 0.8773388

00:08:21.930 --> 00:08:24.268 So we want to emphasize that positive

NOTE Confidence: 0.8773388

00:08:24.268 --> 00:08:26.384 airway pressure is the gold standard

NOTE Confidence: 0.8773388

00:08:26.384 --> 00:08:28.134 for therapy for OSA patients.

NOTE Confidence: 0.8773388

00:08:28.140 --> 00:08:30.510 But just in case the patient

NOTE Confidence: 0.8773388

00:08:30.510 --> 00:08:31.695 can't tolerate it,

NOTE Confidence: 0.8773388

00:08:31.700 --> 00:08:34.420 or for some reason it's just not working,

NOTE Confidence: 0.8773388

00:08:34.420 --> 00:08:35.620 then we have to consider hey,

NOTE Confidence: 0.8773388

00:08:35.620 --> 00:08:37.530 can we offer something sortable

NOTE Confidence: 0.8773388

00:08:37.530 --> 00:08:39.553 for these patients and what I

NOTE Confidence: 0.8773388

00:08:39.553 --> 00:08:41.299 want to highlight in this chart

NOTE Confidence: 0.8773388

00:08:41.299 --> 00:08:43.607 is that the blue the blue boxes?

NOTE Confidence: 0.8773388

00:08:43.607 --> 00:08:45.821 Are the different areas that we're

NOTE Confidence: 0.8773388

00:08:45.821 --> 00:08:48.017 looking at in terms of anatomy in

NOTE Confidence: 0.8773388

00:08:48.017 --> 00:08:50.285 terms of things that we want to assess

NOTE Confidence: 0.8773388

15

00:08:50.285 --> 00:08:52.260 and diagnose before we consider

NOTE Confidence: 0.8773388

00:08:52.260 --> 00:08:54.848 what kind of surgery we want to do.

NOTE Confidence: 0.8773388

00:08:54.850 --> 00:08:57.058 The yellow boxes or the different

NOTE Confidence: 0.8773388

00:08:57.058 --> 00:08:59.221 types of surgeries that we can

NOTE Confidence: 0.8773388

00:08:59.221 --> 00:09:00.786 consider to help treat OSA?

NOTE Confidence: 0.8773388

00:09:00.790 --> 00:09:02.314 It may not help it completely

NOTE Confidence: 0.8773388

00:09:02.314 --> 00:09:03.929 or cure them from their OSA,

NOTE Confidence: 0.8773388

00:09:03.930 --> 00:09:06.242 but it could make it more tolerable for

NOTE Confidence: 0.8773388

00:09:06.242 --> 00:09:08.974 them to use PAP or to use a dental device,

NOTE Confidence: 0.8773388

00:09:08.980 --> 00:09:10.690 etc.

NOTE Confidence: 0.8773388

00:09:10.690 --> 00:09:11.087 And.

NOTE Confidence: 0.8773388

00:09:11.087 --> 00:09:13.866 You'll see this chart kind of going

NOTE Confidence: 0.8773388

00:09:13.866 --> 00:09:16.695 from top left to bottom right and

NOTE Confidence: 0.8773388

00:09:16.695 --> 00:09:19.540 the yellow from the top to bottom.

NOTE Confidence: 0.8773388

00:09:19.540 --> 00:09:20.636 In general,

NOTE Confidence: 0.8773388

00:09:20.636 --> 00:09:24.060 OK goes from the least morbid or

NOTE Confidence: 0.8773388

00:09:24.060 --> 00:09:26.730 the the best tolerated to the

NOTE Confidence: 0.8773388

00:09:26.825 --> 00:09:29.416 least tolerated so nasal surgery

NOTE Confidence: 0.8773388

00:09:29.416 --> 00:09:31.018 so septal rhinoplasty.

NOTE Confidence: 0.8773388

00:09:31.020 --> 00:09:34.320 Zoar Turbinectomy's are very well tolerated.

NOTE Confidence: 0.8773388

00:09:34.320 --> 00:09:35.880 The hypoglossal nerve stimulator

NOTE Confidence: 0.8773388

00:09:35.880 --> 00:09:37.440 again very well tolerated,

NOTE Confidence: 0.8773388

00:09:37.440 --> 00:09:38.838 although it is an implant and

NOTE Confidence: 0.8773388

00:09:38.838 --> 00:09:40.696 then you go on to these other

NOTE Confidence: 0.8773388

00:09:40.696 --> 00:09:42.430 surgeries which are EU Triple P's.

NOTE Confidence: 0.8773388

00:09:42.430 --> 00:09:45.210 Or you willo palafrugell, plasties?

NOTE Confidence: 0.8773388

00:09:45.210 --> 00:09:47.268 That, or the glass ectomy's what?

NOTE Confidence: 0.8773388

00:09:47.270 --> 00:09:48.950 What that does is just remove

NOTE Confidence: 0.8773388

00:09:48.950 --> 00:09:50.439 excess tissue from the upper

NOTE Confidence: 0.8773388

00:09:50.439 --> 00:09:51.969 airway to create more space.

NOTE Confidence: 0.8773388

00:09:51.970 --> 00:09:53.590 Sometimes it works, sometimes it doesn't,

NOTE Confidence: 0.8773388

00:09:53.590 --> 00:09:54.570 but it's certainly very

NOTE Confidence: 0.8773388

00:09:54.570 --> 00:09:55.550 painful for the patient.

NOTE Confidence: 0.8773388

00:09:55.550 --> 00:09:57.548 OK for at least three weeks,

NOTE Confidence: 0.8773388

00:09:57.550 --> 00:09:59.646 really bad sore throat for like the worst

NOTE Confidence: 0.8773388

00:09:59.646 --> 00:10:01.845 sore throat they've ever had for three weeks,

NOTE Confidence: 0.8773388

00:10:01.850 --> 00:10:03.788 even on narcotics, so these are.

NOTE Confidence: 0.8773388

00:10:03.790 --> 00:10:06.324 And then you go onto the most

NOTE Confidence: 0.8773388

00:10:06.330 --> 00:10:07.830 or the least well tolerated,

NOTE Confidence: 0.8773388

00:10:07.830 --> 00:10:09.222 which are orthognathic surgeries,

NOTE Confidence: 0.8773388

00:10:09.222 --> 00:10:10.614 which where you're essentially

NOTE Confidence: 0.8773388

00:10:10.614 --> 00:10:12.070 expanding the facial skeleton,

NOTE Confidence: 0.8773388

00:10:12.070 --> 00:10:13.870 so that requires a lot of Bony work.

NOTE Confidence: 0.8773388

00:10:13.870 --> 00:10:16.117 A lot of soft tissue maneuvering and

NOTE Confidence: 0.8773388

00:10:16.117 --> 00:10:18.529 it changes the way the patients look.

NOTE Confidence: 0.8773388

00:10:18.530 --> 00:10:21.630 So so this is kind of in the order of

NOTE Confidence: 0.8773388

00:10:21.714 --> 00:10:24.726 what we think patients can tolerate.

NOTE Confidence: 0.8773388

00:10:24.730 --> 00:10:25.894 And in general,

NOTE Confidence: 0.8773388

00:10:25.894 --> 00:10:27.446 if they fail PAP,

NOTE Confidence: 0.8773388

00:10:27.450 --> 00:10:29.385 what we would try to do is figure out

NOTE Confidence: 0.8773388

00:10:29.385 --> 00:10:31.641 a way for them to get a surgery that

NOTE Confidence: 0.8773388

00:10:31.641 --> 00:10:33.406 will allow them to use their PAP.

NOTE Confidence: 0.8773388

00:10:33.410 --> 00:10:33.645 OK,

NOTE Confidence: 0.8773388

00:10:33.645 --> 00:10:35.290 so if they have any kind of

NOTE Confidence: 0.8773388

00:10:35.290 --> 00:10:36.460 nasal airway obstruction,

NOTE Confidence: 0.8773388

00:10:36.460 --> 00:10:37.486 that's what we go for first,

NOTE Confidence: 0.8773388

00:10:37.490 --> 00:10:38.998 because it's it's effective.

NOTE Confidence: 0.8773388

00:10:38.998 --> 00:10:41.260 It's easy to tolerate and you

NOTE Confidence: 0.8773388

00:10:41.330 --> 00:10:43.124 can then have the patient try

NOTE Confidence: 0.8773388

00:10:43.124 --> 00:10:45.169 Pap again to see if it works.

NOTE Confidence: 0.8773388

00:10:45.170 --> 00:10:46.418 If it doesn't work,

NOTE Confidence: 0.8773388

00:10:46.418 --> 00:10:48.627 then we have to assess whether it

NOTE Confidence: 0.8773388

00:10:48.627 --> 00:10:50.503 is an excess tissue problem or if

NOTE Confidence: 0.8773388

00:10:50.503 --> 00:10:52.609 it's a pharyngeal tone problem.

NOTE Confidence: 0.8773388

00:10:52.610 --> 00:10:54.290 We can figure this out using

NOTE Confidence: 0.8773388

00:10:54.290 --> 00:10:55.130 something called dice.

NOTE Confidence: 0.8773388

00:10:55.130 --> 00:10:57.510 Which is a drug induced sleep endoscopy?

NOTE Confidence: 0.8773388

00:10:57.510 --> 00:10:58.992 That's what we gave him medicine

NOTE Confidence: 0.8773388

00:10:58.992 --> 00:10:59.980 to put them to

NOTE Confidence: 0.797691249090909

00:11:00.034 --> 00:11:01.790 sleep. Then we assess their upper

NOTE Confidence: 0.797691249090909

00:11:01.790 --> 00:11:02.942 airway when they're sleeping,

NOTE Confidence: 0.797691249090909

00:11:02.950 --> 00:11:04.460 and I'll have videos of

NOTE Confidence: 0.797691249090909

00:11:04.460 --> 00:11:05.928 this later and in this.

NOTE Confidence: 0.797691249090909

00:11:05.928 --> 00:11:08.006 Through this dice, we can tell whether

NOTE Confidence: 0.797691249090909

00:11:08.006 --> 00:11:10.410 they have a fringe real tone problem,

NOTE Confidence: 0.797691249090909

00:11:10.410 --> 00:11:12.698 and if they do, which way they collapse.

NOTE Confidence: 0.797691249090909

00:11:12.700 --> 00:11:14.485 And this is important to to figure

NOTE Confidence: 0.797691249090909

00:11:14.485 --> 00:11:16.172 out if they're a good candidate

NOTE Confidence: 0.797691249090909

00:11:16.172 --> 00:11:17.906 for heavy loss in or stimulation.

NOTE Confidence: 0.797691249090909

00:11:17.910 --> 00:11:20.568 If these types of surgeries work,

NOTE Confidence: 0.797691249090909

00:11:20.570 --> 00:11:22.232 then great, they can just go

NOTE Confidence: 0.797691249090909

00:11:22.232 --> 00:11:24.174 on to using their either their

NOTE Confidence: 0.797691249090909

00:11:24.174 --> 00:11:26.109 stimulator or their PAT machine,

NOTE Confidence: 0.797691249090909

00:11:26.110 --> 00:11:27.290 but if they don't improve,

NOTE Confidence: 0.797691249090909

00:11:27.290 --> 00:11:29.285 that's when they have to go get

NOTE Confidence: 0.797691249090909

00:11:29.285 --> 00:11:31.246 the more painful surgeries which

NOTE Confidence: 0.797691249090909

00:11:31.246 --> 00:11:32.922 was Orthodox orthognathic surgery

NOTE Confidence: 0.797691249090909

00:11:32.922 --> 00:11:35.077 where they advance the job board.

NOTE Confidence: 0.4589023

00:11:37.850 --> 00:11:40.480 The why so why they have glossner?

NOTE Confidence: 0.4589023

00:11:40.480 --> 00:11:43.088 So just to review they have glossner comes

NOTE Confidence: 0.4589023

00:11:43.088 --> 00:11:46.074 out of the brain stem out of the medulla.

NOTE Confidence: 0.4589023

00:11:46.080 --> 00:11:48.124 Until they have a glass of canal.

NOTE Confidence: 0.4589023

00:11:48.130 --> 00:11:50.210 And it comes out of the frame of

NOTE Confidence: 0.4589023

00:11:50.210 --> 00:11:51.808 Magnum and then it helps to stimulate

NOTE Confidence: 0.4589023

00:11:51.808 --> 00:11:53.030 different muscles of the tongue.

NOTE Confidence: 0.4589023

00:11:53.030 --> 00:11:55.926 Not all of them, but the major ones.

NOTE Confidence: 0.4589023

00:11:55.930 --> 00:11:58.585 The ones that we are focused on are the

NOTE Confidence: 0.4589023

00:11:58.585 --> 00:12:01.427 the ones that advance the tongue forward

NOTE Confidence: 0.4589023

00:12:01.430 --> 00:12:04.790 and the the the ones that retrieves

NOTE Confidence: 0.4589023

00:12:04.790 --> 00:12:07.130 basically retract the tongue backwards.

NOTE Confidence: 0.4589023

00:12:07.130 --> 00:12:09.728 The Genioglossus is in the geniohyoid

NOTE Confidence: 0.4589023

00:12:09.730 --> 00:12:12.138 our attachments to the mantle itself and

NOTE Confidence: 0.4589023

00:12:12.138 --> 00:12:14.888 it helps to pull that tongue forward.

NOTE Confidence: 0.4589023

00:12:14.890 --> 00:12:16.372 So these are the branches that

NOTE Confidence: 0.4589023

00:12:16.372 --> 00:12:17.360 were focused on that.

NOTE Confidence: 0.4589023

00:12:17.360 --> 00:12:19.528 We want to include the ones that pull

NOTE Confidence: 0.4589023

00:12:19.528 --> 00:12:21.423 the tongue backwards and the pallet

NOTE Confidence: 0.4589023

00:12:21.423 --> 00:12:23.695 backwards is the style of losses and

NOTE Confidence: 0.4589023

00:12:23.695 --> 00:12:25.903 the higher losses and you can see these.

NOTE Confidence: 0.4589023

00:12:25.910 --> 00:12:27.950 In red and you can see the direction

NOTE Confidence: 0.4589023

00:12:27.950 --> 00:12:30.017 of that pole will just retract

NOTE Confidence: 0.4589023

00:12:30.017 --> 00:12:31.136 that tongue backwards.

NOTE Confidence: 0.4589023

00:12:31.140 --> 00:12:32.028 These are the ones that we

NOTE Confidence: 0.4589023

00:12:32.028 --> 00:12:33.020 do not want to stimulate.

NOTE Confidence: 0.8728989635

00:12:36.050 --> 00:12:38.458 And this is just a a table that

NOTE Confidence: 0.8728989635

00:12:38.458 --> 00:12:40.743 outlines the ones the divisions that

NOTE Confidence: 0.8728989635

00:12:40.743 --> 00:12:43.161 help to bring the tongue backwards,

NOTE Confidence: 0.8728989635

00:12:43.170 --> 00:12:44.550 which is the style losses

NOTE Confidence: 0.8728989635

00:12:44.550 --> 00:12:45.654 in the higher glasses.

NOTE Confidence: 0.8728989635

00:12:45.660 --> 00:12:47.200 And then there's the medial

NOTE Confidence: 0.8728989635

00:12:47.200 --> 00:12:48.740 division that helps to stimulate

NOTE Confidence: 0.8728989635

00:12:48.793 --> 00:12:50.178 the tongue to come forward.

NOTE Confidence: 0.8728989635

00:12:50.180 --> 00:12:50.850 And these are the ones

NOTE Confidence: 0.8728989635

00:12:50.850 --> 00:12:51.520 that we want to target.

NOTE Confidence: 0.91776214

00:12:53.420 --> 00:12:54.278 That's right, so

00:12:54.310 --> 00:12:55.680 like yeah and said so.

00:12:55.680 --> 00:12:58.466 The Genioglossus is really the the muscle

00:12:58.466 --> 00:13:01.129 that we're targeting here with hypoglossal

00:13:01.129 --> 00:13:03.459 nerve stimulation and that's really,

00:13:03.460 --> 00:13:05.932 you know, been shown in neuro

00:13:05.932 --> 00:13:08.769 anatomical studies to really be the main

00:13:08.769 --> 00:13:10.486 airway dilator of the upper airway.

00:13:10.486 --> 00:13:12.864 So I just want to step back and change

00:13:12.864 --> 00:13:15.377 gears a little bit here to history and

00:13:15.377 --> 00:13:17.697 development of hypoglossal nerve stimulation.

00:13:17.700 --> 00:13:20.479 So pilot studies really started in the

00:13:20.479 --> 00:13:22.968 late 1980s and they really looked at.

00:13:22.970 --> 00:13:25.000 You know three ways in which they

00:13:25.000 --> 00:13:27.102 were going to stimulate the tongue

00:13:27.102 --> 00:13:29.244 in order to open the upper airway.

NOTE Confidence: 0.71870981

00:13:29.250 --> 00:13:32.512 So the first was they focused on

NOTE Confidence: 0.71870981

00:13:32.512 --> 00:13:33.910 submental transcutaneous stimulation.

NOTE Confidence: 0.71870981

00:13:33.910 --> 00:13:36.080 This was with electrodes on the outside

NOTE Confidence: 0.71870981

00:13:36.080 --> 00:13:38.444 of the neck, stimulating the tongue,

NOTE Confidence: 0.71870981

00:13:38.444 --> 00:13:40.834 muscles, and several studies in

NOTE Confidence: 0.71870981

00:13:40.834 --> 00:13:42.956 this area showed some improvements

NOTE Confidence: 0.71870981

00:13:42.956 --> 00:13:44.248 in air flow dynamics,

NOTE Confidence: 0.71870981

00:13:44.250 --> 00:13:46.215 but other studies showed minimal

NOTE Confidence: 0.71870981

00:13:46.215 --> 00:13:47.787 improvements in the AHI,

NOTE Confidence: 0.71870981

00:13:47.790 --> 00:13:49.188 and certainly, as you can imagine,

NOTE Confidence: 0.71870981

00:13:49.190 --> 00:13:51.638 there were quite a few arousals

NOTE Confidence: 0.71870981

00:13:51.638 --> 00:13:53.232 occurring during stimulation, so.

NOTE Confidence: 0.71870981

00:13:53.232 --> 00:13:56.430 They decided to take a different approach

NOTE Confidence: 0.71870981

00:13:56.430 --> 00:13:58.500 and researchers started to look at

NOTE Confidence: 0.71870981

00:13:58.500 --> 00:14:00.710 direct fine wire stimulation at this point.

