WEBVTT

NOTE duration:"00:14:46.4850000"

NOTE language:en-us

NOTE Confidence: 0.9866618

00:00:00.000 --> 00:00:02.736 Hi, my name is Julie Leviter.

NOTE Confidence: 0.9866618

00:00:02.740 --> 00:00:04.425 I'm an assistant professor of

NOTE Confidence: 0.9866618

00:00:04.425 --> 00:00:06.110 clinical Pediatrics at Yale and

NOTE Confidence: 0.9866618

00:00:06.169 --> 00:00:07.870 I'd like to talk to you today

NOTE Confidence: 0.9866618

00:00:07.870 --> 00:00:09.527 about point of care ultrasound or

NOTE Confidence: 0.9866618

00:00:09.527 --> 00:00:11.274 pocus for skin and soft tissue.

NOTE Confidence: 0.9866618

00:00:11.274 --> 00:00:13.200 So your first patient of the day

NOTE Confidence: 0.9866618

00:00:13.200 --> 00:00:15.366 is a 15 year old male with red

NOTE Confidence: 0.9866618

00:00:15.366 --> 00:00:17.739 tender lesion of his ankle as shown.

NOTE Confidence: 0.9866618

00:00:17.740 --> 00:00:19.892 Now it's not obvious to you on exam

NOTE Confidence: 0.9866618

00:00:19.892 --> 00:00:21.740 whether there is an underlying Abscess

NOTE Confidence: 0.9866618

00:00:21.740 --> 00:00:23.618 or if this is simply Cellulitis.

NOTE Confidence: 0.9866618

00:00:23.620 --> 00:00:25.734 How do we tell whether we should

NOTE Confidence: 0.9866618

00:00:25.734 --> 00:00:27.820 just give antibiotics or if we need

NOTE Confidence: 0.9866618

00:00:27.820 --> 00:00:29.500 to perform an incision and drainage?

NOTE Confidence: 0.9866618

00:00:29.500 --> 00:00:31.640 We can use focus. Here

NOTE Confidence: 0.98828065

00:00:31.640 --> 00:00:33.710 are some indications for when you

NOTE Confidence: 0.98828065

00:00:33.710 --> 00:00:36.470 would use pocus for skin and soft tissue.

NOTE Confidence: 0.98828065

00:00:36.470 --> 00:00:38.794 So the first indication is to differentiate

NOTE Confidence: 0.98828065

00:00:38.794 --> 00:00:40.260 Cellulitis versus an Abscess.

NOTE Confidence: 0.98828065

00:00:40.260 --> 00:00:43.164 Figure out if you're just going to give

NOTE Confidence: 0.98828065

00:00:43.164 --> 00:00:45.780 antibiotics or if you also need to perform

NOTE Confidence: 0.98828065

00:00:45.780 --> 00:00:47.829 a drainage procedure.

NOTE Confidence: 0.98828065

00:00:47.830 --> 00:00:50.273 The next is to identify the location

NOTE Confidence: 0.98828065

00:00:50.273 --> 00:00:52.563 and size of the Abscess that

NOTE Confidence: 0.98828065

00:00:52.563 --> 00:00:54.750 can help to direct any procedure

NOTE Confidence: 0.9892222

00:00:54.750 --> 00:00:56.570 that you're going to perform.

NOTE Confidence: 0.9892222

00:00:56.570 --> 00:00:58.901 The next is to identify the presence

NOTE Confidence: 0.9892222

00:00:58.901 --> 00:01:00.930 and location of foreign bodies,

NOTE Confidence: 0.9892222

00:01:00.930 --> 00:01:03.120 thereby helping you to remove them,

NOTE Confidence: 0.9892222

00:01:03.120 --> 00:01:04.940 and the last is too.

NOTE Confidence: 0.9892222

00:01:04.940 --> 00:01:06.316 As I mentioned before,

NOTE Confidence: 0.9892222

00:01:06.316 --> 00:01:07.692 guide your Abscess drainage

NOTE Confidence: 0.9892222

00:01:07.692 --> 00:01:09.668 and your foreign body removal.

NOTE Confidence: 0.9881113

00:01:11.790 --> 00:01:13.740 Let's talk about what skin

NOTE Confidence: 0.9881113

00:01:13.740 --> 00:01:16.844 and soft tissue focus is not meant to

NOTE Confidence: 0.9881113

00:01:16.850 --> 00:01:19.962 do. One is that it's not meant to

NOTE Confidence: 0.9881113

00:01:19.962 --> 00:01:21.512 differentiate Cellulitis versus edema.

NOTE Confidence: 0.9881113

00:01:21.512 --> 00:01:24.042 This is going to look very similar

NOTE Confidence: 0.9881113

00:01:24.042 --> 00:01:26.570 or exactly the same on ultrasound,

NOTE Confidence: 0.9881113

00:01:26.570 --> 00:01:29.684 and so you're going to have to use

NOTE Confidence: 0.9881113

00:01:29.684 --> 00:01:31.630 other clinical and historical clothes.

NOTE Confidence: 0.9881113

00:01:31.630 --> 00:01:33.186 Another thing that skin

NOTE Confidence: 0.9881113

00:01:33.186 --> 00:01:35.126 and soft tissue pocus is

NOTE Confidence: 0.9881113

00:01:35.130 --> 00:01:37.846 not meant to do is to differentiate

NOTE Confidence: 0.9881113

00:01:37.850 --> 00:01:39.020 Abscess versus hematoma.

NOTE Confidence: 0.9881113

00:01:39.020 --> 00:01:41.390 Again, these can look very similar.

NOTE Confidence: 0.9881113

00:01:41.390 --> 00:01:43.110 An ultrasound and you're going

NOTE Confidence: 0.9881113

00:01:43.110 --> 00:01:45.090 to have to go with historical

NOTE Confidence: 0.98803943

00:01:45.090 --> 00:01:48.070 and clinical cues. So

NOTE Confidence: 0.98900384

00:01:48.070 --> 00:01:50.326 how do we practically go about

NOTE Confidence: 0.98900384

00:01:50.326 --> 00:01:52.400 scanning skin and soft tissue?

NOTE Confidence: 0.98900384

00:01:52.400 --> 00:01:55.048 We're going to use a linear probe.

NOTE Confidence: 0.98900384

00:01:55.050 --> 00:01:57.306 That's because it's high frequency and

NOTE Confidence: 0.98477405

00:01:57.310 --> 00:01:59.200 we want good resolution of

NOTE Confidence: 0.98477405

00:01:59.200 --> 00:02:00.334 those superficial structures.

NOTE Confidence: 0.98477405

00:02:00.340 --> 00:02:03.740 We're also going to put a tegaderm on it.

NOTE Confidence: 0.98477405

00:02:03.740 --> 00:02:06.766 It is not cool to get the probe

NOTE Confidence: 0.98477405

00:02:06.766 --> 00:02:08.646 covered in Mersa or COVID-19.

NOTE Confidence: 0.98477405

00:02:08.650 --> 00:02:11.226 The first thing I want you to

NOTE Confidence: 0.98477405

00:02:11.226 --> 00:02:13.690 do when you start this scan is

NOTE Confidence: 0.98477405

00:02:13.777 --> 00:02:16.207 to adjust the depth and gain.

NOTE Confidence: 0.98477405

00:02:16.210 --> 00:02:18.100 You'll notice that this depth

NOTE Confidence: 0.98477405

00:02:18.100 --> 00:02:19.234 is 4 centimeters,

NOTE Confidence: 0.98477405

00:02:19.240 --> 00:02:21.544 so we're going to get great

NOTE Confidence: 0.98477405

00:02:21.544 --> 00:02:23.080 resolution of those structures.

NOTE Confidence: 0.98477405

00:02:23.080 --> 00:02:24.845 Of interest in the superficial

NOTE Confidence: 0.98477405

00:02:24.845 --> 00:02:26.259 skin and soft tissue,

NOTE Confidence: 0.98477405

00:02:26.260 --> 00:02:28.114 one rule is to start though

NOTE Confidence: 0.98477405

00:02:28.114 --> 00:02:30.490 at about 5 to 6 centimeters,

NOTE Confidence: 0.98477405

00:02:30.490 --> 00:02:32.597 and then decrease your depth to hone

NOTE Confidence: 0.98477405

00:02:32.597 --> 00:02:35.078 in on the structures of interest.

NOTE Confidence: 0.98477405

00:02:35.080 --> 00:02:36.846 Otherwise you might miss something

NOTE Confidence: 0.98477405

00:02:36.846 --> 00:02:39.670 deeper then you want to turn up your

NOTE Confidence: 0.98477405

00:02:39.670 --> 00:02:42.138 game to make sure you can visualize

NOTE Confidence: 0.98477405

00:02:42.140 --> 00:02:46.440 your object of interest with good resolution.

NOTE Confidence: 0.98477405

00:02:46.440 --> 00:02:49.368 Once you've optimized your depth and gain,

NOTE Confidence: 0.98477405

00:02:49.370 --> 00:02:51.890 I want you to fully interrogate

NOTE Confidence: 0.98477405

00:02:51.890 --> 00:02:53.566 your area of interest.

NOTE Confidence: 0.98477405

00:02:53.566 --> 00:02:56.916 Now this doesn't mean just scan the area

NOTE Confidence: 0.98477405

00:02:56.916 --> 00:02:59.530 that looks abnormal on visual inspection,

NOTE Confidence: 0.98477405

00:02:59.530 --> 00:03:02.200 fully sweep through the area because

NOTE Confidence: 0.98477405

00:03:02.271 --> 00:03:04.686 you might find an Abscess adjacent to

NOTE Confidence: 0.98477405

00:03:04.686 --> 00:03:07.390 that area that looks abnormal visually.

NOTE Confidence: 0.98477405

00:03:07.390 --> 00:03:10.182 So scan it in short axis and then

NOTE Confidence: 0.98477405

00:03:10.182 --> 00:03:13.370 rotate 90 degrees and scan in long

NOTE Confidence: 0.98477405

00:03:13.370 --> 00:03:15.770 axis and two perpendicular planes,

NOTE Confidence: 0.98477405

00:03:15.770 --> 00:03:16.780 then measure.