NOTE Confidence: 0.71870981

00:14:00.710 --> 00:14:03.302 So this was transmucosal

NOTE Confidence: 0.71870981

00:14:03.302 --> 00:14:05.894 electrode stimulation of the

NOTE Confidence: 0.71870981

00:14:05.894 --> 00:14:08.540 individual muscles of the tongue,

NOTE Confidence: 0.71870981

00:14:08.540 --> 00:14:10.784 and these studies showed a more

NOTE Confidence: 0.71870981

00:14:10.784 --> 00:14:12.280 pronounced improvement in muscle

NOTE Confidence: 0.71870981

00:14:12.339 --> 00:14:14.207 contraction and airway dilation,

NOTE Confidence: 0.71870981

00:14:14.210 --> 00:14:17.330 specifically of the genioglossus muscle,

NOTE Confidence: 0.71870981

00:14:17.330 --> 00:14:20.053 and they also at this time started

NOTE Confidence: 0.71870981

00:14:20.053 --> 00:14:21.738 to develop synchronous stimulation

NOTE Confidence: 0.71870981

00:14:21.738 --> 00:14:24.426 with inspiration at the same time.

NOTE Confidence: 0.71870981

00:14:24.430 --> 00:14:25.460 In 1997,

NOTE Confidence: 0.71870981

00:14:25.460 --> 00:14:28.550 the first human study involving direct

NOTE Confidence: 0.71870981

00:14:28.550 --> 00:14:31.469 type glossal nerve stimulation took

NOTE Confidence: 0.71870981

00:14:31.469 --> 00:14:36.577 place by researchers and this was just

NOTE Confidence: 0.71870981

00:14:36.577 --> 00:14:38.866 an illustration of that of that study,

NOTE Confidence: 0.71870981

00:14:38.870 --> 00:14:40.412 and so they actually have an

NOTE Confidence: 0.71870981

00:14:40.412 --> 00:14:41.880 electrode cuff in two different

NOTE Confidence: 0.71870981

00:14:41.880 --> 00:14:43.810 locations on the hypoglossal nerve.

NOTE Confidence: 0.71870981

00:14:43.810 --> 00:14:46.434 The first is on the main trunk right

NOTE Confidence: 0.71870981

00:14:46.434 --> 00:14:49.249 after the branching point with the anti

NOTE Confidence: 0.71870981

00:14:49.249 --> 00:14:51.553 placy and the next cuff that they put

NOTE Confidence: 0.71870981

00:14:51.553 --> 00:14:54.597 on was on the distal branches of the nerve.

NOTE Confidence: 0.71870981

00:14:54.600 --> 00:14:56.690 Going specifically to the genioglossus

NOTE Confidence: 0.71870981

00:14:56.690 --> 00:14:59.535 muscle and so this was really an

NOTE Confidence: 0.71870981

00:14:59.535 --> 00:15:01.587 airflow dynamics study that did not

NOTE Confidence: 0.71870981

00:15:01.587 --> 00:15:04.026 do a polysomnogram in this study,

NOTE Confidence: 0.71870981

00:15:04.026 --> 00:15:05.336 but they looked at they.

NOTE Confidence: 0.71870981

00:15:05.340 --> 00:15:08.472 What they found was basically that

NOTE Confidence: 0.71870981

00:15:08.472 --> 00:15:10.958 this increased airflow velocity by

NOTE Confidence: 0.71870981

00:15:10.958 --> 00:15:12.550 stimulating the hypoglossal nerve

NOTE Confidence: 0.71870981

00:15:12.550 --> 00:15:15.041 and decrease to the airflow velocity

NOTE Confidence: 0.71870981

00:15:15.041 --> 00:15:17.216 when they stopped stimulating it.

NOTE Confidence: 0.71870981

00:15:17.220 --> 00:15:18.387 In these patients,

NOTE Confidence: 0.71870981

00:15:18.387 --> 00:15:20.721 I think they had eight patients

NOTE Confidence: 0.71870981

00:15:20.721 --> 00:15:22.109 enrolled in this study,

NOTE Confidence: 0.71870981

00:15:22.110 --> 00:15:24.768 so from there they started several

NOTE Confidence: 0.71870981

00:15:24.768 --> 00:15:27.612 companies started to develop loop systems,

NOTE Confidence: 0.71870981

00:15:27.612 --> 00:15:30.292 so synchronous closed loop stimulation

NOTE Confidence: 0.71870981

00:15:30.292 --> 00:15:33.246 systems which timed the hypoglossal

NOTE Confidence: 0.71870981

00:15:33.246 --> 00:15:35.778 nerve stimulation with inspiration,

NOTE Confidence: 0.71870981

00:15:35.780 --> 00:15:38.706 and this is similar to the current

NOTE Confidence: 0.71870981

00:15:38.706 --> 00:15:41.420 modern day inspire system and one

NOTE Confidence: 0.71870981

00:15:41.420 --> 00:15:43.670 company in Thera actually started

NOTE Confidence: 0.71870981

00:15:43.670 --> 00:15:46.418 to develop an asynchronous open

NOTE Confidence: 0.71870981

00:15:46.418 --> 00:15:49.038 loop stimulation system which.

NOTE Confidence: 0.71870981

00:15:49.040 --> 00:15:51.096 In this picture, in the upper right here,

NOTE Confidence: 0.71870981

00:15:51.100 --> 00:15:52.324 there's actually this.

NOTE Confidence: 0.71870981

00:15:52.324 --> 00:15:55.600 This is what the electrode cuff look like.

NOTE Confidence: 0.71870981

00:15:55.600 --> 00:15:57.595 There's actually six different electrode

NOTE Confidence: 0.71870981

00:15:57.595 --> 00:16:00.357 arrays that they put around the main

NOTE Confidence: 0.71870981

00:16:00.357 --> 00:16:02.469 trunk of the nerve for continuous

NOTE Confidence: 0.71870981

00:16:02.469 --> 00:16:03.940 hypoglossal nerve stimulation,

NOTE Confidence: 0.71870981

00:16:03.940 --> 00:16:06.600 and So what this did was basically

NOTE Confidence: 0.71870981

00:16:06.600 --> 00:16:08.177 stimulate different branches and

NOTE Confidence: 0.71870981

00:16:08.177 --> 00:16:10.037 fibers of the nerve continuously,

NOTE Confidence: 0.71870981

00:16:10.040 --> 00:16:14.438 but in different timing and pattern.

NOTE Confidence: 0.71870981

00:16:14.440 --> 00:16:16.232 So like I said,

NOTE Confidence: 0.71870981

00:16:16.232 --> 00:16:18.472 several companies were were involved

NOTE Confidence: 0.71870981

00:16:18.472 --> 00:16:21.447 in research in the early 90s up

NOTE Confidence: 0.71870981

00:16:21.447 --> 00:16:23.075 until the early 2000s

NOTE Confidence: 0.844364426666667

00:16:23.080 --> 00:16:25.780 trying to develop a stimulator implant,

NOTE Confidence: 0.844364426666667

00:16:25.780 --> 00:16:29.140 including Medtronic app next Inspire,

NOTE Confidence: 0.844364426666667

00:16:29.140 --> 00:16:31.420 which was an offshoot of Medtronic.

NOTE Confidence: 0.844364426666667

00:16:31.420 --> 00:16:33.504 And then in Thera,

NOTE Confidence: 0.844364426666667

00:16:33.504 --> 00:16:36.630 the app Nicks and Inspire devices

NOTE Confidence: 0.844364426666667

00:16:36.733 --> 00:16:39.738 were both closed loop systems,

NOTE Confidence: 0.844364426666667

00:16:39.740 --> 00:16:43.468 and the Anthera was a open loop system.

NOTE Confidence: 0.844364426666667

00:16:43.470 --> 00:16:47.737 So this is a a graph just showing the

NOTE Confidence: 0.844364426666667

00:16:47.737 --> 00:16:50.899 early feasibility data on all these

NOTE Confidence: 0.844364426666667

00:16:50.899 --> 00:16:53.489 different implants that we're done,

NOTE Confidence: 0.844364426666667

00:16:53.490 --> 00:16:56.304 and so it shows significant reduction

NOTE Confidence: 0.844364426666667

00:16:56.304 --> 00:17:00.314 in the HI from baseline compared to

NOTE Confidence: 0.844364426666667

00:17:00.314 --> 00:17:03.599 the six month follow-up polysomnogram.

NOTE Confidence: 0.844364426666667

00:17:03.600 --> 00:17:06.295 And so they all you know were

NOTE Confidence: 0.844364426666667

00:17:06.295 --> 00:17:08.820 showing that they worked clinically

NOTE Confidence: 0.844364426666667

00:17:08.820 --> 00:17:11.388 in these feasibility studies.

NOTE Confidence: 0.844364426666667

00:17:11.390 --> 00:17:13.280 And this is a polysomnogram recording

NOTE Confidence: 0.844364426666667

00:17:13.280 --> 00:17:15.309 that you're all probably familiar with,

NOTE Confidence: 0.844364426666667

00:17:15.310 --> 00:17:18.766 but so in this on the left you have

NOTE Confidence: 0.844364426666667

00:17:18.770 --> 00:17:20.574 the patient having obstructive

NOTE Confidence: 0.844364426666667

00:17:20.574 --> 00:17:23.280 apneic events where air flow is

NOTE Confidence: 0.844364426666667

00:17:23.360 --> 00:17:25.922 being restricted here and you see

NOTE Confidence: 0.844364426666667

00:17:25.922 --> 00:17:28.330 a drop in the oxygen saturation and

NOTE Confidence: 0.844364426666667

00:17:28.408 --> 00:17:30.562 then when the stimulation is turned

NOTE Confidence: 0.844364426666667

00:17:30.562 --> 00:17:33.829 on you have a plateau in the oxygen

NOTE Confidence: 0.844364426666667

00:17:33.829 --> 00:17:36.024 saturation and you have continuous

NOTE Confidence: 0.844364426666667

00:17:36.024 --> 00:17:39.520 air flow in the upper airway.

NOTE Confidence: 0.844364426666667

00:17:39.520 --> 00:17:40.090 So.

NOTE Confidence: 0.891083819333333

00:17:42.320 --> 00:17:46.177 Again, several companies were trying to get

NOTE Confidence: 0.891083819333333

00:17:46.177 --> 00:17:50.167 FDA approval in the early and mid 2000s,

NOTE Confidence: 0.891083819333333

00:17:50.170 --> 00:17:52.324 and Inspire was the only company

NOTE Confidence: 0.891083819333333

00:17:52.324 --> 00:17:54.814 that actually was able to get FDA

NOTE Confidence: 0.891083819333333

00:17:54.814 --> 00:17:56.758 approval and then occurred in 2014.

NOTE Confidence: 0.891083819333333

00:17:56.758 --> 00:17:58.298 So I'll just go through

NOTE Confidence: 0.891083819333333

00:17:58.298 --> 00:18:00.189 that a little bit with you.

NOTE Confidence: 0.891083819333333

00:18:00.190 --> 00:18:04.534 So it started with a proof of

NOTE Confidence: 0.891083819333333

00:18:04.534 --> 00:18:07.154 principle trial in 2001 that had

NOTE Confidence: 0.891083819333333

00:18:07.154 --> 00:18:10.010 about 8 patients and then they do

NOTE Confidence: 0.891083819333333

00:18:10.100 --> 00:18:12.880 two separate feasibility trials.

NOTE Confidence: 0.891083819333333

00:18:12.880 --> 00:18:15.440 In 2009 through 2011,

NOTE Confidence: 0.891083819333333

00:18:15.440 --> 00:18:18.640 basically working on patient selection

NOTE Confidence: 0.891083819333333

00:18:18.640 --> 00:18:21.932 and implant technique and then looking

NOTE Confidence: 0.891083819333333

00:18:21.932 --> 00:18:24.247 at their preliminary safety and

NOTE Confidence: 0.891083819333333

00:18:24.247 --> 00:18:27.288 efficacy data and this culminated with

NOTE Confidence: 0.891083819333333

00:18:27.288 --> 00:18:31.492 the Inspire Star trial in 2012 and 2013,

NOTE Confidence: 0.891083819333333

00:18:31.492 --> 00:18:33.957 which led to FDA approval.

NOTE Confidence: 0.891083819333333

00:18:33.960 --> 00:18:35.843 So I'm just going to go through

NOTE Confidence: 0.891083819333333

00:18:35.843 --> 00:18:37.679 that trial with you a little bit,

NOTE Confidence: 0.891083819333333

00:18:37.680 --> 00:18:40.215 so star stands for stimulation

NOTE Confidence: 0.891083819333333

00:18:40.215 --> 00:18:42.750 therapy for apnea reduction trial.

NOTE Confidence: 0.891083819333333

00:18:42.750 --> 00:18:44.390 This was published in the

NOTE Confidence: 0.891083819333333

00:18:44.390 --> 00:18:46.087 New England Journal in 2014,

NOTE Confidence: 0.891083819333333

00:18:46.087 --> 00:18:48.349 and this trial was a multicenter,

NOTE Confidence: 0.891083819333333

00:18:48.350 --> 00:18:49.594 prospective trial.

NOTE Confidence: 0.891083819333333

00:18:49.594 --> 00:18:52.082 They enrolled 126 patients

NOTE Confidence: 0.891083819333333

00:18:52.082 --> 00:18:54.570 who were eventually implanted

NOTE Confidence: 0.891083819333333

00:18:54.654 --> 00:18:56.809 with the Inspire 2 device.

NOTE Confidence: 0.891083819333333

00:18:56.810 --> 00:19:00.140 Their primary outcomes were ajy

NOTE Confidence: 0.891083819333333

00:19:00.140 --> 00:19:03.470 and oxygen D saturation index.

NOTE Confidence: 0.891083819333333

00:19:03.470 --> 00:19:06.338 After a 12 month period of

NOTE Confidence: 0.891083819333333

00:19:06.338 --> 00:19:08.250 therapy in these patients,

NOTE Confidence: 0.891083819333333

00:19:08.250 --> 00:19:11.148 46 patients were randomized into two groups,

NOTE Confidence: 0.891083819333333

00:19:11.150 --> 00:19:13.376 so one being a maintenance therapy

NOTE Confidence: 0.891083819333333

00:19:13.376 --> 00:19:16.193 group and one being a pause in therapy

NOTE Confidence: 0.891083819333333

00:19:16.193 --> 00:19:18.111 group where they actually stopped

NOTE Confidence: 0.891083819333333

00:19:18.111 --> 00:19:20.904 their therapy for about 5 days and

NOTE Confidence: 0.891083819333333

00:19:20.904 --> 00:19:23.275 then had another polysomnogram at

NOTE Confidence: 0.891083819333333

00:19:23.275 --> 00:19:25.650 that time before restarting it.

NOTE Confidence: 0.891083819333333

00:19:25.650 --> 00:19:28.290 So in terms of characteristics

NOTE Confidence: 0.891083819333333

00:19:28.290 --> 00:19:30.402 of the the participants,

NOTE Confidence: 0.891083819333333

00:19:30.410 --> 00:19:34.120 these were a majority white males in

NOTE Confidence: 0.891083819333333

00:19:34.120 --> 00:19:37.330 their middle age around their 50s.

NOTE Confidence: 0.891083819333333

00:19:37.330 --> 00:19:41.730 BMI was in the in the high 20s.

NOTE Confidence: 0.891083819333333

00:19:41.730 --> 00:19:43.668 In terms of the primary outcome,

NOTE Confidence: 0.891083819333333

00:19:43.670 --> 00:19:46.001 there was a 68% decrease in the

NOTE Confidence: 0.891083819333333

00:19:46.001 --> 00:19:48.481 median age I in these patients and

NOTE Confidence: 0.891083819333333

00:19:48.481 --> 00:19:51.848 a 70% decrease in the median ody.

NOTE Confidence: 0.891083819333333

00:19:51.850 --> 00:19:55.468 In terms of surgical response rates,

NOTE Confidence: 0.891083819333333

00:19:55.470 --> 00:19:57.642 in terms of which patients were

NOTE Confidence: 0.891083819333333

00:19:57.642 --> 00:19:59.090 considered to be responders,

NOTE Confidence: 0.891083819333333

00:19:59.090 --> 00:20:02.139 which we consider a 50% reduction

NOTE Confidence: 0.891083819333333

00:20:02.139 --> 00:20:04.931 in the HI and then hi less than

NOTE Confidence: 0.891083819333333

00:20:04.931 --> 00:20:07.670 20 which was used in this study,

NOTE Confidence: 0.891083819333333

00:20:07.670 --> 00:20:11.425 66% of the participants were

NOTE Confidence: 0.891083819333333

00:20:11.425 --> 00:20:13.678 considered responders surgically.

NOTE Confidence: 0.891083819333333

00:20:13.680 --> 00:20:16.200 This is the portion of the study in

NOTE Confidence: 0.891083819333333

00:20:16.200 --> 00:20:18.484 which the patients were randomized

NOTE Confidence: 0.891083819333333

00:20:18.484 --> 00:20:21.326 after 12 months into two different groups,

NOTE Confidence: 0.891083819333333

00:20:21.330 --> 00:20:23.885 and so you say 23 patients continued

NOTE Confidence: 0.891083819333333

00:20:23.885 --> 00:20:26.193 their therapy for another five days

NOTE Confidence: 0.891083819333333

00:20:26.193 --> 00:20:28.846 and 23 actually stopped for five days,

NOTE Confidence: 0.891083819333333

00:20:28.850 --> 00:20:31.706 and then a repeat study was performed.

NOTE Confidence: 0.891083819333333

00:20:31.710 --> 00:20:34.270 So at the 12 month mark you see

NOTE Confidence: 0.891083819333333

00:20:34.270 --> 00:20:36.590 that the POLYSOMNOGRAM data in their

NOTE Confidence: 0.891083819333333

00:20:36.590 --> 00:20:39.710 age I and ODI was very similar.

NOTE Confidence: 0.891083819333333

00:20:39.710 --> 00:20:43.098 But after the five day randomization period.

NOTE Confidence: 0.891083819333333

00:20:43.100 --> 00:20:46.173 You see that the patients who stopped

NOTE Confidence: 0.891083819333333

00:20:46.173 --> 00:20:47.941 their therapy actually regressed

NOTE Confidence: 0.891083819333333

00:20:47.941 --> 00:20:50.668 back to close to their pre therapy

NOTE Confidence: 0.891083819333333

00:20:50.668 --> 00:20:53.008 age I and ODI levels.