NOTE Confidence: 0.98477405

00:03:16.780 --> 00:03:19.810 Any kind of fluid collection in

NOTE Confidence: 0.98477405

00:03:19.810 --> 00:03:21.889 three dimensions apply color,

NOTE Confidence: 0.98477405

00:03:21.890 --> 00:03:24.858 Doppler and optionally compare

NOTE Confidence: 0.98477405

00:03:24.858 --> 00:03:27.826 to the contralateral side.

NOTE Confidence: 0.98477405

00:03:27.830 --> 00:03:30.518 So now we're ready to scan.

NOTE Confidence: 0.98477405

00:03:30.520 --> 00:03:32.760 Let's first take a look

NOTE Confidence: 0.96866566

00:03:32.760 --> 00:03:35.448 at what normal tissue looks like.

NOTE Confidence: 0.96866566

00:03:35.450 --> 00:03:39.028 Here is someone's chest wall. This very top

NOTE Confidence: 0.96866566

00:03:39.030 --> 00:03:41.718 layer is the epidermis. Then we

NOTE Confidence: 0.96866566

00:03:41.720 --> 00:03:44.408 have some fascia and subq tissues.

NOTE Confidence: 0.96866566

00:03:44.410 --> 00:03:46.650 Nicely layered hypoechoic with linear,

NOTE Confidence: 0.96866566

00:03:46.650 --> 00:03:48.426 clearly demarcated sort

NOTE Confidence: 0.96866566

00:03:48.426 --> 00:03:51.386 of facial planes in there.

NOTE Confidence: 0.96866566

00:03:51.390 --> 00:03:54.330 Then we have the deep fascia layer,

NOTE Confidence: 0.96866566

00:03:54.330 --> 00:03:57.270 a little more hyper, hyperechoic and linear.

NOTE Confidence: 0.96866566

00:03:57.270 --> 00:03:59.370 Here we have some muscle,

NOTE Confidence: 0.96866566

00:03:59.370 --> 00:04:01.956 note the striations going from left

NOTE Confidence: 0.96866566

00:04:01.956 --> 00:04:04.830 to right and then we have bone.

NOTE Confidence: 0.96866566

00:04:04.830 --> 00:04:07.690 It's echogenic with acoustic

NOTE Confidence: 0.96866566

00:04:07.690 --> 00:04:09.120 shadowing posteriorly.

NOTE Confidence: 0.96866566

00:04:09.120 --> 00:04:11.815 Here's the calf of a four year

NOTE Confidence: 0.96866566

00:04:11.815 --> 00:04:13.895 old boy with pain, redness,

NOTE Confidence: 0.96866566

00:04:13.895 --> 00:04:15.050 warmth, and induration.

NOTE Confidence: 0.96866566

00:04:15.050 --> 00:04:16.590 Does this look different

NOTE Confidence: 0.96866566

00:04:16.590 --> 00:04:18.300 from the previous slide?

NOTE Confidence: 0.96866566

00:04:18.300 --> 00:04:19.008 It should.

NOTE Confidence: 0.96866566

00:04:19.008 --> 00:04:21.132 Those nice bright white lines of

NOTE Confidence: 0.96866566

00:04:21.132 --> 00:04:23.478 the fascia layers have disappeared.

NOTE Confidence: 0.96866566

00:04:23.480 --> 00:04:25.790 Now you have this black anechoic

NOTE Confidence: 0.96866566

00:04:25.790 --> 00:04:27.870 fluid tracing within the tissue.

NOTE Confidence: 0.96866566

00:04:27.870 --> 00:04:30.610 This is called cobblestoning.

NOTE Confidence: 0.96866566

00:04:30.610 --> 00:04:31.786 How about this scam?

NOTE Confidence: 0.96866566

00:04:31.786 --> 00:04:35.198 This is a 5 year old boy with buttock pain,

NOTE Confidence: 0.96866566

00:04:35.200 --> 00:04:37.216 redness, warmth, and induration.

NOTE Confidence: 0.96866566

00:04:37.216 --> 00:04:38.728 First of all,

NOTE Confidence: 0.96866566

00:04:38.730 --> 00:04:40.725 aside from the obvious circle

NOTE Confidence: 0.96866566

00:04:40.725 --> 00:04:43.360 in the center of the screen,

NOTE Confidence: 0.96866566

00:04:43.360 --> 00:04:46.307 which we'll get to in a second,

NOTE Confidence: 0.96866566

00:04:46.310 --> 00:04:49.678 what do you make of this tissue architecture?

NOTE Confidence: 0.96866566

00:04:49.680 --> 00:04:51.785 Notice how those nice bright

NOTE Confidence: 0.96866566

00:04:51.785 --> 00:04:53.469 fascia layers have disappeared,

NOTE Confidence: 0.96866566

00:04:53.470 --> 00:04:55.570 and now it looks homogeneous,

NOTE Confidence: 0.96866566

00:04:55.570 --> 00:04:58.538 so this is caused by the inflammation

NOTE Confidence: 0.96866566

00:04:58.538 --> 00:05:01.489 and this sort of anechoic fluid

NOTE Confidence: 0.96866566

00:05:01.489 --> 00:05:03.617 collection with a heterogeneous

NOTE Confidence: 0.96866566

00:05:03.617 --> 00:05:06.957 inside that is an Abscess with pus.

NOTE Confidence: 0.96866566

00:05:06.960 --> 00:05:09.546 Take a look at this slide.

NOTE Confidence: 0.96866566

00:05:09.550 --> 00:05:13.186 Look how bright it looks posteriorly.

NOTE Confidence: 0.96866566

00:05:13.190 --> 00:05:16.160 So what artifact is this?

NOTE Confidence: 0.96866566

00:05:16.160 --> 00:05:18.172 This is called posterior

NOTE Confidence: 0.96866566

00:05:18.172 --> 00:05:19.178 acoustic enhancement,

NOTE Confidence: 0.96866566

00:05:19.180 --> 00:05:21.188 so this happens posterior

NOTE Confidence: 0.96866566

00:05:21.188 --> 00:05:23.196 to a fluid collection.

NOTE Confidence: 0.96866566

00:05:23.200 --> 00:05:26.704 Any kind anywhere in the body also occurs

NOTE Confidence: 0.96866566

00:05:26.704 --> 00:05:30.240 in the bladder and the gallbladder,

NOTE Confidence: 0.96866566

00:05:30.240 --> 00:05:33.618 but here this can help us

NOTE Confidence: 0.96866566

00:05:33.618 --> 00:05:35.307 differentiate Abscess versus

NOTE Confidence: 0.96866566

00:05:35.307 --> 00:05:38.162 Cellulitis in cases when the pus

NOTE Confidence: 0.96866566

00:05:38.162 --> 00:05:40.367 inside isn't as hypoechoic or

NOTE Confidence: 0.96866566

00:05:40.461 --> 00:05:43.317 obvious as in the previous slide.

NOTE Confidence: 0.9863511

00:05:47.160 --> 00:05:48.985 So before we spoke about

NOTE Confidence: 0.9863511

00:05:48.985 --> 00:05:50.810 to have a complete scan,

NOTE Confidence: 0.9863511

00:05:50.810 --> 00:05:53.246 we not only have to fan through

NOTE Confidence: 0.9863511

00:05:53.246 --> 00:05:54.830 in two perpendicular planes,

NOTE Confidence: 0.9863511

00:05:54.830 --> 00:05:57.301 but we also have to measure the

NOTE Confidence: 0.9863511

00:05:57.301 --> 00:05:59.569 object of interest and apply color.

NOTE Confidence: 0.9863511

00:05:59.570 --> 00:06:03.210 So let's talk about that right now.

NOTE Confidence: 0.9863511

00:06:03.210 --> 00:06:05.576 So here is an illustration of how

NOTE Confidence: 0.9863511

00:06:05.576 --> 00:06:08.021 we need to measure our object

NOTE Confidence: 0.9863511

00:06:08.021 --> 00:06:10.276 of interest in three planes.

NOTE Confidence: 0.9863511

00:06:10.280 --> 00:06:12.856 So here on the top of Mount Upper

NOTE Confidence: 0.9863511

00:06:12.856 --> 00:06:15.146 left you see depth and width

NOTE Confidence: 0.9863511

00:06:15.146 --> 00:06:17.492 measured and then in the bottom

NOTE Confidence: 0.9863511

00:06:17.576 --> 00:06:20.106 right we're measuring the length.

NOTE Confidence: 0.9828506

00:06:24.070 --> 00:06:27.088 Here we are applying color Doppler.

NOTE Confidence: 0.9828506

00:06:27.090 --> 00:06:29.610 Now this is important to

NOTE Confidence: 0.9828506

00:06:29.610 --> 00:06:31.626 distinguish this structure from,

NOTE Confidence: 0.9828506

00:06:31.630 --> 00:06:34.150 for example, a blood vessel,

NOTE Confidence: 0.9828506

00:06:34.150 --> 00:06:35.662 a lymphatic structure,

NOTE Confidence: 0.9828506

00:06:35.662 --> 00:06:39.190 even a pseudo aneurysm or a mess.

NOTE Confidence: 0.9828506

00:06:39.190 --> 00:06:42.000 All of these potential alternative

NOTE Confidence: 0.9828506

00:06:42.000 --> 00:06:45.372 diagnosis would be expected to have

NOTE Confidence: 0.9828506

00:06:45.372 --> 00:06:47.707 some flow and should definitely

NOTE Confidence: 0.9828506

00:06:47.707 --> 00:06:50.880 not be incised as you would and.

NOTE Confidence: 0.9828506

00:06:50.880 --> 00:06:55.050 Abscess another thing that you can do

NOTE Confidence: 0.9828506

00:06:55.050 --> 00:06:57.334 to differentiate is to apply pressure

NOTE Confidence: 0.9828506

00:06:57.334 --> 00:07:00.158 and look for the swirl sign or the

NOTE Confidence: 0.9828506

00:07:00.239 --> 00:07:02.549 movement of the contents inside.