NOTE Confidence: 0.91991235875

00:20:55.020 --> 00:20:57.212 So another large study

NOTE Confidence: 0.91991235875

00:20:57.212 --> 00:20:59.404 that's that's been published,

NOTE Confidence: 0.91991235875

00:20:59.410 --> 00:21:01.284 and this was published in 2018,

NOTE Confidence: 0.91991235875

00:21:01.284 --> 00:21:03.300 is the Adhir registry,

NOTE Confidence: 0.91991235875

00:21:03.300 --> 00:21:06.982 and this is a very large multicenter

NOTE Confidence: 0.91991235875

00:21:06.982 --> 00:21:09.760 registry of patients who have had

NOTE Confidence: 0.91991235875

00:21:09.760 --> 00:21:12.684 hypoglossal nerve stimulation implants

NOTE Confidence: 0.91991235875

00:21:12.684 --> 00:21:16.600 and so at the time of publication,

NOTE Confidence: 0.91991235875

00:21:16.600 --> 00:21:18.460 301 patients were enrolled in

NOTE Confidence: 0.91991235875

00:21:18.460 --> 00:21:20.320 this registry over two years,

NOTE Confidence: 0.91991235875

00:21:20.320 --> 00:21:22.324 so it was a very large

NOTE Confidence: 0.91991235875

00:21:22.324 --> 00:21:23.660 database for these patients.

NOTE Confidence: 0.91991235875

00:21:23.660 --> 00:21:26.061 And it was nice because it was

NOTE Confidence: 0.91991235875

00:21:26.061 --> 00:21:28.000 collecting outcomes in demographics,

NOTE Confidence: 0.91991235875

00:21:28.000 --> 00:21:29.479 surgical outcomes, complications,

NOTE Confidence: 0.91991235875

00:21:29.479 --> 00:21:31.944 quality of life and patient

NOTE Confidence: 0.91991235875

00:21:31.944 --> 00:21:32.930 reported outcomes.

NOTE Confidence: 0.91991235875

00:21:32.930 --> 00:21:34.826 And it was really the largest

NOTE Confidence: 0.91991235875

00:21:34.830 --> 00:21:37.165 registry of these patients that

NOTE Confidence: 0.91991235875

00:21:37.165 --> 00:21:40.000 had been published at the time.

NOTE Confidence: 0.91991235875

00:21:40.000 --> 00:21:43.318 So in that registry the the reduction

NOTE Confidence: 0.91991235875

00:21:43.318 --> 00:21:47.208 in HI was also very significant from

NOTE Confidence: 0.91991235875

00:21:47.208 --> 00:21:51.484 a baseline of around 35.6 to 10.2 in

NOTE Confidence: 0.91991235875

00:21:51.484 --> 00:21:54.340 terms of their Epworth sleepiness scale,

NOTE Confidence: 0.91991235875

00:21:54.340 --> 00:21:59.260 they went from close to 12 down to 7.5.

NOTE Confidence: 0.91991235875

00:21:59.260 --> 00:22:02.500 In terms of patient reported outcomes,

NOTE Confidence: 0.91991235875

00:22:02.500 --> 00:22:05.225 94% of patients had positive

NOTE Confidence: 0.91991235875

00:22:05.225 --> 00:22:06.860 feedback after surgery,

NOTE Confidence: 0.91991235875

00:22:06.860 --> 00:22:09.638 90% of them preferred having this

NOTE Confidence: 0.91991235875

00:22:09.638 --> 00:22:12.042 surgery and using this therapy

NOTE Confidence: 0.91991235875

00:22:12.042 --> 00:22:15.036 over CPAP and 96% would choose

NOTE Confidence: 0.91991235875

00:22:15.036 --> 00:22:16.578 upper airway stimulation.

NOTE Confidence: 0.91991235875

00:22:16.580 --> 00:22:16.967 Again,

NOTE Confidence: 0.91991235875

00:22:16.967 --> 00:22:18.128 if they could.

NOTE Confidence: 0.90550763

00:22:20.520 --> 00:22:22.865 The star trial participants were

NOTE Confidence: 0.90550763

00:22:22.865 --> 00:22:25.726 followed for five years and then

NOTE Confidence: 0.90550763

00:22:25.726 --> 00:22:28.744 that data was also published in 2018.

NOTE Confidence: 0.90550763

00:22:28.744 --> 00:22:32.200 And So what you can see in terms

NOTE Confidence: 0.90550763

00:22:32.307 --> 00:22:34.450 of age I Epworth sleepiness,

NOTE Confidence: 0.90550763

00:22:34.450 --> 00:22:38.350 scale the FOSCUE scores and also

NOTE Confidence: 0.90550763

00:22:38.350 --> 00:22:41.128 the responder rates is that.

NOTE Confidence: 0.90550763

00:22:41.130 --> 00:22:43.825 Patients who continued to use this for

NOTE Confidence: 0.90550763

00:22:43.825 --> 00:22:46.950 five years had a durable, lasting effect.

NOTE Confidence: 0.90550763

00:22:46.950 --> 00:22:49.850 In in all these measures,

NOTE Confidence: 0.90550763

00:22:49.850 --> 00:22:52.310 and so this really, you know,

NOTE Confidence: 0.90550763

00:22:52.310 --> 00:22:55.544 proved that this was not just a

NOTE Confidence: 0.90550763

00:22:55.550 --> 00:22:57.354 kind of a fluke, it was, you know,

NOTE Confidence: 0.90550763

00:22:57.354 --> 00:22:58.746 they continued to use this therapy.

NOTE Confidence: 0.90550763

00:22:58.750 --> 00:22:59.950 It was really had a durable,

NOTE Confidence: 0.90550763

00:22:59.950 --> 00:23:00.980 lasting effect.

NOTE Confidence: 0.923569159

00:23:03.210 --> 00:23:05.562 Great so so here we want to transition

NOTE Confidence: 0.923569159

00:23:05.562 --> 00:23:07.877 to just talk about what the surgery

NOTE Confidence: 0.923569159

00:23:07.877 --> 00:23:10.434 entails and this is just a diagram of

NOTE Confidence: 0.923569159

00:23:10.434 --> 00:23:13.010 what we want to have happen on the left.

NOTE Confidence: 0.923569159

00:23:13.010 --> 00:23:14.960 You can see that without stimulation

NOTE Confidence: 0.923569159

00:23:14.960 --> 00:23:17.269 that the base of tongue is so this

NOTE Confidence: 0.923569159

00:23:17.269 --> 00:23:19.020 is a flexible fiber optic scope

NOTE Confidence: 0.923569159

00:23:19.020 --> 00:23:20.898 and we're looking into the nose

NOTE Confidence: 0.923569159

00:23:20.898 --> 00:23:22.678 down onto the onto the airway,

NOTE Confidence: 0.923569159

00:23:22.678 --> 00:23:24.113 and these little lumpy bumpy's

NOTE Confidence: 0.923569159

00:23:24.113 --> 00:23:25.789 on the bottom of the screen.

NOTE Confidence: 0.923569159

00:23:25.790 --> 00:23:27.542 That's the back of the tongue with the

NOTE Confidence: 0.923569159

00:23:27.542 --> 00:23:29.347 base of the tongue and then you can

NOTE Confidence: 0.923569159

00:23:29.347 --> 00:23:31.273 barely see the tip of the epiglottis and

NOTE Confidence: 0.923569159

00:23:31.273 --> 00:23:33.168 then the the small airway the pallet.

NOTE Confidence: 0.923569159

00:23:33.168 --> 00:23:35.112 Also, we're looking through the nose

NOTE Confidence: 0.923569159

00:23:35.112 --> 00:23:37.566 at this view and you can see the soft

NOTE Confidence: 0.923569159

00:23:37.566 --> 00:23:39.529 palate on the bottom of the screen

NOTE Confidence: 0.923569159

00:23:39.529 --> 00:23:41.680 and it is almost touching the back

NOTE Confidence: 0.923569159

00:23:41.680 --> 00:23:44.140 of the throat with mild stimulation.

NOTE Confidence: 0.923569159

00:23:44.140 --> 00:23:47.124 You can see that the base of tongue.

NOTE Confidence: 0.923569159

00:23:47.130 --> 00:23:47.640 Pulls forward,

NOTE Confidence: 0.923569159

00:23:47.640 --> 00:23:49.680 which means it goes down on the bottom

NOTE Confidence: 0.923569159

00:23:49.733 --> 00:23:51.704 of the screen and you can see the larynx.

NOTE Confidence: 0.923569159

00:23:51.710 --> 00:23:53.824 You can finally see the vocal cords

NOTE Confidence: 0.923569159

00:23:53.824 --> 00:23:55.667 and the unwritten noise that help

NOTE Confidence: 0.923569159

00:23:55.667 --> 00:23:57.910 helped open up the airway and then on

NOTE Confidence: 0.923569159

00:23:57.910 --> 00:24:00.078 the right you can see the pallet view

NOTE Confidence: 0.923569159

00:24:00.078 --> 00:24:02.066 and the soft palate has been pulled

NOTE Confidence: 0.923569159

00:24:02.066 --> 00:24:04.210 down or forward on on the screen here

NOTE Confidence: 0.923569159

00:24:04.210 --> 00:24:05.917 and then you can see the epiglottis

NOTE Confidence: 0.923569159

00:24:05.917 --> 00:24:07.828 and so there's plenty of space in

NOTE Confidence: 0.923569159

00:24:07.828 --> 00:24:10.710 the oral fairing oral fairings.

NOTE Confidence: 0.923569159

00:24:10.710 --> 00:24:13.160 It is a procedure that used to

NOTE Confidence: 0.923569159

00:24:13.160 --> 00:24:14.210 require 3 incisions,

NOTE Confidence: 0.923569159

00:24:14.210 --> 00:24:16.274 but now we have a 2 incision technique

NOTE Confidence: 0.923569159

00:24:16.274 --> 00:24:18.582 which is even better and it is

NOTE Confidence: 0.923569159

00:24:18.582 --> 00:24:19.966 outpatient procedure which means

NOTE Confidence: 0.923569159

00:24:19.966 --> 00:24:21.748 patients as as soon as we're done.

NOTE Confidence: 0.923569159

00:24:21.750 --> 00:24:22.550 We'll go to the pack.

NOTE Confidence: 0.923569159

00:24:22.550 --> 00:24:24.584 You get a chest X ray to confirm its

NOTE Confidence: 0.923569159

00:24:24.584 --> 00:24:27.066 placement, and they can go home OK.

NOTE Confidence: 0.923569159

00:24:27.070 --> 00:24:30.944 The the stimulation is again synchronized

NOTE Confidence: 0.923569159

00:24:30.944 --> 00:24:34.472 to the the muscles of respiration and

NOTE Confidence: 0.923569159

00:24:34.472 --> 00:24:38.006 I'll show you what these electrodes do.

NOTE Confidence: 0.923569159

00:24:38.010 --> 00:24:40.020 In this diagram you can see

NOTE Confidence: 0.923569159

00:24:40.020 --> 00:24:41.025 that the computer.

NOTE Confidence: 0.923569159

00:24:41.030 --> 00:24:41.374 Is.

NOTE Confidence: 0.923569159

00:24:41.374 --> 00:24:43.094 Implanted into the chest soft

NOTE Confidence: 0.923569159

00:24:43.094 --> 00:24:45.331 tissues of the chest wall along

NOTE Confidence: 0.923569159

00:24:45.331 --> 00:24:47.306 with the electrode that senses

NOTE Confidence: 0.923569159

00:24:47.306 --> 00:24:49.735 the respirations and then it has a

NOTE Confidence: 0.923569159

00:24:49.735 --> 00:24:51.493 other a second electrode that is

NOTE Confidence: 0.923569159

00:24:51.500 --> 00:24:52.718 tunneled in the soft tissues of

NOTE Confidence: 0.923569159

00:24:52.718 --> 00:24:54.199 the neck and then it's connected.

NOTE Confidence: 0.923569159

00:24:54.200 --> 00:24:57.056 The hypoglossal nerve branches on the right.

NOTE Confidence: 0.923569159

00:24:57.060 --> 00:24:59.048 You can see the small little remote

NOTE Confidence: 0.923569159

00:24:59.048 --> 00:25:01.124 control that you use to turn this this

NOTE Confidence: 0.923569159

00:25:01.124 --> 00:25:03.396 mechanism on and off and when you turn

NOTE Confidence: 0.923569159

00:25:03.396 --> 00:25:05.835 it on it doesn't turn on immediately.

NOTE Confidence: 0.923569159

00:25:05.840 --> 00:25:07.580 It waits about 30 minutes and

NOTE Confidence: 0.923569159

00:25:07.580 --> 00:25:09.340 you can change that duration,

NOTE Confidence: 0.923569159

00:25:09.340 --> 00:25:10.817 but it allows for the patient to

NOTE Confidence: 0.923569159

00:25:10.817 --> 00:25:12.238 fall asleep before it starts working.

NOTE Confidence: 0.923569159

00:25:12.240 --> 00:25:13.443 And kicking in.

NOTE Confidence: 0.923569159

00:25:13.443 --> 00:25:14.646 When they travel,

NOTE Confidence: 0.923569159

00:25:14.650 --> 00:25:16.210 they don't have to take the

NOTE Confidence: 0.923569159

00:25:16.210 --> 00:25:17.250 CPAP machine with them,

NOTE Confidence: 0.923569159

00:25:17.250 --> 00:25:20.950 it will just be this remote control.

NOTE Confidence: 0.923569159

00:25:20.950 --> 00:25:23.530 The criteria that is important.

NOTE Confidence: 0.923569159

00:25:23.530 --> 00:25:25.777 The indications for this type of surgery.

NOTE Confidence: 0.923569159

00:25:25.780 --> 00:25:27.746 There are several number one.

NOTE Confidence: 0.923569159

00:25:27.746 --> 00:25:29.490 They are for adults.

NOTE Confidence: 0.923569159

00:25:29.490 --> 00:25:29.977 OK,

NOTE Confidence: 0.923569159

00:25:29.977 --> 00:25:34.360 so anybody that's 22 or over is a candidate.

NOTE Confidence: 0.923569159

00:25:34.360 --> 00:25:37.078 People who are 18 to 21 though they can,

NOTE Confidence: 0.923569159

00:25:37.080 --> 00:25:38.160 they can qualify,

NOTE Confidence: 0.923569159

00:25:38.160 --> 00:25:41.000 but only after they've had their tonsils out.

NOTE Confidence: 0.923569159

00:25:41.000 --> 00:25:43.070 The they have to have a

NOTE Confidence: 0.923569159

00:25:43.070 --> 00:25:44.450 diagnosis of obstructive sleep

NOTE Confidence: 0.871756078421053

00:25:44.522 --> 00:25:47.299 apnea with an age I range between 15 to 65.

NOTE Confidence: 0.871756078421053

00:25:47.299 --> 00:25:49.531 OK, so there are people with an HI

NOTE Confidence: 0.871756078421053

00:25:49.531 --> 00:25:51.737 that's over 65 that will not qualify,

NOTE Confidence: 0.871756078421053

00:25:51.740 --> 00:25:53.882 so they must have moderate to

NOTE Confidence: 0.871756078421053

00:25:53.882 --> 00:25:57.520 severe sleep apnea but not over 65.

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NOTE Confidence: 0.871756078421053

00:25:57.520 --> 00:26:00.894 They have to have either failure or

NOTE Confidence: 0.871756078421053

00:26:00.894 --> 00:26:04.180 unwillingness to to tolerate PAF treatment,

NOTE Confidence: 0.871756078421053

00:26:04.180 --> 00:26:06.140 so it used to be that they have to have

NOTE Confidence: 0.871756078421053

00:26:06.194 --> 00:26:08.410 tried a certain duration of time to qualify.

NOTE Confidence: 0.871756078421053

00:26:08.410 --> 00:26:09.990 But at this point,

NOTE Confidence: 0.871756078421053

00:26:09.990 --> 00:26:13.000 if they're just unwilling to to try it,

NOTE Confidence: 0.871756078421053

00:26:13.000 --> 00:26:15.946 they can still be candidates and then the

NOTE Confidence: 0.871756078421053

00:26:15.946 --> 00:26:18.299 next step would be for us to do a dice.

NOTE Confidence: 0.871756078421053

00:26:18.300 --> 00:26:20.055 Which is this drug induced

NOTE Confidence: 0.871756078421053

00:26:20.055 --> 00:26:21.459 sleep endoscopy and all.

NOTE Confidence: 0.871756078421053

00:26:21.460 --> 00:26:22.948 It is is a quick little nap and

NOTE Confidence: 0.871756078421053

00:26:22.948 --> 00:26:24.553 we bring him to the operating we

NOTE Confidence: 0.871756078421053

00:26:24.553 --> 00:26:26.020 bring them to the operating room.

NOTE Confidence: 0.871756078421053

00:26:26.020 --> 00:26:28.576 For this we give them propofol.

NOTE Confidence: 0.871756078421053

00:26:28.580 --> 00:26:30.036 To for them to drift off to sleep,

NOTE Confidence: 0.871756078421053

00:26:30.040 --> 00:26:32.616 and as they're sleeping, we can see.

NOTE Confidence: 0.871756078421053

00:26:32.620 --> 00:26:34.209 When they're snoring we can see what

NOTE Confidence: 0.871756078421053

00:26:34.209 --> 00:26:35.797 their upper airway is looking like when,

NOTE Confidence: 0.871756078421053

00:26:35.800 --> 00:26:40.110 when their oxygen level drops

NOTE Confidence: 0.871756078421053

00:26:40.110 --> 00:26:41.466 during the sleep endoscopy.

NOTE Confidence: 0.871756078421053

00:26:41.466 --> 00:26:44.430 What we can find out is the collapse,

NOTE Confidence: 0.871756078421053

00:26:44.430 --> 00:26:47.510 the pattern of collapse.

NOTE Confidence: 0.871756078421053

00:26:47.510 --> 00:26:49.250 And here is a video.

NOTE Confidence: 0.871756078421053

00:26:49.250 --> 00:26:51.110 OK, so I'm going to pause this one for now.

NOTE Confidence: 0.871756078421053

00:26:51.110 --> 00:26:51.358 OK,

NOTE Confidence: 0.871756078421053

00:26:51.358 --> 00:26:53.342 so on the left you can see that

NOTE Confidence: 0.871756078421053

00:26:53.342 --> 00:26:55.370 there is complete AP or front to

NOTE Confidence: 0.871756078421053

00:26:55.370 --> 00:26:57.169 back collapse at the soft palate

NOTE Confidence: 0.871756078421053

00:26:57.169 --> 00:26:59.248 and this is what we're looking for

NOTE Confidence: 0.871756078421053

00:26:59.248 --> 00:27:01.723 is the level of soft palate and

NOTE Confidence: 0.871756078421053

00:27:01.723 --> 00:27:03.781 you can tell that when they're

46

NOTE Confidence: 0.871756078421053

00:27:03.781 --> 00:27:05.779 collapsing it squeezes front and back.

NOTE Confidence: 0.871756078421053

00:27:05.780 --> 00:27:07.250 OK.