NOTE Confidence: 0.9828506

00:07:02.550 --> 00:07:05.198 So this will happen in an Abscess and

NOTE Confidence: 0.9828506

00:07:05.198 --> 00:07:08.058 it won't happen in a lymph node or

NOTE Confidence: 0.9828506

00:07:08.058 --> 00:07:10.554 mass or pseudo aneurysm or lymphatic

NOTE Confidence: 0.9828506

00:07:10.554 --> 00:07:13.074 malformation or something like that.

NOTE Confidence: 0.96124834

00:07:16.320 --> 00:07:19.600 So let's talk a little bit more about

NOTE Confidence: 0.96124834

00:07:19.600 --> 00:07:21.650 some of these potential pitfalls.

NOTE Confidence: 0.96124834

00:07:21.650 --> 00:07:23.700 So is this an Abscess?

NOTE Confidence: 0.96124834

00:07:23.700 --> 00:07:26.160 No, this is a lymph node.

NOTE Confidence: 0.96124834

00:07:26.160 --> 00:07:29.440 How can we distinguish this from an Abscess?

NOTE Confidence: 0.96124834

00:07:29.440 --> 00:07:32.310 Will usually it's more Oval or round.

NOTE Confidence: 0.96124834

00:07:32.310 --> 00:07:34.360 Morse well circumscribed, it doesn't

NOTE Confidence: 0.96124834

00:07:34.360 --> 00:07:35.848 swirl on compression,

NOTE Confidence: 0.96124834

00:07:35.848 --> 00:07:39.320 and you can see this hilar vascularity

NOTE Confidence: 0.96124834

00:07:39.406 --> 00:07:42.549 that will light up with color Doppler.

NOTE Confidence: 0.96124834

00:07:42.550 --> 00:07:46.166 How about this one? Is this an Abscess?

NOTE Confidence: 0.96124834

00:07:46.170 --> 00:07:48.888 You might see some pockets of

NOTE Confidence: 0.96124834

00:07:48.888 --> 00:07:51.612 hypoechoic fluid, but not as much

NOTE Confidence: 0.96124834

00:07:51.612 --> 00:07:54.779 as you would see in an Abscess,

NOTE Confidence: 0.96124834

00:07:54.779 --> 00:07:57.497 and there is some blood flow,

NOTE Confidence: 0.96124834

00:07:57.500 --> 00:08:00.158 whereas we would expect an Abscess

NOTE Confidence: 0.96124834

00:08:00.158 --> 00:08:03.389 not to have blood flow through it.

NOTE Confidence: 0.96124834

00:08:03.390 --> 00:08:06.108 So this is a lymphatic malformation,

NOTE Confidence: 0.96124834

00:08:06.110 --> 00:08:08.435 something you definitely would not

NOTE Confidence: 0.96124834

00:08:08.435 --> 00:08:11.705 want to incise and would want to

NOTE Confidence: 0.96124834

00:08:11.705 --> 00:08:13.975 follow up with radiology. Study.

NOTE Confidence: 0.96124834

00:08:13.975 --> 00:08:16.650 Now, before applying color Doppler,

NOTE Confidence: 0.96124834

00:08:16.650 --> 00:08:18.550 we might have misdiagnosed this

NOTE Confidence: 0.96124834

00:08:18.550 --> 00:08:20.850 person with an Abscess as well,

NOTE Confidence: 0.96124834

00:08:20.850 --> 00:08:23.524 but now that we've applied color Doppler,

NOTE Confidence: 0.96124834

00:08:23.530 --> 00:08:25.987 we can see what's called the Ying

NOTE Confidence: 0.96124834

00:08:25.987 --> 00:08:28.490 Yang sign of a pseudo aneurysm.

NOTE Confidence: 0.96124834

00:08:28.490 --> 00:08:32.810 Again, not something that we want to inside.

NOTE Confidence: 0.96124834

00:08:32.810 --> 00:08:34.178 So here's a case.

NOTE Confidence: 0.96124834

00:08:34.178 --> 00:08:36.794 We have a 10 year old girl

NOTE Confidence: 0.96124834

00:08:36.794 --> 00:08:38.690 with a breast Abscess.

NOTE Confidence: 0.96124834

00:08:38.690 --> 00:08:41.826 It was actually seen at an outside hospital.

NOTE Confidence: 0.96124834

00:08:41.830 --> 00:08:43.398 They performed an Ind,

NOTE Confidence: 0.96124834

00:08:43.398 --> 00:08:45.750 but it didn't reveal any pus,

NOTE Confidence: 0.96124834

00:08:45.750 --> 00:08:48.487 just some blood and they were transferred.

NOTE Confidence: 0.96124834

00:08:48.490 --> 00:08:50.842 Now to your hospital or for

NOTE Confidence: 0.96124834

00:08:50.842 --> 00:08:52.018 some further management.