NOTE Confidence: 0.871756078421053

00:27:07.250 --> 00:27:09.385 But here's an example on the right

NOTE Confidence: 0.871756078421053

00:27:09.385 --> 00:27:11.610 for a complete concentric collapse,

NOTE Confidence: 0.871756078421053

00:27:11.610 --> 00:27:13.475 which means it's just squeezing

NOTE Confidence: 0.871756078421053

00:27:13.475 --> 00:27:14.967 from all different directions.

NOTE Confidence: 0.871756078421053

00:27:14.970 --> 00:27:16.986 This is not a good candidate for Inspire,

NOTE Confidence: 0.871756078421053

00:27:16.990 --> 00:27:19.350 because the whole idea is that you're trying

NOTE Confidence: 0.871756078421053

00:27:19.350 --> 00:27:21.387 to stimulate the tongue to move forward,

NOTE Confidence: 0.871756078421053

00:27:21.390 --> 00:27:25.108 which opens the airway up in an AP diameter.

NOTE Confidence: 0.871756078421053

00:27:25.108 --> 00:27:28.096 But if you have concentric collapse,

NOTE Confidence: 0.871756078421053

00:27:28.100 --> 00:27:29.072 these are the people that we

NOTE Confidence: 0.871756078421053

00:27:29.072 --> 00:27:29.720 want to rule out.

NOTE Confidence: 0.871756078421053

00:27:29.720 --> 00:27:30.290 These will not.

NOTE Confidence: 0.871756078421053

00:27:30.290 --> 00:27:31.430 This person will not be a

NOTE Confidence: 0.871756078421053

00:27:31.430 --> 00:27:32.570 good candidate for surgery.

NOTE Confidence: 0.874079147777778

00:27:35.960 --> 00:27:37.908 There are some contraindications,

NOTE Confidence: 0.874079147777778

00:27:37.908 --> 00:27:40.343 some absolute and some relative.

NOTE Confidence: 0.874079147777778

00:27:40.350 --> 00:27:42.786 For those that have greater than

NOTE Confidence: 0.874079147777778

00:27:42.790 --> 00:27:44.410 25% central or mixed apneas,

NOTE Confidence: 0.874079147777778

00:27:44.410 --> 00:27:46.587 these are not going to be great

NOTE Confidence: 0.874079147777778

00:27:46.587 --> 00:27:48.812 candidates because not enough of their

NOTE Confidence: 0.874079147777778

00:27:48.812 --> 00:27:50.456 apneas are considered obstructive.

NOTE Confidence: 0.874079147777778

00:27:50.460 --> 00:27:52.520 Again, those people with complete

NOTE Confidence: 0.874079147777778

00:27:52.520 --> 00:27:54.580 concentric collapse are not good

NOTE Confidence: 0.874079147777778

00:27:54.651 --> 00:27:56.901 anatomic candidates for this type of

NOTE Confidence: 0.874079147777778

00:27:56.901 --> 00:27:59.456 surgery just because of the way that

NOTE Confidence: 0.874079147777778

00:27:59.456 --> 00:28:01.494 they collapse and narrow if they have

NOTE Confidence: 0.874079147777778

00:28:01.494 --> 00:28:04.060 a BMI of skip to the 4th bullet point.

NOTE Confidence: 0.874079147777778

00:28:04.060 --> 00:28:06.556 If they have a BMI greater than 35,

NOTE Confidence: 0.874079147777778

00:28:06.560 --> 00:28:07.808 they're not good candidates.

NOTE Confidence: 0.874079147777778

00:28:07.808 --> 00:28:10.096 There are some states where you can

NOTE Confidence: 0.874079147777778

00:28:10.096 --> 00:28:11.866 appeal and make special circumstances

NOTE Confidence: 0.874079147777778

00:28:11.866 --> 00:28:13.810 and exceptions for certain patients,

NOTE Confidence: 0.874079147777778

00:28:13.810 --> 00:28:14.842 but not in Connecticut.

NOTE Confidence: 0.874079147777778

00:28:14.842 --> 00:28:16.143 In Connecticut, they're pretty strict.

NOTE Confidence: 0.874079147777778

00:28:16.143 --> 00:28:18.440 You have to have a BMI less than 35.

NOTE Confidence: 0.874079147777778

00:28:18.440 --> 00:28:20.372 Some insurances will be.

NOTE Confidence: 0.874079147777778

00:28:20.372 --> 00:28:21.338 Even stricter,

NOTE Confidence: 0.874079147777778

00:28:21.340 --> 00:28:23.516 and they will require BMI less than 32,

NOTE Confidence: 0.874079147777778

00:28:23.520 --> 00:28:26.704 so it's just there are all the major

NOTE Confidence: 0.874079147777778

00:28:26.704 --> 00:28:28.859 care carriers essentially are.

NOTE Confidence: 0.874079147777778

00:28:28.860 --> 00:28:30.813 As long as their BMI is less than 35,

NOTE Confidence: 0.874079147777778

00:28:30.820 --> 00:28:31.556 they're fine.

NOTE Confidence: 0.874079147777778

00:28:31.556 --> 00:28:33.764 There are two major carriers that

NOTE Confidence: 0.874079147777778

00:28:33.764 --> 00:28:36.245 require the BMI BMI to be less than 32.

NOTE Confidence: 0.874079147777778

00:28:36.250 --> 00:28:38.665 If patients will need routine MRI scans

NOTE Confidence: 0.874079147777778

00:28:38.665 --> 00:28:41.528 or any kind of MRI scans of the chest,

NOTE Confidence: 0.874079147777778

00:28:41.530 --> 00:28:42.445 abdomen and pelvis,

NOTE Confidence: 0.874079147777778

00:28:42.445 --> 00:28:45.470 they will not be able to get this implant.

NOTE Confidence: 0.874079147777778

00:28:45.470 --> 00:28:47.731 It used to be the earlier models

NOTE Confidence: 0.874079147777778

00:28:47.731 --> 00:28:49.886 for Inspire did not allow any MRI's

NOTE Confidence: 0.874079147777778

00:28:49.886 --> 00:28:51.774 but at least at this point I think

NOTE Confidence: 0.874079147777778

00:28:51.774 --> 00:28:53.240 they're on their third or fourth

NOTE Confidence: 0.874079147777778

00:28:53.240 --> 00:28:55.010 model that they are MRI compatible,

NOTE Confidence: 0.874079147777778

00:28:55.010 --> 00:28:59.050 but only for the arms, legs, head and neck.

NOTE Confidence: 0.874079147777778

00:28:59.050 --> 00:29:00.418 Eventually I at least they've been

NOTE Confidence: 0.874079147777778

00:29:00.418 --> 00:29:01.690 talking about this for a while.

NOTE Confidence: 0.874079147777778

00:29:01.690 --> 00:29:03.430 They're looking for a device that

NOTE Confidence: 0.874079147777778

00:29:03.430 --> 00:29:05.220 will be completely MRI compatible,

NOTE Confidence: 0.874079147777778

00:29:05.220 --> 00:29:06.718 but they they have not yet come

NOTE Confidence: 0.874079147777778

00:29:06.718 --> 00:29:07.610 up with this yet.

NOTE Confidence: 0.874079147777778

00:29:07.610 --> 00:29:09.030 OK,

NOTE Confidence: 0.874079147777778

00:29:09.030 --> 00:29:11.067 next one is it is compatible with

NOTE Confidence: 0.874079147777778

00:29:11.067 --> 00:29:12.650 certain types of pacemakers,

NOTE Confidence: 0.874079147777778

00:29:12.650 --> 00:29:13.370 but not all,

NOTE Confidence: 0.874079147777778

00:29:13.370 --> 00:29:15.456 and the only way to tell is to

NOTE Confidence: 0.874079147777778

00:29:15.456 --> 00:29:17.478 ask the cardiologist what kind of

NOTE Confidence: 0.874079147777778

00:29:17.478 --> 00:29:19.254 pacemaker they have and whether

NOTE Confidence: 0.874079147777778

00:29:19.254 --> 00:29:20.658 it's compatible or not.

NOTE Confidence: 0.874079147777778

00:29:20.660 --> 00:29:22.557 Of course you want to have the

NOTE Confidence: 0.874079147777778

00:29:22.557 --> 00:29:24.146 patients or somebody who is a

NOTE Confidence: 0.874079147777778

00:29:24.146 --> 00:29:25.580 caregiver for them that can turn

NOTE Confidence: 0.874079147777778

00:29:25.580 --> 00:29:26.890 the machine on and off.

NOTE Confidence: 0.874079147777778

00:29:26.890 --> 00:29:28.300 And of course patients who are

NOTE Confidence: 0.874079147777778

00:29:28.300 --> 00:29:29.966 pregnant or plan to become pregnant

NOTE Confidence: 0.874079147777778

00:29:29.966 --> 00:29:31.646 are not eligible until afterwards.

NOTE Confidence: 0.896895446071428

00:29:34.080 --> 00:29:35.324 OK, these are incisions,

NOTE Confidence: 0.896895446071428

00:29:35.324 --> 00:29:38.160 they are so you can on the left you

NOTE Confidence: 0.896895446071428

00:29:38.160 --> 00:29:40.246 can see that this is an incision

NOTE Confidence: 0.896895446071428

00:29:40.319 --> 00:29:42.474 5 centimeter incision just right

NOTE Confidence: 0.896895446071428

00:29:42.474 --> 00:29:44.724 underneath the chin off the midline,

NOTE Confidence: 0.896895446071428

00:29:44.724 --> 00:29:46.314 and then in the chest.

NOTE Confidence: 0.896895446071428

00:29:46.320 --> 00:29:48.474 It's just another 5 centimeter incision

NOTE Confidence: 0.896895446071428

00:29:48.474 --> 00:29:51.058 about a few centimeters below the clavicle.

NOTE Confidence: 0.896895446071428

00:29:51.060 --> 00:29:52.566 It's important that that we ask

NOTE Confidence: 0.896895446071428

00:29:52.566 --> 00:29:54.114 whether or not they shoot rifles

NOTE Confidence: 0.896895446071428

00:29:54.114 --> 00:29:55.836 or they do a lot of backpacking,

NOTE Confidence: 0.896895446071428

00:29:55.840 --> 00:29:57.490 because that will impact the

NOTE Confidence: 0.896895446071428

00:29:57.490 --> 00:29:59.140 placement of this this generator.

NOTE Confidence: 0.9470383

00:30:01.230 --> 00:30:05.149 OK. The most critical part of the surgery

NOTE Confidence: 0.9470383

00:30:05.149 --> 00:30:07.090 is finding the right branches of the

NOTE Confidence: 0.9470383

00:30:07.090 --> 00:30:09.283 nerve and This is why we take multiple

NOTE Confidence: 0.9470383

00:30:09.283 --> 00:30:11.715 steps to try to figure out which branches

NOTE Confidence: 0.9470383

00:30:11.720 --> 00:30:13.834 to include and which ones to exclude.

NOTE Confidence: 0.9470383

00:30:13.840 --> 00:30:15.364 So we put these little electrodes

NOTE Confidence: 0.9470383

00:30:15.364 --> 00:30:17.299 on the top OK and don't worry,

NOTE Confidence: 0.9470383

00:30:17.300 --> 00:30:17.915 they're they're asleep.

NOTE Confidence: 0.9470383

00:30:17.915 --> 00:30:19.830 When we do this, so we don't feel this,

NOTE Confidence: 0.9470383

00:30:19.830 --> 00:30:21.324 but the red channels are the

NOTE Confidence: 0.9470383

00:30:21.324 --> 00:30:22.979 ones that we want to exclude,

NOTE Confidence: 0.9470383

00:30:22.980 --> 00:30:25.484 and these are going to be the ones

NOTE Confidence: 0.9470383

00:30:25.484 --> 00:30:27.300 that that they're more lateral.

NOTE Confidence: 0.9470383

00:30:27.300 --> 00:30:29.175 These are the lateral divisions.

NOTE Confidence: 0.9470383

00:30:29.180 --> 00:30:31.720 And the ones that we include OK

NOTE Confidence: 0.9470383

00:30:31.720 --> 00:30:35.409 are the genioglossus and the TTV.

NOTE Confidence: 0.9470383

00:30:35.409 --> 00:30:37.365 Just means transverse and

NOTE Confidence: 0.9470383

00:30:37.365 --> 00:30:39.810 vertical fibers of the tongue.

NOTE Confidence: 0.9470383

00:30:39.810 --> 00:30:43.034 OK, so after we put those in then

NOTE Confidence: 0.9470383

00:30:43.034 --> 00:30:44.738 we do the neck dissection part

NOTE Confidence: 0.9470383

00:30:44.738 --> 00:30:46.225 where we identify that digastric

NOTE Confidence: 0.9470383

00:30:46.225 --> 00:30:48.248 tendon OK and if you guys remember

NOTE Confidence: 0.9470383

00:30:48.248 --> 00:30:49.978 from anatomy there's an anterior

NOTE Confidence: 0.9470383

00:30:49.978 --> 00:30:51.703 belly and the posterior belly.

NOTE Confidence: 0.9470383

00:30:51.710 --> 00:30:53.414 But right in the middle is a tendon.

NOTE Confidence: 0.9470383

00:30:53.420 --> 00:30:55.562 So we find this which is really easy to

NOTE Confidence: 0.9470383

00:30:55.562 --> 00:30:58.106 find because it's white and then we can

NOTE Confidence: 0.9470383

00:30:58.106 --> 00:31:00.460 retract it using these little rubber bands.

NOTE Confidence: 0.9470383

00:31:00.460 --> 00:31:01.804 Next there are two major things

NOTE Confidence: 0.9470383

00:31:01.804 --> 00:31:03.651 that we have to retract and then we

NOTE Confidence: 0.9470383

00:31:03.651 --> 00:31:05.290 can look at the nerve right away.

NOTE Confidence: 0.9470383

00:31:05.290 --> 00:31:07.768 One is to some individual and

NOTE Confidence: 0.9470383

00:31:07.768 --> 00:31:10.020 you see those fatty fatty.

NOTE Confidence: 0.9470383

00:31:10.020 --> 00:31:11.796 Polypoid looking thing here that's cemented

NOTE Confidence: 0.9470383

00:31:11.796 --> 00:31:14.267 your plan and we can retract it backwards.

NOTE Confidence: 0.9470383

00:31:14.270 --> 00:31:15.820 And then there's the mylohyoid,

NOTE Confidence: 0.9470383

00:31:15.820 --> 00:31:17.542 which is in a different muscle

NOTE Confidence: 0.9470383

00:31:17.542 --> 00:31:19.031 right underneath the chin and

NOTE Confidence: 0.9470383

00:31:19.031 --> 00:31:20.179 we retract that forward,

NOTE Confidence: 0.9470383

00:31:20.180 --> 00:31:21.644 and so you can see our two little

NOTE Confidence: 0.9470383

00:31:21.644 --> 00:31:22.690 retractors here and right away you

NOTE Confidence: 0.9470383

00:31:22.690 --> 00:31:23.920 can see the hubs loss on Earth.

NOTE Confidence: 0.90866696

00:31:26.470 --> 00:31:28.766 And then once we find the hypoglossal nerve,

NOTE Confidence: 0.90866696

00:31:28.770 --> 00:31:31.619 it's important that we find the inclusion

NOTE Confidence: 0.90866696

00:31:31.619 --> 00:31:34.150 fibers and the exclusion fibers,

NOTE Confidence: 0.90866696

00:31:34.150 --> 00:31:35.500 and we find the break point,

NOTE Confidence: 0.90866696

00:31:35.500 --> 00:31:38.878 which is what divides the two.

NOTE Confidence: 0.90866696

00:31:38.880 --> 00:31:39.740 And as you can see,

NOTE Confidence: 0.90866696

00:31:39.740 --> 00:31:41.780 sometimes there's a very clear separation.

NOTE Confidence: 0.90866696

00:31:41.780 --> 00:31:43.748 We know exactly where to go

NOTE Confidence: 0.90866696

00:31:43.748 --> 00:31:45.600 and and isolate these fibers.

NOTE Confidence: 0.90866696

00:31:45.600 --> 00:31:46.668 But then on the right on

NOTE Confidence: 0.90866696

00:31:46.668 --> 00:31:47.680 the picture on the right,

NOTE Confidence: 0.90866696

00:31:47.680 --> 00:31:49.738 you can tell that the there is

NOTE Confidence: 0.90866696

00:31:49.738 --> 00:31:51.280 an exclusion fiber that's really

NOTE Confidence: 0.90866696

00:31:51.280 --> 00:31:53.380 close to the top of the screen,

NOTE Confidence: 0.90866696

00:31:53.380 --> 00:31:55.459 and then we have to dissect along

NOTE Confidence: 0.90866696

00:31:55.459 --> 00:31:57.499 that nerve to literally set spread

NOTE Confidence: 0.90866696

00:31:57.499 --> 00:31:59.659 out those fibers and split the

NOTE Confidence: 0.90866696

00:31:59.659 --> 00:32:02.345 nerve a little bit so that we can

NOTE Confidence: 0.90866696

00:32:02.345 --> 00:32:05.420 exclude the appropriate fibers.

NOTE Confidence: 0.90866696

00:32:05.420 --> 00:32:08.236 Once we find them then we put this

NOTE Confidence: 0.90866696

00:32:08.236 --> 00:32:10.826 little cuff around the entire nerve

NOTE Confidence: 0.90866696

00:32:10.826 --> 00:32:13.306 fiber the entire nerve bundle.

NOTE Confidence: 0.90866696

00:32:13.310 --> 00:32:15.571 And we make sure that it's sitting

NOTE Confidence: 0.90866696

00:32:15.571 --> 00:32:17.430 nicely along the entire nerve,

NOTE Confidence: 0.90866696

00:32:17.430 --> 00:32:18.515 and then we suture it in place.

NOTE Confidence: 0.862020216923077

00:32:20.590 --> 00:32:22.284 Next is the chest incision and we

NOTE Confidence: 0.862020216923077

00:32:22.284 --> 00:32:24.050 make a little soft tissue pocket.

NOTE Confidence: 0.862020216923077

00:32:24.050 --> 00:32:26.394 Usually we put a couple of little 2

NOTE Confidence: 0.862020216923077

00:32:26.394 --> 00:32:28.515 segments of our of our feelings into

NOTE Confidence: 0.862020216923077

00:32:28.515 --> 00:32:31.158 the the chest wall and this is going to

NOTE Confidence: 0.862020216923077

00:32:31.158 --> 00:32:33.558 be in the fatty pocket, so it doesn't.

NOTE Confidence: 0.862020216923077

00:32:33.558 --> 00:32:35.238 It's not going to endanger

NOTE Confidence: 0.862020216923077

00:32:35.238 --> 00:32:36.150 anything around it.

NOTE Confidence: 0.862020216923077

00:32:36.150 --> 00:32:38.257 This is superficial to the pectoralis muscle.

NOTE Confidence: 0.8829272428

00:32:40.480 --> 00:32:42.920 Third part of the surgery is to find

NOTE Confidence: 0.8829272428

00:32:42.920 --> 00:32:44.907 the intercostals so that we can put

NOTE Confidence: 0.8829272428

00:32:44.907 --> 00:32:46.957 the pressure sensor so that we can

NOTE Confidence: 0.8829272428

00:32:46.957 --> 00:32:49.019 sense the inspirations and just a

NOTE Confidence: 0.8829272428

00:32:49.019 --> 00:32:51.137 review of the chest wall layers.

NOTE Confidence: 0.8829272428

00:32:51.140 --> 00:32:52.384 You've got your skin,

NOTE Confidence: 0.8829272428

00:32:52.384 --> 00:32:53.317 your subcutaneous fat,

NOTE Confidence: 0.8829272428

00:32:53.320 --> 00:32:55.880 which can be really sick for some patients.

NOTE Confidence: 0.8829272428

00:32:55.880 --> 00:32:57.250 And then there's a pectoralis

NOTE Confidence: 0.8829272428

00:32:57.250 --> 00:32:58.952 major which are thicker and males

NOTE Confidence: 0.8829272428

00:32:58.952 --> 00:33:00.774 and thinner and females and then

NOTE Confidence: 0.8829272428

00:33:00.774 --> 00:33:03.238 you get to the external and the

NOTE Confidence: 0.8829272428

00:33:03.238 --> 00:33:05.099 internal intercostal muscles.

NOTE Confidence: 0.8829272428

00:33:05.100 --> 00:33:07.354 If you remember they're really thin muscles,

NOTE Confidence: 0.8829272428

00:33:07.360 --> 00:33:08.395 but they crisscross,

NOTE Confidence: 0.8829272428

00:33:08.395 --> 00:33:10.465 they go in direct that completely.

NOTE Confidence: 0.8829272428

00:33:10.470 --> 00:33:11.114 Opposite directions,

NOTE Confidence: 0.8829272428

00:33:11.114 --> 00:33:13.967 and so that makes it really easy for us

NOTE Confidence: 0.8829272428

00:33:13.967 --> 00:33:15.947 to find so you can see that the EIC,

NOTE Confidence: 0.8829272428

00:33:15.950 --> 00:33:17.766 the external intercostals run

NOTE Confidence: 0.8829272428

00:33:17.766 --> 00:33:19.128 in this direction,

NOTE Confidence: 0.8829272428

00:33:19.130 --> 00:33:21.164 and then as soon as you go through them,

NOTE Confidence: 0.8829272428

00:33:21.170 --> 00:33:23.216 you will see the internal intercostal

NOTE Confidence: 0.8829272428

00:33:23.216 --> 00:33:25.314 muscles going the other way and as

NOTE Confidence: 0.8829272428

00:33:25.314 --> 00:33:27.229 soon as you can see that then you'll

NOTE Confidence: 0.8829272428

00:33:27.229 --> 00:33:28.975 know that your pressure sensor is

NOTE Confidence: 0.8829272428

00:33:28.975 --> 00:33:33.030 going to go right between those layers.

NOTE Confidence: 0.8829272428

00:33:33.030 --> 00:33:35.550 OK, and this is the picture of us

NOTE Confidence: 0.8829272428

00:33:35.550 --> 00:33:37.758 putting in that pressure sensor.

NOTE Confidence: 0.8829272428

00:33:37.760 --> 00:33:38.202 After surgery,

NOTE Confidence: 0.8829272428

00:33:38.202 --> 00:33:39.970 I mean after those part we we hook

NOTE Confidence: 0.8829272428

00:33:40.015 --> 00:33:41.455 it up and we tested just to make

NOTE Confidence: 0.8829272428

00:33:41.455 --> 00:33:42.945 sure it works and it's super cool

NOTE Confidence: 0.8829272428

00:33:42.945 --> 00:33:45.242 'cause you can see the the tongue

NOTE Confidence: 0.8829272428

00:33:45.242 --> 00:33:47.686 coming out during during just

NOTE Confidence: 0.8829272428

00:33:47.686 --> 00:33:48.938 right after your surgery.

NOTE Confidence: 0.8829272428

00:33:48.940 --> 00:33:50.632 You can already tell that it

NOTE Confidence: 0.8829272428

00:33:50.632 --> 00:33:51.556 works in the pack.

NOTE Confidence: 0.8829272428

00:33:51.556 --> 00:33:53.315 You will take an X ray of the

NOTE Confidence: 0.8829272428

00:33:53.315 --> 00:33:55.051 chest and X ray of the neck just

NOTE Confidence: 0.8829272428

00:33:55.051 --> 00:33:56.806 to make sure that the electrodes

NOTE Confidence: 0.8829272428

00:33:56.806 --> 00:33:58.281 are in the right place.

NOTE Confidence: 0.8829272428

00:33:58.290 --> 00:33:58.620 And then

NOTE Confidence: 0.863207211666667

00:33:58.730 --> 00:34:00.056 of course there's no new thorax.

NOTE Confidence: 0.82028145

00:34:02.490 --> 00:34:04.780 And Bruno's gonna talk about the risks. So

NOTE Confidence: 0.881794142857143

00:34:04.790 --> 00:34:07.968 in terms of risks of the surgery,

NOTE Confidence: 0.881794142857143

00:34:07.970 --> 00:34:09.930 these are things that Jen and I

NOTE Confidence: 0.881794142857143

00:34:09.930 --> 00:34:11.370 talked to our patients about.

NOTE Confidence: 0.881794142857143

00:34:11.370 --> 00:34:13.170 You know, before the surgery.

NOTE Confidence: 0.881794142857143

00:34:13.170 --> 00:34:16.458 Obviously you can break them down

NOTE Confidence: 0.881794142857143

00:34:16.458 --> 00:34:19.416 into bleeding risks, infection, risk,

NOTE Confidence: 0.881794142857143

00:34:19.416 --> 00:34:22.912 injury to nerve risk, new thorax.

NOTE Confidence: 0.881794142857143

00:34:22.912 --> 00:34:25.558 OK, so tongue weakness from either

NOTE Confidence: 0.881794142857143

00:34:25.558 --> 00:34:28.620 temporary or permanent injury to the

NOTE Confidence: 0.881794142857143

00:34:28.620 --> 00:34:30.354 hypoglossal nerve, tongue numbness.

NOTE Confidence: 0.881794142857143

00:34:30.354 --> 00:34:33.090 So that'll be injury to the lingual nerve.

NOTE Confidence: 0.881794142857143

00:34:33.090 --> 00:34:35.090 And read to the marginal mandibular nerve,

NOTE Confidence: 0.881794142857143

00:34:35.090 --> 00:34:37.456 which is a small little branch of

NOTE Confidence: 0.881794142857143

00:34:37.456 --> 00:34:39.610 the facial nerve that makes your

NOTE Confidence: 0.881794142857143

00:34:39.610 --> 00:34:42.010 the corner of your mouth droop.

NOTE Confidence: 0.881794142857143

00:34:42.010 --> 00:34:43.012 If it's injured,

NOTE Confidence: 0.881794142857143

00:34:43.012 --> 00:34:45.016 a new more thorax is obviously

NOTE Confidence: 0.881794142857143

00:34:45.016 --> 00:34:46.440 a collapsed lung,

NOTE Confidence: 0.881794142857143

00:34:46.440 --> 00:34:49.289 and that can occur when placing sensing

NOTE Confidence: 0.881794142857143

00:34:49.289 --> 00:34:51.989 lead between those intercostal muscles,

NOTE Confidence: 0.881794142857143

00:34:51.990 --> 00:34:52.902 hematoma, bleeding,

NOTE Confidence: 0.881794142857143

00:34:52.902 --> 00:34:55.182 and infection are always concerns

NOTE Confidence: 0.881794142857143

00:34:55.182 --> 00:34:57.708 when you know operating in the

NOTE Confidence: 0.881794142857143

00:34:57.708 --> 00:35:00.274 neck and chest and therapy related

NOTE Confidence: 0.881794142857143

00:35:00.274 --> 00:35:03.082 risks can be due to unfavorable.

NOTE Confidence: 0.881794142857143

00:35:03.090 --> 00:35:05.618 Tongue protrusion obviously an

NOTE Confidence: 0.881794142857143

00:35:05.618 --> 00:35:08.146 inadequate response to therapy.

NOTE Confidence: 0.881794142857143

00:35:08.150 --> 00:35:10.345 Patients having poor sleep quality

NOTE Confidence: 0.881794142857143

00:35:10.345 --> 00:35:13.161 due to discomfort or arousals from

NOTE Confidence: 0.881794142857143

00:35:13.161 --> 00:35:15.048 stimulation and tongue irritation.

NOTE Confidence: 0.881794142857143

00:35:15.048 --> 00:35:19.178 So if we look at data from the STAR

NOTE Confidence: 0.881794142857143

00:35:19.178 --> 00:35:22.363 trial and the five year start trial,

NOTE Confidence: 0.881794142857143

00:35:22.370 --> 00:35:26.106 you can see that the majority of adverse

NOTE Confidence: 0.881794142857143

00:35:26.110 --> 00:35:28.602 events that were reported in that study

NOTE Confidence: 0.881794142857143

00:35:28.602 --> 00:35:31.622 were in the 1st 12 months and these were,

NOTE Confidence: 0.881794142857143

00:35:31.622 --> 00:35:32.270 you know,

NOTE Confidence: 0.881794142857143

00:35:32.270 --> 00:35:33.554 mostly related to.

NOTE Confidence: 0.881794142857143

00:35:33.554 --> 00:35:35.694 Discomfort related to the incisions.

NOTE Confidence: 0.881794142857143

00:35:35.700 --> 00:35:38.976 Discomfort related to the therapy itself,

NOTE Confidence: 0.881794142857143

00:35:38.980 --> 00:35:41.968 there were quite a few temporary

NOTE Confidence: 0.881794142857143

00:35:41.968 --> 00:35:44.790 tongue weaknesses that were reported,

NOTE Confidence: 0.881794142857143

00:35:44.790 --> 00:35:46.522 but these obviously resolved

NOTE Confidence: 0.881794142857143

00:35:46.522 --> 00:35:49.120 with time as you would expect

NOTE Confidence: 0.881794142857143

00:35:49.202 --> 00:35:51.667 temporary weakness or to resolve.

NOTE Confidence: 0.881794142857143

00:35:51.670 --> 00:35:55.009 There was one case of mild infection.

NOTE Confidence: 0.881794142857143

00:35:55.010 --> 00:35:58.118 There were no cases of pneumothorax.

NOTE Confidence: 0.881794142857143

00:35:58.120 --> 00:36:00.856 There were no cases of permanent

NOTE Confidence: 0.881794142857143

00:36:00.860 --> 00:36:04.928 nerve injury and no cases of.

NOTE Confidence: 0.881794142857143

00:36:04.930 --> 00:36:08.758 Major infection or sepsis or death.

NOTE Confidence: 0.881794142857143

00:36:08.760 --> 00:36:11.259 And so you can see that overtime

NOTE Confidence: 0.881794142857143

00:36:11.259 --> 00:36:13.408 you know the number of adverse

NOTE Confidence: 0.881794142857143

00:36:13.408 --> 00:36:15.193 events were were very low,

NOTE Confidence: 0.881794142857143

00:36:15.200 --> 00:36:18.528 and so overall this is a very safe

NOTE Confidence: 0.881794142857143

00:36:18.530 --> 00:36:22.578 surgery if you look at data from the

NOTE Confidence: 0.881794142857143

00:36:22.578 --> 00:36:25.940 adhere registry with quite a few

NOTE Confidence: 0.881794142857143

00:36:25.940 --> 00:36:28.526 larger number of patients who have

NOTE Confidence: 0.881794142857143

00:36:28.526 --> 00:36:30.434 been implanted the adverse events

NOTE Confidence: 0.881794142857143

00:36:30.434 --> 00:36:33.343 again are very low in terms of the

NOTE Confidence: 0.881794142857143

00:36:33.343 --> 00:36:35.731 percentage and in terms of tongue

NOTE Confidence: 0.881794142857143

00:36:35.731 --> 00:36:38.523 weakness less than 1% of speech and

NOTE Confidence: 0.881794142857143

00:36:38.523 --> 00:36:40.828 swallowing dysfunction less than 1%.

NOTE Confidence: 0.881794142857143

00:36:40.830 --> 00:36:43.315 There were no infections reported

NOTE Confidence: 0.881794142857143

00:36:43.315 --> 00:36:46.250 in in that registry at all,

NOTE Confidence: 0.881794142857143

00:36:46.250 --> 00:36:49.197 and so most of the the adverse

NOTE Confidence: 0.881794142857143

00:36:49.197 --> 00:36:51.759 events in that registry that have

NOTE Confidence: 0.881794142857143

00:36:51.759 --> 00:36:54.258 been reported have been related

NOTE Confidence: 0.881794142857143

00:36:54.258 --> 00:36:56.538 to stimulation related discomfort

NOTE Confidence: 0.881794142857143

00:36:56.538 --> 00:36:58.818 or activation related discomfort.

NOTE Confidence: 0.881794142857143

00:36:58.820 --> 00:37:02.484 And so overall is a very safe surgery

NOTE Confidence: 0.881794142857143

00:37:02.484 --> 00:37:04.734 in terms of surgical procedures.

NOTE Confidence: 0.881794142857143

00:37:04.734 --> 00:37:07.757 That again and I performed in

NOTE Confidence: 0.881794142857143

00:37:07.757 --> 00:37:10.379 terms of the patients pathway after

NOTE Confidence: 0.881794142857143

00:37:10.379 --> 00:37:11.253 their implantation,

NOTE Confidence: 0.881794142857143

00:37:11.260 --> 00:37:14.239 so we would see them about a week after

NOTE Confidence: 0.881794142857143

00:37:14.239 --> 00:37:16.655 surgery to make sure their surgical

NOTE Confidence: 0.881794142857143

00:37:16.655 --> 00:37:19.230 incision sites are healing up nicely.

NOTE Confidence: 0.881794142857143

00:37:19.230 --> 00:37:19.830 Typically,

NOTE Confidence: 0.881794142857143

00:37:19.830 --> 00:37:22.110 wait a month after the surgery

NOTE Confidence: 0.881794142857143

00:37:22.110 --> 00:37:24.610 in order to activate the patient.

NOTE Confidence: 0.881794142857143

00:37:24.610 --> 00:37:27.196 This is typically done in the

NOTE Confidence: 0.881794142857143

00:37:27.196 --> 00:37:28.920 office with the patient.

NOTE Confidence: 0.881794142857143

00:37:28.920 --> 00:37:30.468 And you know you teach them

NOTE Confidence: 0.881794142857143

00:37:30.468 --> 00:37:31.980 how to use their remote.

NOTE Confidence: 0.881794142857143

00:37:31.980 --> 00:37:33.988 You actually program their

NOTE Confidence: 0.881794142857143

00:37:33.988 --> 00:37:37.000 device in the office with them,

NOTE Confidence: 0.881794142857143

00:37:37.000 --> 00:37:38.560 and you actually turn it on

NOTE Confidence: 0.881794142857143

00:37:38.560 --> 00:37:40.280 with them awake in the office,

NOTE Confidence: 0.881794142857143

00:37:40.280 --> 00:37:41.595 and they get to actually

NOTE Confidence: 0.881794142857143

00:37:41.595 --> 00:37:42.910 experience and and see what

NOTE Confidence: 0.94827962

00:37:42.964 --> 00:37:45.034 it feels like and see what it looks like,

NOTE Confidence: 0.94827962

00:37:45.040 --> 00:37:46.174 and you get to see that too.

NOTE Confidence: 0.94827962

00:37:46.180 --> 00:37:47.520 So it's pretty cool.

NOTE Confidence: 0.94827962

00:37:47.520 --> 00:37:49.195 About a month after that,

NOTE Confidence: 0.94827962

00:37:49.200 --> 00:37:50.593 you checked in with them that can

NOTE Confidence: 0.94827962

00:37:50.593 --> 00:37:52.141 be through a Tele health visit and

NOTE Confidence: 0.94827962

00:37:52.141 --> 00:37:53.491 just see how things are going,

NOTE Confidence: 0.94827962

00:37:53.500 --> 00:37:54.980 see how they're feeling,

NOTE Confidence: 0.94827962

00:37:54.980 --> 00:37:57.200 see how their sleep quality is,

NOTE Confidence: 0.94827962

00:37:57.200 --> 00:38:00.116 see how they're you know snoring is, or if.

NOTE Confidence: 0.94827962

00:38:00.116 --> 00:38:03.332 It's if it's been resolved per their partner.

NOTE Confidence: 0.94827962

00:38:03.332 --> 00:38:05.576 And then usually around the three

NOTE Confidence: 0.94827962

00:38:05.576 --> 00:38:08.351 to four month Mark is when you would

NOTE Confidence: 0.94827962

00:38:08.351 --> 00:38:10.373 typically get a follow-up sleep

NOTE Confidence: 0.94827962

00:38:10.373 --> 00:38:12.775 study and do any of your fine tuning

NOTE Confidence: 0.94827962

00:38:12.775 --> 00:38:14.789 that you need to do in terms of,

NOTE Confidence: 0.94827962

00:38:14.790 --> 00:38:17.030 you know, reprogramming the software

NOTE Confidence: 0.94827962

00:38:17.030 --> 00:38:19.870 in terms of the implant itself.

NOTE Confidence: 0.94827962

00:38:19.870 --> 00:38:22.035 And certainly these patients are

NOTE Confidence: 0.94827962

00:38:22.035 --> 00:38:23.650 not patients that you want to,

NOTE Confidence: 0.94827962

00:38:23.650 --> 00:38:24.376 just you know,

NOTE Confidence: 0.94827962

00:38:24.376 --> 00:38:25.828 see in those first few months

NOTE Confidence: 0.94827962

00:38:25.828 --> 00:38:27.188 and then never see again.

NOTE Confidence: 0.94827962

00:38:27.190 --> 00:38:29.276 They they need to be, you know,

NOTE Confidence: 0.94827962

00:38:29.276 --> 00:38:31.380 have routine follow up at least once or

NOTE Confidence: 0.94827962

00:38:31.443 --> 00:38:33.483 twice a year to see how they're doing.

NOTE Confidence: 0.94827962

00:38:33.490 --> 00:38:35.398 See if they're still using there.