NOTE Confidence: 0.96124834

00:08:52.020 --> 00:08:54.366 So when you apply your ultrasound,

NOTE Confidence: 0.96124834

00:08:54.370 --> 00:08:57.554 you notice that the pocket of fluid does

NOTE Confidence: 0.96124834

00:08:57.554 --> 00:09:00.387 not correlate with where it might seem

NOTE Confidence: 0.96124834

00:09:00.387 --> 00:09:03.010 that there was an underlying Abscess.

NOTE Confidence: 0.96124834

00:09:03.010 --> 00:09:07.170 On visual and physical exam.

NOTE Confidence: 0.96124834

00:09:07.170 --> 00:09:10.110 So this has been found in the

NOTE Confidence: 0.96124834

00:09:10.110 --> 00:09:12.658 literature to be true as well.

NOTE Confidence: 0.96124834

00:09:12.660 --> 00:09:14.575 This was a prospective randomized

NOTE Confidence: 0.96124834

00:09:14.575 --> 00:09:17.054 clinical trial of patients in an

NOTE Confidence: 0.96124834

00:09:17.054 --> 00:09:18.557 academic emergency department.

NOTE Confidence: 0.96124834

00:09:18.560 --> 00:09:20.248 Patients presenting with an

NOTE Confidence: 0.96124834

00:09:20.248 --> 00:09:21.936 uncomplicated skin soft tissue,

NOTE Confidence: 0.96124834

00:09:21.940 --> 00:09:23.756 Abscess requiring drainage diagnosis

NOTE Confidence: 0.96124834

00:09:23.756 --> 00:09:26.480 was either by physical exam by

NOTE Confidence: 0.96124834

00:09:26.550 --> 00:09:28.866 bedside ultrasound or by both and

NOTE Confidence: 0.96124834

00:09:28.866 --> 00:09:31.294 those randomized to the pocus group

NOTE Confidence: 0.96124834

00:09:31.294 --> 00:09:33.324 had Ind performed with bedside

NOTE Confidence: 0.96124834

00:09:33.330 --> 00:09:35.485 ultrasonographic imaging of the Abscess.

NOTE Confidence: 0.96124834

00:09:35.485 --> 00:09:37.660 Those in the non pocus.

NOTE Confidence: 0.96124834

00:09:37.660 --> 00:09:40.607 Group had Ind with physical exam alone.

NOTE Confidence: 0.96124834

00:09:40.610 --> 00:09:43.085 Now there were 125 patients

NOTE Confidence: 0.96124834

00:09:43.085 --> 00:09:46.516 enrolled 54 in the focus group and

NOTE Confidence: 0.96124834

00:09:46.516 --> 00:09:49.084 53 in the non focus group.

NOTE Confidence: 0.96124834

00:09:49.090 --> 00:09:51.598 They found that the Pokus group

NOTE Confidence: 0.96124834

00:09:51.598 --> 00:09:54.439 was less likely to fail therapy.

NOTE Confidence: 0.96124834

00:09:54.440 --> 00:09:58.008 The focus group had a four point 8%

NOTE Confidence: 0.96124834

00:09:58.010 --> 00:10:00.740 failure rate and the physical exam

NOTE Confidence: 0.96124834

00:10:00.740 --> 00:10:03.980 group alone had a 16% failure rate,

NOTE Confidence: 0.96124834

00:10:03.980 --> 00:10:07.690 so this is likely because pocus guidance

NOTE Confidence: 0.96124834

00:10:07.690 --> 00:10:10.297 facilitates the identification of the

NOTE Confidence: 0.96124834

00:10:10.297 --> 00:10:13.285 Abscess pocket and allows for better

NOTE Confidence: 0.96124834

00:10:13.368 --> 00:10:16.018 planning of the initial incision.

NOTE Confidence: 0.96124834

00:10:16.020 --> 00:10:16.335 So,

NOTE Confidence: 0.96124834

00:10:16.335 --> 00:10:17.280 just to recap,

NOTE Confidence: 0.96124834

00:10:17.280 --> 00:10:20.353 the first thing we want to do when we're

NOTE Confidence: 0.96124834

00:10:20.353 --> 00:10:22.950 doing a skin and soft tissue ultrasound

NOTE Confidence: 0.96124834

00:10:23.020 --> 00:10:25.470 is cover the probe with a tegaderm.

NOTE Confidence: 0.96124834

00:10:25.470 --> 00:10:28.270 Then we're going to scan in two planes,

NOTE Confidence: 0.96124834

00:10:28.270 --> 00:10:30.790 fully interrogate the area of interest we're

NOTE Confidence: 0.96124834

00:10:30.790 --> 00:10:33.170 going to measure the dimensions in 3D,

NOTE Confidence: 0.96124834

00:10:33.170 --> 00:10:35.970 apply color Doppler check for the swirl sign,

NOTE Confidence: 0.96124834

00:10:35.970 --> 00:10:37.490 and don't be fooled.