NOTE Confidence: 0.94827962

00:38:35.400 --> 00:38:36.672 Their device to,

NOTE Confidence: 0.94827962

00:38:36.672 --> 00:38:38.368 similar to a CPAP.

NOTE Confidence: 0.94827962

00:38:38.370 --> 00:38:40.218 See how their quality of life

NOTE Confidence: 0.94827962

00:38:40.218 --> 00:38:41.990 is while they're using therapy.

NOTE Confidence: 0.9287399505

00:38:44.340 --> 00:38:46.181 And you know just to give you

NOTE Confidence: 0.9287399505

00:38:46.181 --> 00:38:47.908 a sense of what we've been

NOTE Confidence: 0.9287399505

00:38:47.908 --> 00:38:49.931 doing here at Yale is we we.

NOTE Confidence: 0.9287399505

00:38:49.940 --> 00:38:51.200 It's a very expensive implant.

NOTE Confidence: 0.9287399505

00:38:51.200 --> 00:38:53.438 And so in the beginning stages,

NOTE Confidence: 0.9287399505

00:38:53.440 --> 00:38:55.390 a lot of hospitals aren't

NOTE Confidence: 0.9287399505

00:38:55.390 --> 00:38:56.950 are very reluctant to.

NOTE Confidence: 0.9287399505

00:38:56.950 --> 00:38:57.798 Allow implants,

NOTE Confidence: 0.9287399505

00:38:57.798 --> 00:39:01.021 but in January or in March of 2019

NOTE Confidence: 0.9287399505

00:39:01.021 --> 00:39:03.029 is when we got approval to to do

NOTE Confidence: 0.9287399505

00:39:03.029 --> 00:39:05.099 them at GAIL and in November of 2020

NOTE Confidence: 0.9287399505

00:39:05.099 --> 00:39:07.230 is when we did our first implant,

NOTE Confidence: 0.9287399505

00:39:07.230 --> 00:39:08.913 so it took us a little bit of time

NOTE Confidence: 0.9287399505

00:39:08.913 --> 00:39:10.569 to even find the right candidate

NOTE Confidence: 0.9287399505

00:39:10.569 --> 00:39:11.984 for this surgery and then.

NOTE Confidence: 0.9287399505

00:39:11.990 --> 00:39:14.170 But since then, for the past 14 months or so,

NOTE Confidence: 0.9287399505

00:39:14.170 --> 00:39:16.719 we have had 10 implants already

NOTE Confidence: 0.9287399505

00:39:16.719 --> 00:39:19.053 and at various stages of activation

NOTE Confidence: 0.9287399505

00:39:19.053 --> 00:39:21.547 and we have 7 already scheduled

NOTE Confidence: 0.9287399505

00:39:21.547 --> 00:39:23.627 in the upcoming two months.

NOTE Confidence: 0.9287399505

00:39:23.630 --> 00:39:25.694 We are building this who also

NOTE Confidence: 0.9287399505

00:39:25.694 --> 00:39:26.726 nerve stimulation program.

NOTE Confidence: 0.9287399505

00:39:26.730 --> 00:39:28.476 Of course with the help of doctors in Chuck.

NOTE Confidence: 0.9287399505

00:39:28.480 --> 00:39:30.766 And we have monthly meetings that

NOTE Confidence: 0.9287399505

00:39:30.766 --> 00:39:32.740 a multidisciplinary we are doing.

NOTE Confidence: 0.9287399505

00:39:32.740 --> 00:39:34.328 Physician outreach events where

NOTE Confidence: 0.9287399505

00:39:34.328 --> 00:39:36.313 we're reaching out to pulmonologist

NOTE Confidence: 0.9287399505

00:39:36.313 --> 00:39:39.091 as well as primary care doctors and

NOTE Confidence: 0.9287399505

00:39:39.091 --> 00:39:40.635 probably eventually cardiologist as

NOTE Confidence: 0.9287399505

00:39:40.696 --> 00:39:42.461 well to to see if we can increase

NOTE Confidence: 0.9287399505

00:39:42.461 --> 00:39:44.065 everyones knowledge about hypoglossal

NOTE Confidence: 0.9287399505

00:39:44.065 --> 00:39:46.349 nerve stimulation to so that they

NOTE Confidence: 0.9287399505

00:39:46.349 --> 00:39:47.675 can keep an eye out for.

NOTE Confidence: 0.9287399505

00:39:47.680 --> 00:39:49.736 For patients that may may benefit from this.

NOTE Confidence: 0.9287399505

00:39:49.740 --> 00:39:51.695 And we're also planning on

NOTE Confidence: 0.9287399505

00:39:51.695 --> 00:39:53.259 some community outreach talks.

NOTE Confidence: 0.9287399505

00:39:53.260 --> 00:39:55.148 We are also I forgot to put this

NOTE Confidence: 0.9287399505

00:39:55.148 --> 00:39:56.539 on the the list here,

NOTE Confidence: 0.9287399505

00:39:56.540 --> 00:39:59.428 but we're also reaching out to some patients.

NOTE Confidence: 0.9287399505

00:39:59.430 --> 00:40:01.022 Who have tried CPAP,

NOTE Confidence: 0.9287399505

00:40:01.022 --> 00:40:02.614 who are not compliant,

NOTE Confidence: 0.9287399505

00:40:02.620 --> 00:40:05.105 and so from we have a database.

NOTE Confidence: 0.9287399505

00:40:05.110 --> 00:40:06.445 Thank you to doctors and

NOTE Confidence: 0.9287399505

00:40:06.445 --> 00:40:07.513 Chuck for providing it,

NOTE Confidence: 0.9287399505

00:40:07.520 --> 00:40:09.245 but but essentially we're trying

NOTE Confidence: 0.9287399505

00:40:09.245 --> 00:40:11.740 to find out patients who are not

NOTE Confidence: 0.9287399505

00:40:11.740 --> 00:40:13.846 tolerating the PAP machine and then

NOTE Confidence: 0.9287399505

00:40:13.846 --> 00:40:16.103 screening them to to see if they

NOTE Confidence: 0.9287399505

00:40:16.103 --> 00:40:17.588 would be interested in inspire.

NOTE Confidence: 0.9287399505

00:40:17.590 --> 00:40:19.480 Because we think that it would

NOTE Confidence: 0.9287399505

00:40:19.480 --> 00:40:21.140 benefit them greatly, of course,

NOTE Confidence: 0.9287399505

00:40:21.140 --> 00:40:24.410 and these are our media outlets and you know,

NOTE Confidence: 0.9287399505

00:40:24.410 --> 00:40:25.058 Doctor Cardoso.

NOTE Confidence: 0.9287399505

00:40:25.058 --> 00:40:27.326 Doctors in shock was in a couple

NOTE Confidence: 0.9287399505

00:40:27.326 --> 00:40:28.921 articles and of course there

NOTE Confidence: 0.9287399505

00:40:28.921 --> 00:40:30.436 was a tiny little interview.

NOTE Confidence: 0.9287399505

00:40:30.440 --> 00:40:31.889 20 years eve.

NOTE Confidence: 0.9287399505

00:40:31.889 --> 00:40:33.338 To help promote,

NOTE Confidence: 0.9287399505

00:40:33.340 --> 00:40:35.728 we're actually not necessarily to promote

NOTE Confidence: 0.9287399505

00:40:35.728 --> 00:40:37.890 this necessarily for industry purposes,

NOTE Confidence: 0.9287399505

00:40:37.890 --> 00:40:41.186 but really to to spread the word on

NOTE Confidence: 0.9287399505

00:40:41.186 --> 00:40:44.045 this possible therapy for a small

NOTE Confidence: 0.9287399505

00:40:44.045 --> 00:40:46.475 population of patients with OSA.

NOTE Confidence: 0.9287399505

00:40:46.480 --> 00:40:48.517 With that I will kind of turn

NOTE Confidence: 0.9287399505

00:40:48.517 --> 00:40:50.921 this over to to you guys for

NOTE Confidence: 0.9287399505

00:40:50.921 --> 00:40:52.377 any questions or comments,

NOTE Confidence: 0.9287399505

00:40:52.380 --> 00:40:55.048 and I know that.

NOTE Confidence: 0.9287399505

00:40:55.050 --> 00:40:57.178 There's a chat box that you

NOTE Confidence: 0.9287399505

00:40:57.178 --> 00:40:57.844 can post questions.

NOTE Confidence: 0.961175516666667

00:40:59.800 --> 00:41:01.468 Great, thank you so much guys.

NOTE Confidence: 0.961175516666667

00:41:01.470 --> 00:41:05.530 I appreciate the nice journey through the.

NOTE Confidence: 0.961175516666667

00:41:05.530 --> 00:41:07.515 Through the history of the

NOTE Confidence: 0.961175516666667

00:41:07.515 --> 00:41:08.706 hypoglossal nerve stimulation,

NOTE Confidence: 0.961175516666667

00:41:08.710 --> 00:41:10.230 the failed and successful attempts,

NOTE Confidence: 0.961175516666667

00:41:10.230 --> 00:41:13.326 and also where we are now.

NOTE Confidence: 0.961175516666667

00:41:13.330 --> 00:41:15.160 And absolutely great to have

NOTE Confidence: 0.961175516666667

00:41:15.160 --> 00:41:16.990 a partnership with you guys.

NOTE Confidence: 0.961175516666667

00:41:16.990 --> 00:41:18.886 So I'm just going to turn and see.

NOTE Confidence: 0.961175516666667

00:41:18.890 --> 00:41:20.228 Is there any questions or comments?

NOTE Confidence: 0.961175516666667

00:41:20.230 --> 00:41:23.352 And so I have a comment from Doctor Kumar.

NOTE Confidence: 0.961175516666667

00:41:23.352 --> 00:41:25.160 It says it's not a question but I

NOTE Confidence: 0.961175516666667

00:41:25.214 --> 00:41:26.489 wish while advertising about its

NOTE Confidence: 0.961175516666667

00:41:26.489 --> 00:41:28.250 fire as a non secret solution.

NOTE Confidence: 0.961175516666667

00:41:28.250 --> 00:41:30.625 They included the BMI exclusion

NOTE Confidence: 0.961175516666667

00:41:30.625 --> 00:41:32.525 and so I think.

NOTE Confidence: 0.961175516666667

00:41:32.530 --> 00:41:35.770 Speaks to the statement about awareness

NOTE Confidence: 0.961175516666667

00:41:35.770 --> 00:41:40.189 of for whom the therapy is appropriate

NOTE Confidence: 0.961175516666667

73

00:41:40.190 --> 00:41:42.646 and one of the comments that I'll make

NOTE Confidence: 0.961175516666667

00:41:42.646 --> 00:41:45.128 is that BMI is a modifiable factor,

NOTE Confidence: 0.961175516666667

00:41:45.130 --> 00:41:48.882 and so we do have some individuals who

NOTE Confidence: 0.961175516666667

00:41:48.882 --> 00:41:50.920 really want the uproar stimulation,

NOTE Confidence: 0.961175516666667

00:41:50.920 --> 00:41:51.640 device implantation,

NOTE Confidence: 0.961175516666667

00:41:51.640 --> 00:41:52.720 and so therefore,

NOTE Confidence: 0.961175516666667

00:41:52.720 --> 00:41:55.030 are working on losing weight and we're

NOTE Confidence: 0.961175516666667

00:41:55.030 --> 00:41:56.705 working with our weight management

NOTE Confidence: 0.961175516666667

00:41:56.705 --> 00:41:58.929 colleagues in GI to do that with them.

NOTE Confidence: 0.961175516666667

00:41:58.930 --> 00:42:02.258 And so there's also comment from Doctor Yagi.

NOTE Confidence: 0.961175516666667

00:42:02.260 --> 00:42:03.920 In committee is excellent talk.

NOTE Confidence: 0.961175516666667

00:42:03.920 --> 00:42:05.100 In addition to dice,

NOTE Confidence: 0.961175516666667

00:42:05.100 --> 00:42:07.779 what other ways may we be able to

NOTE Confidence: 0.961175516666667

00:42:07.779 --> 00:42:09.884 predict nonresponders to this therapy?

NOTE Confidence: 0.896354304

00:42:12.300 --> 00:42:14.030 That's a great question in

NOTE Confidence: 0.896354304

00:42:14.030 --> 00:42:15.760 terms of let's go backwards.

NOTE Confidence: 0.896354304

00:42:15.760 --> 00:42:18.164 So Doctor Yagi the.

NOTE Confidence: 0.896354304

00:42:18.164 --> 00:42:21.114 The reason why they keep the criteria

NOTE Confidence: 0.896354304

00:42:21.114 --> 00:42:23.164 so strict at this point is because

NOTE Confidence: 0.896354304

00:42:23.164 --> 00:42:25.316 we want to make sure that we don't

NOTE Confidence: 0.896354304

00:42:25.316 --> 00:42:27.397 put the implant into patients who are

NOTE Confidence: 0.896354304

00:42:27.397 --> 00:42:29.596 have a very very low success rate,

NOTE Confidence: 0.896354304

00:42:29.596 --> 00:42:31.648 and so these are the people

NOTE Confidence: 0.896354304

00:42:31.648 --> 00:42:33.429 with BMI greater than 35.

NOTE Confidence: 0.896354304

00:42:33.430 --> 00:42:34.582 Especially because when they

NOTE Confidence: 0.896354304

00:42:34.582 --> 00:42:36.607 have just a lot of fatty tissue

NOTE Confidence: 0.896354304

00:42:36.607 --> 00:42:38.245 in the upper airway or just a

NOTE Confidence: 0.896354304

00:42:38.245 --> 00:42:39.967 lot of weight and neck girth,

NOTE Confidence: 0.896354304

00:42:39.970 --> 00:42:40.675 it's really difficult.

NOTE Confidence: 0.896354304

00:42:40.675 --> 00:42:42.930 Like no matter how much you try to stimulate,

NOTE Confidence: 0.896354304

00:42:42.930 --> 00:42:45.042 the tongue is not going to

NOTE Confidence: 0.896354304

00:42:45.042 --> 00:42:46.450 expand the upper airway,

NOTE Confidence: 0.896354304

00:42:46.450 --> 00:42:48.669 so that's that's a really important one.

NOTE Confidence: 0.896354304

00:42:48.670 --> 00:42:51.631 I also in general like to make sure that

NOTE Confidence: 0.896354304

00:42:51.631 --> 00:42:54.950 my patients are very motivated there are,

NOTE Confidence: 0.896354304

00:42:54.950 --> 00:42:55.442 you know,

NOTE Confidence: 0.896354304

00:42:55.442 --> 00:42:57.164 surgery in general is not without risk.

NOTE Confidence: 0.896354304

00:42:57.170 --> 00:42:59.090 I mean you saw all the the list of yes,

NOTE Confidence: 0.896354304

00:42:59.090 --> 00:43:00.114 they're not that common,

NOTE Confidence: 0.896354304

00:43:00.114 --> 00:43:02.004 but it is possible for them to

NOTE Confidence: 0.896354304

00:43:02.004 --> 00:43:03.188 get those adverse outcomes.

NOTE Confidence: 0.896354304

00:43:03.190 --> 00:43:05.614 And I want to make sure that they

NOTE Confidence: 0.896354304

00:43:05.614 --> 00:43:07.571 understand the risks and they are

NOTE Confidence: 0.896354304

00:43:07.571 --> 00:43:09.503 motivated to to have the surgery

NOTE Confidence: 0.896354304

00:43:09.566 --> 00:43:11.521 even though they understand that

NOTE Confidence: 0.896354304

00:43:11.521 --> 00:43:13.476 things bad things can happen.

NOTE Confidence: 0.896354304

00:43:13.480 --> 00:43:16.702 There are and then back to

NOTE Confidence: 0.896354304

00:43:16.702 --> 00:43:18.958 Toshiba Kumar question the BMI,

NOTE Confidence: 0.896354304

00:43:18.958 --> 00:43:21.191 so there are a lot of patients

NOTE Confidence: 0.896354304

00:43:21.191 --> 00:43:23.580 with obstructive sleep apnea who

NOTE Confidence: 0.896354304

00:43:23.580 --> 00:43:26.075 doesn't respond completely to PAT,

NOTE Confidence: 0.896354304

00:43:26.080 --> 00:43:28.276 but we also want to make sure that they,

NOTE Confidence: 0.896354304

00:43:28.280 --> 00:43:29.400 even if they don't come,

NOTE Confidence: 0.896354304

00:43:29.400 --> 00:43:29.856 if they,

NOTE Confidence: 0.896354304

00:43:29.856 --> 00:43:31.680 even if they come in and they don't

NOTE Confidence: 0.896354304

00:43:31.733 --> 00:43:33.599 end up being candidates for inspire,

NOTE Confidence: 0.896354304

00:43:33.600 --> 00:43:34.854 it is still a great opportunity

NOTE Confidence: 0.896354304

00:43:34.854 --> 00:43:36.608 for us to talk to them about all

NOTE Confidence: 0.896354304

00:43:36.608 --> 00:43:38.100 the other things that they can do,

NOTE Confidence: 0.896354304

00:43:38.100 --> 00:43:39.084 like weight loss.

NOTE Confidence: 0.896354304

00:43:39.084 --> 00:43:39.740 There's a,

NOTE Confidence: 0.896354304

00:43:39.740 --> 00:43:41.938 there's a really funny story from one

NOTE Confidence: 0.896354304

00:43:41.938 --> 00:43:44.487 of our colleagues who does inspire at the VA.

NOTE Confidence: 0.896354304

00:43:44.490 --> 00:43:46.140 He's just saying that there was

NOTE Confidence: 0.896354304

00:43:46.140 --> 00:43:48.074 a patient with a really high VMI

NOTE Confidence: 0.896354304

00:43:48.074 --> 00:43:49.880 and really high hi and but he

NOTE Confidence: 0.896354304

00:43:49.938 --> 00:43:51.543 really wanted this implant 'cause

NOTE Confidence: 0.896354304

00:43:51.543 --> 00:43:53.723 he thought it was cool and so he

NOTE Confidence: 0.896354304

00:43:53.723 --> 00:43:54.869 ended up losing all this weight.

NOTE Confidence: 0.896354304

00:43:54.870 --> 00:43:57.012 He lost £50 and then at the end of

NOTE Confidence: 0.896354304

00:43:57.012 --> 00:43:59.504 the day they repeated the PSG and he

NOTE Confidence: 0.896354304

00:43:59.504 --> 00:44:01.372 didn't have sleep apnea anymore and

NOTE Confidence: 0.896354304

00:44:01.372 --> 00:44:03.840 so he he was really mad that he was

NOTE Confidence: 0.896354304

00:44:03.840 --> 00:44:05.190 really bummed that he couldn't get

NOTE Confidence: 0.896354304

00:44:05.190 --> 00:44:06.829 inspired by at least his OSA was cured.

NOTE Confidence: 0.896354304

00:44:06.830 --> 00:44:08.840 So it's a good way for us to at least

NOTE Confidence: 0.896354304

00:44:08.899 --> 00:44:10.803 bring patients in and even talk to

NOTE Confidence: 0.896354304

00:44:10.803 --> 00:44:12.605 them about their OSA and what the

NOTE Confidence: 0.896354304

00:44:12.605 --> 00:44:14.040 different strategies are to treat it.

NOTE Confidence: 0.857306917058824

00:44:15.240 --> 00:44:16.336 Yeah, great thank you.

NOTE Confidence: 0.857306917058824

00:44:16.336 --> 00:44:18.789 And so and and I just add that

NOTE Confidence: 0.857306917058824

00:44:18.789 --> 00:44:20.654 it is a multidisciplinary effort.

NOTE Confidence: 0.857306917058824

00:44:20.660 --> 00:44:23.270 A lot of these individuals.

NOTE Confidence: 0.857306917058824

00:44:23.270 --> 00:44:25.060 Don't just have sleep apnea,

NOTE Confidence: 0.857306917058824

00:44:25.060 --> 00:44:28.222 they have other sleep problems and

NOTE Confidence: 0.857306917058824

00:44:28.222 --> 00:44:29.782 there are some other predictors

NOTE Confidence: 0.857306917058824

00:44:29.782 --> 00:44:31.995 that are in the works for food.

NOTE Confidence: 0.857306917058824

00:44:31.995 --> 00:44:34.410 May I mean not be responded to

NOTE Confidence: 0.857306917058824

00:44:34.410 --> 00:44:35.935 stimulation so there's a recent

NOTE Confidence: 0.857306917058824

00:44:35.935 --> 00:44:37.950 paper published in a blue journal.

NOTE Confidence: 0.857306917058824

00:44:37.950 --> 00:44:40.086 Looking at these physiologic traits so

NOTE Confidence: 0.857306917058824

00:44:40.086 --> 00:44:42.804 people with easier as ability or high

NOTE Confidence: 0.857306917058824

00:44:42.804 --> 00:44:45.653 loop gain tend to be poor responders.

NOTE Confidence: 0.857306917058824

00:44:45.660 --> 00:44:47.346 Even among those who were in

NOTE Confidence: 0.857306917058824

00:44:47.346 --> 00:44:49.150 Star trial so and just as a,

NOTE Confidence: 0.857306917058824

00:44:49.150 --> 00:44:50.510 it's a highlight, you know,

NOTE Confidence: 0.857306917058824

00:44:50.510 --> 00:44:53.021 one up to 1/3 of patients in the start

NOTE Confidence: 0.857306917058824

00:44:53.021 --> 00:44:55.334 trial were nonresponders in terms

NOTE Confidence: 0.857306917058824

00:44:55.334 --> 00:44:57.806 of hi and upward sleepiness scale,

NOTE Confidence: 0.857306917058824

00:44:57.810 --> 00:45:01.290 so it's not a panacea.

NOTE Confidence: 0.857306917058824

00:45:01.290 --> 00:45:03.222 But with the right candidates we

NOTE Confidence: 0.857306917058824

00:45:03.222 --> 00:45:05.070 can have a successful therapy,

NOTE Confidence: 0.857306917058824

00:45:05.070 --> 00:45:07.288 and so Doctor Stewart meant is

NOTE Confidence: 0.857306917058824

00:45:07.288 --> 00:45:09.196 mentioning that what is the logic

NOTE Confidence: 0.857306917058824

00:45:09.196 --> 00:45:11.384 for allowing hi have 60 but not

NOTE Confidence: 0.857306917058824

00:45:11.384 --> 00:45:12.548 70 for this procedure,

NOTE Confidence: 0.857306917058824

00:45:12.550 --> 00:45:14.835 knowing how variable this number

NOTE Confidence: 0.857306917058824

00:45:14.835 --> 00:45:17.120 can be at this level.

NOTE Confidence: 0.857306917058824

00:45:17.120 --> 00:45:18.050 So

00:45:18.820 --> 00:45:21.970 the star trial the the age I cut off was

00:45:22.051 --> 00:45:26.522 actually 50 in that trial, so you know.

00:45:26.522 --> 00:45:28.418 And so several of the other

00:45:28.418 --> 00:45:29.720 studies around that time,

00:45:29.720 --> 00:45:33.339 they actually had similar cut offs and

00:45:33.339 --> 00:45:36.902 so then in getting FDA approval they

00:45:36.902 --> 00:45:40.697 initially made it slightly above that to 65.

00:45:40.700 --> 00:45:42.458 It's sort of an arbitrary number,

00:45:42.460 --> 00:45:45.220 but I think the thought was

00:45:45.220 --> 00:45:47.504 that you know the higher.

00:45:47.504 --> 00:45:51.610 That number went the the less likelihood of

00:45:51.610 --> 00:45:55.646 success in terms of of the device working.

00:45:55.646 --> 00:45:58.418 There have been a couple kind of

00:45:58.418 --> 00:46:01.238 studies out there that have been done.

00:46:01.240 --> 00:46:04.418 As for implants in patients kind of

00:46:04.418 --> 00:46:07.952 off label in patients who have either

NOTE Confidence: 0.723037795333333

00:46:07.952 --> 00:46:12.110 high BMI or age I above the cut off

NOTE Confidence: 0.723037795333333

00:46:12.220 --> 00:46:15.024 of 65 and it's been quite successful,

NOTE Confidence: 0.723037795333333

00:46:15.024 --> 00:46:18.210 but it's in the it's in the 62.

NOTE Confidence: 0.723037795333333

00:46:18.210 --> 00:46:21.610 Maybe 70% efficacy range similar

NOTE Confidence: 0.723037795333333

00:46:21.610 --> 00:46:25.170 to the original star trial.

NOTE Confidence: 0.723037795333333

00:46:25.170 --> 00:46:27.480 So I think that that criteria is

NOTE Confidence: 0.723037795333333

00:46:27.480 --> 00:46:29.730 probably going to change eventually,

NOTE Confidence: 0.723037795333333

00:46:29.730 --> 00:46:31.578 but it's it's not there yet.

NOTE Confidence: 0.860368722857143

00:46:32.390 --> 00:46:34.805 Yeah, we've been seeing in general just

NOTE Confidence: 0.860368722857143

00:46:34.810 --> 00:46:37.505 strict criteria in the in the beginning,

NOTE Confidence: 0.860368722857143

00:46:37.510 --> 00:46:39.715 but then as they demonstrate

NOTE Confidence: 0.860368722857143

00:46:39.715 --> 00:46:40.991 the effectiveness overtime,

NOTE Confidence: 0.860368722857143

00:46:40.991 --> 00:46:42.946 they've been expanding the criteria.

NOTE Confidence: 0.860368722857143

00:46:42.950 --> 00:46:44.726 For example, the BMI it used to be

NOTE Confidence: 0.860368722857143

00:46:44.726 --> 00:46:46.140 very strict, has we less than 32,

NOTE Confidence: 0.860368722857143

00:46:46.140 --> 00:46:47.580 but then they realized that they

NOTE Confidence: 0.860368722857143

00:46:47.580 --> 00:46:49.827 can go up to 35 and still these

NOTE Confidence: 0.860368722857143

00:46:49.827 --> 00:46:51.367 patients had good response rates.

NOTE Confidence: 0.860368722857143

00:46:51.370 --> 00:46:53.736 And so now most carriers will allow

NOTE Confidence: 0.860368722857143

00:46:53.736 --> 00:46:56.670 for BMI is to be as high as 35. Right,

NOTE Confidence: 0.861185968571429

00:46:56.680 --> 00:47:01.928 so Medicare is covers it for BMI up to 35.

NOTE Confidence: 0.861185968571429

00:47:01.928 --> 00:47:05.145 But you know, many of the other private

NOTE Confidence: 0.861185968571429

00:47:05.145 --> 00:47:06.773 insurance companies in Connecticut,

NOTE Confidence: 0.861185968571429

00:47:06.780 --> 00:47:08.622 at least, like Blue Cross Blue

NOTE Confidence: 0.861185968571429

00:47:08.622 --> 00:47:10.639 Shield have a strict 32 cut offs.

NOTE Confidence: 0.801993724444445

00:47:12.560 --> 00:47:14.039 Great, thanks guys.

NOTE Confidence: 0.801993724444445

00:47:14.039 --> 00:47:16.011 There's another question from

NOTE Confidence: 0.801993724444445

00:47:16.011 --> 00:47:18.395 Doctor Thappa and thank you for an

NOTE Confidence: 0.801993724444445

00:47:18.395 --> 00:47:20.232 excellent talk and if the patient

NOTE Confidence: 0.801993724444445

00:47:20.232 --> 00:47:22.518 gets implanted and then gains weight

NOTE Confidence: 0.801993724444445

83

00:47:22.520 --> 00:47:25.480 where the BMI goes up to above 35,

NOTE Confidence: 0.801993724444445

00:47:25.480 --> 00:47:28.000 does the efficacy of therapy decline?

NOTE Confidence: 0.786341639285714

00:47:31.240 --> 00:47:34.414 So excellent question. I don't know

NOTE Confidence: 0.786341639285714

00:47:34.414 --> 00:47:38.400 if we have much data on that yet,

NOTE Confidence: 0.786341639285714

00:47:38.400 --> 00:47:41.970 so I think time will tell on that. Yeah,

NOTE Confidence: 0.726102335

00:47:42.260 --> 00:47:44.327 it's a great idea. In fact, I'm.

NOTE Confidence: 0.726102335

00:47:44.327 --> 00:47:46.589 I'm hoping to to actually study

NOTE Confidence: 0.726102335

00:47:46.589 --> 00:47:49.339 this once we get enough patience.

NOTE Confidence: 0.726102335

00:47:49.340 --> 00:47:50.222 But wait, Andre, do you have

NOTE Confidence: 0.726102335

00:47:50.222 --> 00:47:50.990 something to say about that?

NOTE Confidence: 0.90395848125

00:47:52.140 --> 00:47:54.732 Yeah no, I. I mean I think that BMI

NOTE Confidence: 0.90395848125

00:47:54.732 --> 00:47:57.182 is one of the stronger predictors

NOTE Confidence: 0.90395848125

00:47:57.182 --> 00:47:59.403 of upper escalation efficacy,

NOTE Confidence: 0.90395848125

00:47:59.403 --> 00:48:01.807 and so whether that.

NOTE Confidence: 0.90395848125

00:48:01.810 --> 00:48:05.058 BMI is at time of the plantation

NOTE Confidence: 0.90395848125

00:48:05.058 --> 00:48:06.450 or time postimplantation.

NOTE Confidence: 0.90395848125

00:48:06.450 --> 00:48:08.445 I'm not sure if it makes a

NOTE Confidence: 0.90395848125

00:48:08.445 --> 00:48:09.300 difference that's unknown.

NOTE Confidence: 0.90395848125

00:48:09.300 --> 00:48:10.660 You know it's possible that

NOTE Confidence: 0.90395848125

00:48:10.660 --> 00:48:12.020 as you stimulate the tongue,

NOTE Confidence: 0.90395848125

00:48:12.020 --> 00:48:14.484 there is a lower amount of tongue

NOTE Confidence: 0.90395848125

00:48:14.484 --> 00:48:16.440 fat that ends up being deposited,

NOTE Confidence: 0.90395848125

00:48:16.440 --> 00:48:18.827 which we know from recent work is

NOTE Confidence: 0.90395848125

00:48:18.827 --> 00:48:21.541 one of the major causes of sleep

NOTE Confidence: 0.90395848125

00:48:21.541 --> 00:48:23.959 apnea is the actual tongue fat

NOTE Confidence: 0.90395848125

00:48:23.960 --> 00:48:25.848 rather than hypotonia necessarily?

NOTE Confidence: 0.90395848125

00:48:25.848 --> 00:48:28.680 And so it's possible that with

NOTE Confidence: 0.90395848125

00:48:28.759 --> 00:48:31.965 lower content of fat and a muscle

NOTE Confidence: 0.90395848125

00:48:31.965 --> 00:48:33.339 that's repeatedly stimulated.

NOTE Confidence: 0.90395848125

00:48:33.340 --> 00:48:35.377 Might be not as bad for you,

NOTE Confidence: 0.90395848125

00:48:35.380 --> 00:48:37.644 but I I think the verdict is still

NOTE Confidence: 0.90395848125

00:48:37.644 --> 00:48:40.618 out and I see Doctor Mayer Krieger is

NOTE Confidence: 0.90395848125

00:48:40.618 --> 00:48:43.220 hoping to make comment and so I'll

NOTE Confidence: 0.90395848125

00:48:43.220 --> 00:48:45.380 certainly we have some time to do that.

NOTE Confidence: 0.90395848125

00:48:45.380 --> 00:48:48.670 So let me see if I can find you mayor OK.

NOTE Confidence: 0.700783518333333

00:48:48.960 --> 00:48:52.026 Meanwhile I had I have a direct

NOTE Confidence: 0.700783518333333

00:48:52.026 --> 00:48:54.639 message from Doctor Cynthia career

NOTE Confidence: 0.700783518333333

00:48:54.640 --> 00:48:56.761 and it was four known patients with

NOTE Confidence: 0.700783518333333

00:48:56.761 --> 00:48:59.024 OSA on CPAP and compliant and now

NOTE Confidence: 0.700783518333333

00:48:59.024 --> 00:49:00.356 want to have inspire since this

NOTE Confidence: 0.700783518333333

00:49:00.356 --> 00:49:01.855 type of therapy wasn't available

NOTE Confidence: 0.700783518333333

00:49:01.855 --> 00:49:03.535 when patient was diagnosed with.

NOTE Confidence: 0.700783518333333

00:49:03.540 --> 00:49:04.980 USA, would this be a consideration

NOTE Confidence: 0.700783518333333

00:49:04.980 --> 00:49:06.740 or for this type of patient to

NOTE Confidence: 0.700783518333333

00:49:06.740 --> 00:49:07.980 be included in the criteria?

NOTE Confidence: 0.700783518333333

00:49:07.980 --> 00:49:10.353 Yes, in fact we have several patients

NOTE Confidence: 0.700783518333333

00:49:10.353 --> 00:49:12.399 that we've seen who've been on.

NOTE Confidence: 0.700783518333333

00:49:12.400 --> 00:49:15.088 CPAP tolerating it using it very

NOTE Confidence: 0.700783518333333

00:49:15.088 --> 00:49:18.554 with a lot of compliance but just

NOTE Confidence: 0.700783518333333

00:49:18.554 --> 00:49:20.633 didn't want to carry it around with

NOTE Confidence: 0.700783518333333

00:49:20.633 --> 00:49:22.955 them anymore or travel with it or

NOTE Confidence: 0.700783518333333

00:49:22.955 --> 00:49:24.899 just have the maintenance of the

NOTE Confidence: 0.700783518333333

00:49:24.899 --> 00:49:26.894 tubing and everything and so so they

NOTE Confidence: 0.700783518333333

00:49:26.894 --> 00:49:30.969 are certainly candidates because.

NOTE Confidence: 0.700783518333333

00:49:30.970 --> 00:49:32.370 Because they you know they,

NOTE Confidence: 0.700783518333333

00:49:32.370 --> 00:49:34.308 they just wanna try something else.

NOTE Confidence: 0.700783518333333

00:49:34.310 --> 00:49:35.878 That might be a little bit more

NOTE Confidence: 0.700783518333333

00:49:35.878 --> 00:49:37.050 conducive to their lifestyle.

NOTE Confidence: 0.700783518333333

00:49:37.050 --> 00:49:38.930 But the same counseling applies.

NOTE Confidence: 0.700783518333333

00:49:38.930 --> 00:49:40.946 We always let them know that you

NOTE Confidence: 0.700783518333333

00:49:40.946 --> 00:49:42.770 know there's still strict criteria.

NOTE Confidence: 0.700783518333333

00:49:42.770 --> 00:49:44.034 We still have to do the dice and

NOTE Confidence: 0.700783518333333

00:49:44.034 --> 00:49:45.329 make sure that they're going to be.

NOTE Confidence: 0.700783518333333

00:49:45.330 --> 00:49:47.276 They're going to have good anatomy and

NOTE Confidence: 0.700783518333333

00:49:47.276 --> 00:49:49.123 there are all these other surgical

NOTE Confidence: 0.700783518333333

00:49:49.123 --> 00:49:51.043 considerations to to be aware of.

NOTE Confidence: 0.700783518333333

00:49:51.050 --> 00:49:51.702 For example,

NOTE Confidence: 0.700783518333333

00:49:51.702 --> 00:49:53.984 every 11 years the battery runs out,

NOTE Confidence: 0.700783518333333

00:49:53.990 --> 00:49:56.214 so after 11 years we have to replace

NOTE Confidence: 0.700783518333333

00:49:56.214 --> 00:49:58.666 the CPG which is in the chest pocket.

NOTE Confidence: 0.700783518333333

00:49:58.670 --> 00:50:01.094 The electrodes will stay, so they don't have.

NOTE Confidence: 0.700783518333333

00:50:01.100 --> 00:50:02.240 Risk from that, but yes,

NOTE Confidence: 0.700783518333333

00:50:02.240 --> 00:50:04.352 we do have to subject these

NOTE Confidence: 0.700783518333333

00:50:04.352 --> 00:50:05.760 patients to a surgery,

NOTE Confidence: 0.700783518333333

00:50:05.760 --> 00:50:07.386 a small surgery every 11 years

NOTE Confidence: 0.700783518333333

00:50:07.386 --> 00:50:09.498 and so if it's a young patient,

NOTE Confidence: 0.700783518333333

00:50:09.500 --> 00:50:10.580 they need to know that.

NOTE Confidence: 0.700783518333333

00:50:10.580 --> 00:50:11.480 Otherwise they they'll.

NOTE Confidence: 0.700783518333333

00:50:11.480 --> 00:50:12.080 You know,

NOTE Confidence: 0.700783518333333

00:50:12.080 --> 00:50:13.238 11 years later that their battery

NOTE Confidence: 0.700783518333333

00:50:13.238 --> 00:50:14.518 runs out and you're going to say,

NOTE Confidence: 0.700783518333333

00:50:14.520 --> 00:50:15.840 Oh yeah, oh, by the way,

NOTE Confidence: 0.700783518333333

00:50:15.840 --> 00:50:16.790 we have to replace that,

NOTE Confidence: 0.700783518333333

00:50:17.640 --> 00:50:17.970 right?