NOTE Confidence: 0.96124834

00:10:37.490 --> 00:10:40.185 If anything doesn't look like you would

NOTE Confidence: 0.96124834

00:10:40.185 --> 00:10:42.889 expect an Abscess to look like and has

NOTE Confidence: 0.96124834

00:10:42.889 --> 00:10:46.045 any other signs like color flow through it.

NOTE Confidence: 0.96124834

00:10:46.050 --> 00:10:49.536 Then be sure to follow up

NOTE Confidence: 0.96124834

00:10:49.536 --> 00:10:51.860 with radio radiologic imaging.

NOTE Confidence: 0.96124834

00:10:51.860 --> 00:10:53.935 Let's talk next about using

NOTE Confidence: 0.96124834

00:10:53.935 --> 00:10:55.595 ultrasound for foreign bodies.

NOTE Confidence: 0.96124834

00:10:55.600 --> 00:10:57.680 It actually has a fantastic

NOTE Confidence: 0.96124834

00:10:57.680 --> 00:10:59.760 sensitivity of 80 to 90%.

NOTE Confidence: 0.96124834

00:10:59.760 --> 00:11:01.845 It's very useful for finding

NOTE Confidence: 0.96124834

00:11:01.845 --> 00:11:03.920 radiolucent foreign bodies like wood,

NOTE Confidence: 0.96124834

00:11:03.920 --> 00:11:05.586 plastic, and cactus spine.

NOTE Confidence: 0.96124834

00:11:05.586 --> 00:11:06.418 But remember,

NOTE Confidence: 0.9879809

00:11:06.420 --> 00:11:07.668 if you don't

NOTE Confidence: 0.9879809

00:11:07.670 --> 00:11:10.166 see the foreign body that you're

NOTE Confidence: 0.9879809

00:11:10.166 --> 00:11:11.830 looking for on ultrasound,

NOTE Confidence: 0.9879809

00:11:11.830 --> 00:11:15.646 make sure to get an X ray just to

NOTE Confidence: 0.9879809

00:11:15.646 --> 00:11:19.320 make sure that nothing is missed.

NOTE Confidence: 0.9879809

00:11:19.320 --> 00:11:22.351 And remember. Pocus is also useful in

NOTE Confidence: 0.9879809

00:11:22.351 --> 00:11:25.518 real time for foreign body removal.

NOTE Confidence: 0.9833446

00:11:30.370 --> 00:11:33.676 So what do you see here?

NOTE Confidence: 0.9833446

00:11:33.680 --> 00:11:36.146 So at the top of the screen you see

NOTE Confidence: 0.9833446

00:11:36.146 --> 00:11:38.392 a hyperechoic linear structure that

NOTE Confidence: 0.9833446

00:11:38.392 --> 00:11:41.746 doesn't look like it's part of the

NOTE Confidence: 0.9833446

00:11:41.746 --> 00:11:44.350 muscle tissue that we're seeing here.

NOTE Confidence: 0.9833446

00:11:44.350 --> 00:11:48.200 This is a retained needle.

NOTE Confidence: 0.9833446

00:11:48.200 --> 00:11:49.971 This next patient is a 5 year

NOTE Confidence: 0.9833446

00:11:49.971 --> 00:11:51.850 old boy with a red tender area

NOTE Confidence: 0.9833446

00:11:51.850 --> 00:11:53.440 on the bottom of his foot.

NOTE Confidence: 0.9833446

00:11:53.440 --> 00:11:55.968 What do you see?

NOTE Confidence: 0.9833446

00:11:55.970 --> 00:11:58.756 So where are these arrows are pointing?

NOTE Confidence: 0.9833446

00:11:58.760 --> 00:12:00.352 Are the two perpendicular

NOTE Confidence: 0.9833446

00:12:00.352 --> 00:12:02.342 views of a retained splinter,

NOTE Confidence: 0.9833446

00:12:02.350 --> 00:12:05.414 so also notice that there is a small

NOTE Confidence: 0.9833446

00:12:05.414 --> 00:12:08.181 anechoic rim as well as some other

NOTE Confidence: 0.9833446

00:12:08.181 --> 00:12:10.730 pockets of fluid that we're seeing.

NOTE Confidence: 0.9833446

00:12:10.730 --> 00:12:12.655 Superficially this is likely some

NOTE Confidence: 0.9833446

00:12:12.655 --> 00:12:14.580 fluid or pus that's collected

NOTE Confidence: 0.9833446

00:12:14.649 --> 00:12:16.737 around the splinter plus adima or

NOTE Confidence: 0.9833446

00:12:16.737 --> 00:12:18.702 Cellulitis based on the ultrasound

NOTE Confidence: 0.9833446

00:12:18.702 --> 00:12:20.710 findings and clinical context.

NOTE Confidence: 0.9833446

00:12:20.710 --> 00:12:22.780 I'm thinking this splinter needs

NOTE Confidence: 0.9833446

00:12:22.780 --> 00:12:25.610 to be removed and that this kid.