NOTE Confidence: 0.856871467647059

00:50:19.230 --> 00:50:20.742 Along those same lines,

NOTE Confidence: 0.856871467647059

00:50:20.742 --> 00:50:23.010 you know those patients who have

NOTE Confidence: 0.856871467647059

00:50:23.081 --> 00:50:25.034 been on CPAP for a long time.

NOTE Confidence: 0.856871467647059

00:50:25.040 --> 00:50:27.225 They would need an updated

NOTE Confidence: 0.856871467647059

00:50:27.225 --> 00:50:29.410 sleep study within two years.

NOTE Confidence: 0.856871467647059

00:50:29.410 --> 00:50:31.246 That's also part of the criteria.

NOTE Confidence: 0.856871467647059

00:50:31.250 --> 00:50:34.170 That's not typically mentioned. No,

NOTE Confidence: 0.744799177857143

00:50:34.440 --> 00:50:36.232 and so those are all all great points

NOTE Confidence: 0.744799177857143

00:50:36.232 --> 00:50:37.638 and they'll think would add too.

NOTE Confidence: 0.744799177857143

00:50:37.640 --> 00:50:39.648 Is that you know, we in our program

NOTE Confidence: 0.744799177857143

00:50:39.648 --> 00:50:42.157 we have all our patients go through

NOTE Confidence: 0.744799177857143

00:50:42.157 --> 00:50:43.713 this Sleep Medicine consultation

NOTE Confidence: 0.744799177857143

00:50:43.720 --> 00:50:45.455 to make sure that potential

NOTE Confidence: 0.744799177857143

00:50:45.455 --> 00:50:48.150 factors that are making C PAP and

NOTE Confidence: 0.744799177857143

00:50:48.150 --> 00:50:49.938 tolerable are actually addressed.

NOTE Confidence: 0.744799177857143

00:50:49.940 --> 00:50:50.860 And we've had several patients

NOTE Confidence: 0.744799177857143

00:50:50.860 --> 00:50:52.320 who came in for a consultation,

NOTE Confidence: 0.744799177857143

00:50:52.320 --> 00:50:54.726 and now we love their CPAP

NOTE Confidence: 0.744799177857143

00:50:54.730 --> 00:50:58.300 and so sorry and Bruno. Yeah.

NOTE Confidence: 0.783273372222222

00:51:00.420 --> 00:51:03.246 You gotta help the C PAP lovers and so

NOTE Confidence: 0.783273372222222

00:51:03.250 --> 00:51:05.656 it's important to address those other,

NOTE Confidence: 0.783273372222222

00:51:05.660 --> 00:51:06.731 possibly other modalities.

NOTE Confidence: 0.783273372222222

00:51:06.731 --> 00:51:09.230 So some people are switched to oral

NOTE Confidence: 0.783273372222222

00:51:09.296 --> 00:51:11.612 appliance therapy and other people are

NOTE Confidence: 0.783273372222222

00:51:11.612 --> 00:51:14.238 added positional therapy and they do quite

NOTE Confidence: 0.783273372222222

00:51:14.238 --> 00:51:16.272 well without having to undergo surgery.

NOTE Confidence: 0.783273372222222

00:51:16.280 --> 00:51:19.624 And let's see. So let me unmute Doctor

NOTE Confidence: 0.783273372222222

00:51:19.624 --> 00:51:21.768 Mayer Kreger mayor, can you hear us?

NOTE Confidence: 0.958542862

00:51:24.780 --> 00:51:26.570 Can you guys hear me?

NOTE Confidence: 0.958542862

00:51:26.570 --> 00:51:29.435 We can, yes, OK, I'm in a car

NOTE Confidence: 0.958542862

00:51:29.435 --> 00:51:31.950 so that's why I sound so crazy.

NOTE Confidence: 0.958542862

00:51:31.950 --> 00:51:34.498 So there's an interesting

NOTE Confidence: 0.958542862

00:51:34.498 --> 00:51:37.046 history before the history.

NOTE Confidence: 0.958542862

00:51:37.050 --> 00:51:39.918 So in the very early days

NOTE Confidence: 0.958542862

00:51:39.918 --> 00:51:41.830 of sleep apnea Medtronic,

NOTE Confidence: 0.958542862

00:51:41.830 --> 00:51:44.418 the the Pacemaking company

NOTE Confidence: 0.958542862

00:51:44.418 --> 00:51:47.591 actually bought the patents for

NOTE Confidence: 0.958542862

00:51:47.591 --> 00:51:50.496 CPAP from the original inventor.

NOTE Confidence: 0.958542862

00:51:50.500 --> 00:51:53.580 They saw that this was a big business.

NOTE Confidence: 0.958542862

00:51:53.580 --> 00:51:55.690 And they decided that they

NOTE Confidence: 0.958542862

00:51:55.690 --> 00:51:58.602 were going to use their pacing

NOTE Confidence: 0.958542862

00:51:58.602 --> 00:52:00.544 technology to treat sleep apnea.

NOTE Confidence: 0.958542862

00:52:00.544 --> 00:52:02.774 And when I was in Winnipeg at

NOTE Confidence: 0.958542862

00:52:02.774 --> 00:52:04.724 the time which was close to

NOTE Confidence: 0.958542862

00:52:04.724 --> 00:52:06.600 Minneapolis to their headquarters,

NOTE Confidence: 0.958542862

00:52:06.600 --> 00:52:09.180 we actually at that time

NOTE Confidence: 0.958542862

00:52:09.180 --> 00:52:11.244 with Medtronic we tried.

NOTE Confidence: 0.958542862

00:52:11.250 --> 00:52:14.868 Very early to stimulate the tongue,

NOTE Confidence: 0.958542862

00:52:14.870 --> 00:52:18.790 and I had a fellow who was an EMT surgeon

NOTE Confidence: 0.958542862

00:52:18.790 --> 00:52:20.950 actually stick electrodes through,

NOTE Confidence: 0.958542862

00:52:20.950 --> 00:52:22.816 you know, through here,

NOTE Confidence: 0.958542862

00:52:22.816 --> 00:52:24.388 right into his tongue.

NOTE Confidence: 0.958542862

00:52:24.390 --> 00:52:27.882 And we did CT scans and then and then

NOTE Confidence: 0.958542862

00:52:27.882 --> 00:52:30.740 stimulated and it hurts like hell

NOTE Confidence: 0.958542862

00:52:30.740 --> 00:52:32.775 and Medtronic very quickly decided

NOTE Confidence: 0.958542862

00:52:32.775 --> 00:52:36.056 that that was not going to work and

NOTE Confidence: 0.958542862

00:52:36.056 --> 00:52:38.396 they needed to do something different.

NOTE Confidence: 0.958542862

00:52:38.400 --> 00:52:41.550 What then happened is that the guy

NOTE Confidence: 0.958542862

00:52:41.550 --> 00:52:45.470 in charge of the program died and and

NOTE Confidence: 0.958542862

00:52:45.470 --> 00:52:48.260 the the entire painting program died.

NOTE Confidence: 0.958542862

00:52:48.260 --> 00:52:50.846 His name was Don Erik Erikson.

NOTE Confidence: 0.958542862

00:52:50.850 --> 00:52:53.210 And but right before that,

NOTE Confidence: 0.958542862

00:52:53.210 --> 00:52:55.438 Medtronic was so convinced

NOTE Confidence: 0.958542862

00:52:55.438 --> 00:52:58.223 that pacing was gonna work,

NOTE Confidence: 0.958542862

00:52:58.230 --> 00:53:03.432 that they sold the the the C PAP division.

NOTE Confidence: 0.958542862

00:53:03.440 --> 00:53:05.620 To one of its people,

NOTE Confidence: 0.958542862

00:53:05.620 --> 00:53:08.490 and it became rest Med and the

NOTE Confidence: 0.958542862

00:53:08.490 --> 00:53:11.790 rest is history so that those

NOTE Confidence: 0.958542862

00:53:11.790 --> 00:53:13.860 people became billionaires.

NOTE Confidence: 0.958542862

00:53:13.860 --> 00:53:16.506 So that's a part of the history

NOTE Confidence: 0.958542862

00:53:16.506 --> 00:53:18.050 that not many people know

NOTE Confidence: 0.497854268333333

00:53:18.060 --> 00:53:19.788 about. Very interesting.

NOTE Confidence: 0.497854268333333

00:53:19.788 --> 00:53:21.516 Thanks, thanks mayor.

NOTE Confidence: 0.497854268333333

00:53:21.520 --> 00:53:23.875 The lesson is don't jump

NOTE Confidence: 0.497854268333333

00:53:23.875 --> 00:53:25.440 ship too early. Yeah.

NOTE Confidence: 0.821779645555556

00:53:28.900 --> 00:53:29.818 Alright, let's see.

NOTE Confidence: 0.821779645555556

00:53:29.818 --> 00:53:31.654 There's a comment from Doctor Anthony.

NOTE Confidence: 0.821779645555556

00:53:31.660 --> 00:53:33.255 Guardi is successful or appliance

NOTE Confidence: 0.821779645555556

00:53:33.255 --> 00:53:34.531 treatment or predictor of

NOTE Confidence: 0.821779645555556

00:53:34.531 --> 00:53:35.710 hypoglossal nerve stimulation?

NOTE Confidence: 0.918636133333334

00:53:38.210 --> 00:53:39.686 Well I I'm not sure if that data is.

NOTE Confidence: 0.918636133333334

00:53:39.690 --> 00:53:41.825 I'm just going to take it 'cause

NOTE Confidence: 0.918636133333334

00:53:41.825 --> 00:53:43.884 I don't know how much exposure you

NOTE Confidence: 0.918636133333334

00:53:43.884 --> 00:53:46.130 guys have to to oral plants therapy.

NOTE Confidence: 0.918636133333334

00:53:46.130 --> 00:53:49.570 But in the day that I've looked at,

NOTE Confidence: 0.918636133333334

00:53:49.570 --> 00:53:52.366 I have not found a whole lot that

NOTE Confidence: 0.918636133333334

00:53:52.366 --> 00:53:55.208 has been used to predict HNS therapy.

NOTE Confidence: 0.918636133333334

00:53:55.210 --> 00:53:57.679 Following oral appliance.

NOTE Confidence: 0.918636133333334

00:53:57.680 --> 00:54:00.056 Have you guys seen anything that?

NOTE Confidence: 0.918636133333334

00:54:00.060 --> 00:54:02.128 To that effect, no.

NOTE Confidence: 0.918636133333334

00:54:02.128 --> 00:54:04.196 It's conceptually it might.

NOTE Confidence: 0.918636133333334

00:54:04.200 --> 00:54:07.485 Might make sense, but I think it's hard to.

NOTE Confidence: 0.918636133333334

00:54:07.490 --> 00:54:08.786 It's hard to know that that's

NOTE Confidence: 0.918636133333334

00:54:08.786 --> 00:54:09.960 a study to be done.

NOTE Confidence: 0.918636133333334

00:54:09.960 --> 00:54:10.688 Perhaps so,

NOTE Confidence: 0.918636133333334

00:54:10.688 --> 00:54:13.236 but do you worry if you're interested

NOTE Confidence: 0.918636133333334

00:54:13.236 --> 00:54:15.931 in we are happy to take on some

NOTE Confidence: 0.918636133333334

00:54:15.931 --> 00:54:17.248 patients or willing to change.

NOTE Confidence: 0.918636133333334

00:54:17.248 --> 00:54:17.989 Let us know.

NOTE Confidence: 0.83584905

00:54:20.680 --> 00:54:21.848 OK, then there's also

NOTE Confidence: 0.83584905

00:54:21.848 --> 00:54:23.016 another comment from Toshiba.

NOTE Confidence: 0.83584905

00:54:23.020 --> 00:54:24.660 Kumar is a sleep position.

NOTE Confidence: 0.83584905

00:54:24.660 --> 00:54:27.356 I am able to refer to Yale EMT

NOTE Confidence: 0.83584905

00:54:27.356 --> 00:54:29.707 directly for Inspire or they need

NOTE Confidence: 0.83584905

00:54:29.707 --> 00:54:32.101 a sleep consult at Yale first.

NOTE Confidence: 0.83584905

00:54:32.110 --> 00:54:35.635 And so you can refer to Ian

NOTE Confidence: 0.83584905

00:54:35.635 --> 00:54:38.010 and Bruno for our program.

NOTE Confidence: 0.83584905

00:54:38.010 --> 00:54:40.490 We do prefer to see them in clinic

NOTE Confidence: 0.83584905

00:54:40.490 --> 00:54:42.830 first to explore their sleep history.

NOTE Confidence: 0.83584905

00:54:42.830 --> 00:54:44.705 There's some other predictors like

NOTE Confidence: 0.83584905

00:54:44.705 --> 00:54:46.549 increased central propensity for events,

NOTE Confidence: 0.83584905

00:54:46.549 --> 00:54:49.461 and we can do some of the these

NOTE Confidence: 0.83584905

00:54:49.461 --> 00:54:51.316 more additional analysis and traits

NOTE Confidence: 0.83584905

00:54:51.316 --> 00:54:53.780 to help predict who might or might

NOTE Confidence: 0.83584905

00:54:53.780 --> 00:54:55.604 not respond ahead of his time.

NOTE Confidence: 0.83584905

00:54:55.610 --> 00:54:59.138 But you're welcome to refer them to.

NOTE Confidence: 0.83584905

00:54:59.140 --> 00:55:00.490 Doctor Lee and Doctor Carissa.

NOTE Confidence: 0.83584905

00:55:01.360 --> 00:55:01.960 Absolutely we

NOTE Confidence: 0.910256066666667

00:55:01.970 --> 00:55:04.742 can give us. We can give our

NOTE Confidence: 0.910256066666667

00:55:04.742 --> 00:55:06.980 contact information for, you know,

NOTE Confidence: 0.910256066666667

00:55:06.980 --> 00:55:09.380 referrals following the talk absolutely

NOTE Confidence: 0.604477456818182

00:55:09.390 --> 00:55:10.419 absolutely have patience.

NOTE Confidence: 0.604477456818182

00:55:10.419 --> 00:55:13.515 We have patients in in kind of both camps

NOTE Confidence: 0.604477456818182

00:55:13.515 --> 00:55:15.706 that that get all their care through

NOTE Confidence: 0.604477456818182

00:55:15.706 --> 00:55:17.816 the Sleep Medicine Center at Yale.

NOTE Confidence: 0.604477456818182

00:55:17.816 --> 00:55:19.860 And then we also have patients that

NOTE Confidence: 0.604477456818182

00:55:19.920 --> 00:55:21.640 have their own Sleep Medicine,

NOTE Confidence: 0.604477456818182

00:55:21.640 --> 00:55:25.378 doctors and as a sleep physician.

NOTE Confidence: 0.604477456818182

00:55:25.380 --> 00:55:27.426 If you you have the choice.

NOTE Confidence: 0.604477456818182

00:55:27.430 --> 00:55:30.034 So we we all we want to.

NOTE Confidence: 0.604477456818182

00:55:30.040 --> 00:55:32.672 Make it easy for for patients and for

NOTE Confidence: 0.604477456818182

00:55:32.672 --> 00:55:35.016 physicians to take care of the patients,

NOTE Confidence: 0.604477456818182

00:55:35.016 --> 00:55:38.360 and so if you're interested in learning how

NOTE Confidence: 0.604477456818182

00:55:38.441 --> 00:55:41.377 to activate the so so after the implant,

NOTE Confidence: 0.604477456818182

00:55:41.380 --> 00:55:43.916 OK, the someone needs to activate and kind

NOTE Confidence: 0.604477456818182

00:55:43.916 --> 00:55:46.516 of keep track and titrate the machine.

NOTE Confidence: 0.604477456818182

00:55:46.520 --> 00:55:47.876 It it requires a little bit

NOTE Confidence: 0.604477456818182

00:55:47.876 --> 00:55:49.320 of training in the beginning,

NOTE Confidence: 0.604477456818182

00:55:49.320 --> 00:55:51.357 but if you're interested in doing so,

NOTE Confidence: 0.604477456818182

00:55:51.360 --> 00:55:52.440 it's definitely possible.

NOTE Confidence: 0.604477456818182

00:55:52.440 --> 00:55:54.960 But let's say you have 0 interest

NOTE Confidence: 0.604477456818182

00:55:55.026 --> 00:55:56.916 in learning how to activate it.

NOTE Confidence: 0.604477456818182

00:55:56.920 --> 00:55:57.458 Don't worry,

NOTE Confidence: 0.604477456818182

00:55:57.458 --> 00:55:59.072 we can still implant a doctor's

NOTE Confidence: 0.604477456818182

00:55:59.072 --> 00:56:00.469 interest can help to activate.

NOTE Confidence: 0.604477456818182

00:56:00.470 --> 00:56:01.928 And as soon as they're stabilized,

NOTE Confidence: 0.604477456818182

00:56:01.930 --> 00:56:03.202 we can send the patient back

NOTE Confidence: 0.604477456818182

00:56:03.202 --> 00:56:04.880 to to to the referring back.

NOTE Confidence: 0.918027913636363

00:56:09.990 --> 00:56:12.480 OK, great, well I thank you

NOTE Confidence: 0.918027913636363

00:56:12.480 --> 00:56:14.670 all for a wonderful talk.

NOTE Confidence: 0.918027913636363

00:56:14.670 --> 00:56:16.670 Thanks Dan and Bruno and

NOTE Confidence: 0.918027913636363

00:56:16.670 --> 00:56:18.670 thanks all in the audience.

NOTE Confidence: 0.918027913636363

00:56:18.670 --> 00:56:21.270 Please feel free to refer patients to us.

NOTE Confidence: 0.918027913636363

00:56:21.270 --> 00:56:23.526 You can just send an email to myself,

NOTE Confidence: 0.918027913636363

00:56:23.530 --> 00:56:26.146 Jen or Bruno or send us a message.

NOTE Confidence: 0.918027913636363

00:56:26.150 --> 00:56:28.222 Will be happy to see your patients

NOTE Confidence: 0.918027913636363

00:56:28.222 --> 00:56:29.712 evaluate them and and hopefully

NOTE Confidence: 0.918027913636363

00:56:29.712 --> 00:56:32.316 there might be a therapy for them.

NOTE Confidence: 0.918027913636363

00:56:32.320 --> 00:56:33.696 Alright, take care everyone.

NOTE Confidence: 0.918027913636363

00:56:33.696 --> 00:56:35.760 Thanks again for a wonderful session

NOTE Confidence: 0.918027913636363

00:56:35.817 --> 00:56:37.299 and we'll see you next week.

NOTE Confidence: 0.918027913636363

00:56:37.300 --> 00:56:38.132 Alright, thank you guys.

NOTE Confidence: 0.918027913636363

00:56:38.132 --> 00:56:39.570 Thanks guys, appreciate it.