NOTE Confidence: 0.9833446

00:12:25.610 --> 00:12:27.758 Needs antibiotics after removing

NOTE Confidence: 0.9833446

00:12:27.758 --> 00:12:30.443 the foreign body makes sure

NOTE Confidence: 0.9833446

00:12:30.443 --> 00:12:33.499 to scan again to ensure that

NOTE Confidence: 0.9833446

00:12:33.499 --> 00:12:35.929 you've removed the whole thing.

NOTE Confidence: 0.9833446

00:12:35.930 --> 00:12:38.387 This is a nice example of two

NOTE Confidence: 0.9833446

00:12:38.387 --> 00:12:40.048 artifacts that are frequently

NOTE Confidence: 0.9833446

00:12:40.048 --> 00:12:42.156 seen with foreign bodies,

NOTE Confidence: 0.9833446

00:12:42.160 --> 00:12:44.650 so the first is reverberation artifact.

NOTE Confidence: 0.9833446

00:12:44.650 --> 00:12:47.317 So this happens when there are two

NOTE Confidence: 0.9833446

00:12:47.317 --> 00:12:49.714 reflectors parallel to each other and

NOTE Confidence: 0.9833446

00:12:49.714 --> 00:12:52.078 perpendicular to the ultrasound wave and

NOTE Confidence: 0.9833446

00:12:52.078 --> 00:12:54.823 the sound gets trapped between these

NOTE Confidence: 0.9833446

00:12:54.823 --> 00:12:57.098 two echogenic surfaces bounces back

NOTE Confidence: 0.9833446

00:12:57.100 --> 00:12:59.998 and forth before returning to the probe.

NOTE Confidence: 0.9833446

00:13:00.000 --> 00:13:03.735 So since it takes more time to get back,

NOTE Confidence: 0.9833446

00:13:03.740 --> 00:13:05.177 it seems that.

NOTE Confidence: 0.9833446

00:13:05.177 --> 00:13:06.614 Each successive bounce

NOTE Confidence: 0.9833446

00:13:06.614 --> 00:13:09.120 comes from a deeper place,

NOTE Confidence: 0.9833446

00:13:09.120 --> 00:13:11.405 so that's where you're seeing

NOTE Confidence: 0.9833446

00:13:11.405 --> 00:13:14.286 that sort of triangular cone of

NOTE Confidence: 0.9833446

00:13:14.286 --> 00:13:16.846 brightness posterior to that object.

NOTE Confidence: 0.9833446

00:13:16.850 --> 00:13:19.660 That's more superficial.

NOTE Confidence: 0.9833446

00:13:19.660 --> 00:13:22.216 So the other artifact that we're

NOTE Confidence: 0.9833446

00:13:22.216 --> 00:13:24.530 seeing here is acoustic shadow.

NOTE Confidence: 0.9833446

00:13:24.530 --> 00:13:27.230 That's all that black area behind

NOTE Confidence: 0.9833446

00:13:27.230 --> 00:13:30.740 the object up on top of the screen,

NOTE Confidence: 0.9833446

00:13:30.740 --> 00:13:33.666 and that's because the object is preventing

NOTE Confidence: 0.9833446

00:13:33.666 --> 00:13:36.490 the sound waves from passing through.

NOTE Confidence: 0.9833446

00:13:36.490 --> 00:13:39.100 So this example shows a chemotherapy

NOTE Confidence: 0.9833446

00:13:39.100 --> 00:13:42.698 port so it didn't get there by accident.

NOTE Confidence: 0.9833446

00:13:42.700 --> 00:13:45.199 But I thought this was a really

NOTE Confidence: 0.9833446

00:13:45.199 --> 00:13:47.643 nice example of both reverberation

NOTE Confidence: 0.9833446

00:13:47.643 --> 00:13:50.227 artifact and acoustic shadowing.

NOTE Confidence: 0.9833446

00:13:50.230 --> 00:13:51.744 Both of which you can see

NOTE Confidence: 0.9833446

00:13:51.744 --> 00:13:52.500 with foreign bodies.

NOTE Confidence: 0.9421784

00:13:55.100 --> 00:13:57.440 So here's one last example.

NOTE Confidence: 0.9421784

00:13:57.440 --> 00:14:00.712 This is an 8 year old girl

NOTE Confidence: 0.9421784

00:14:00.712 --> 00:14:03.019 with a red painful earlobe.

NOTE Confidence: 0.9421784

00:14:03.019 --> 00:14:05.593 So look at whether it where

NOTE Confidence: 0.9421784

00:14:05.593 --> 00:14:07.740 this arrow is pointing.

NOTE Confidence: 0.9421784

00:14:07.740 --> 00:14:09.612 There's a hyperechoic structure

NOTE Confidence: 0.9421784

00:14:09.612 --> 00:14:13.418 at the top of the screen that is

NOTE Confidence: 0.9421784

00:14:13.418 --> 00:14:15.688 in Piper echoic metal earring,

NOTE Confidence: 0.9421784

00:14:15.690 --> 00:14:18.120 and this also shows that nice

NOTE Confidence: 0.9421784

00:14:18.120 --> 00:14:19.335 posterior acoustic shadowing

NOTE Confidence: 0.9421784

00:14:19.335 --> 00:14:21.309 and reverberation artifact.