WEBVTT

NOTE duration:"00:34:50"

NOTE recognizability:0.973

NOTE language:en-us

NOTE Confidence: 0.9910606

00:00:00.000 --> 00:00:02.770 Hi, my name is Julie Leviter.

NOTE Confidence: 0.9817415025

00:00:02.770 --> 00:00:05.710 I'm going to talk to you today

NOTE Confidence: 0.9817415025

00:00:05.710 --> 00:00:08.069 about Pocus for the pelvis.

NOTE Confidence: 0.9817415025

00:00:08.070 --> 00:00:09.550 Let's start with the case.

NOTE Confidence: 0.9817415025

00:00:09.550 --> 00:00:11.718 An 18 year old girl with a positive

NOTE Confidence: 0.9817415025

00:00:11.718 --> 00:00:13.005 pregnancy test presents with

NOTE Confidence: 0.9817415025

00:00:13.005 --> 00:00:14.530 right lower quadrant pain and

NOTE Confidence: 0.9817415025

00:00:14.530 --> 00:00:17.170 vaginal bleeding for three days.

NOTE Confidence: 0.9817415025

00:00:17.170 --> 00:00:18.380 So what are we going

NOTE Confidence: 0.988957395714286

00:00:18.390 --> 00:00:22.366 to do? Let's use our ultrasound machine,

NOTE Confidence: 0.988957395714286

00:00:22.370 --> 00:00:24.116 so I want you to take a look at

NOTE Confidence: 0.988957395714286

00:00:24.116 --> 00:00:26.137 this clip for a moment and think to

NOTE Confidence: 0.988957395714286

00:00:26.137 --> 00:00:27.978 yourself is this normal or abnormal

NOTE Confidence: 0.988957395714286

00:00:27.978 --> 00:00:30.024 and what are the anatomical landmarks?

NOTE Confidence: 0.988957395714286

00:00:30.030 --> 00:00:33.810 And what concerning features strike you here.

NOTE Confidence: 0.988957395714286

00:00:33.810 --> 00:00:37.010 So this turned out to be a ruptured

NOTE Confidence: 0.988957395714286

00:00:37.010 --> 00:00:38.948 ectopic pregnancy which went to.

NOTE Confidence: 0.988957395714286

00:00:38.950 --> 00:00:43.790 Where 500CC's of Hemoperitoneum were drained.

NOTE Confidence: 0.988957395714286

00:00:43.790 --> 00:00:46.828 So in this case, Pocus expedited care.

NOTE Confidence: 0.988957395714286

00:00:46.830 --> 00:00:48.642 So in this lecture we'll talk

NOTE Confidence: 0.988957395714286

00:00:48.642 --> 00:00:50.549 through the anatomy in the pelvis.

NOTE Confidence: 0.988957395714286

00:00:50.550 --> 00:00:52.290 Come back to this clip and

NOTE Confidence: 0.988957395714286

00:00:52.290 --> 00:00:53.690 dissect what makes it concerning.

NOTE Confidence: 0.988957395714286

00:00:53.690 --> 00:00:57.090 Includes you into the diagnosis.

NOTE Confidence: 0.988957395714286

00:00:57.090 --> 00:00:58.910 So what are we going to talk

NOTE Confidence: 0.988957395714286

00:00:58.910 --> 00:01:00.250 about in this lecture?

NOTE Confidence: 0.988957395714286

00:01:00.250 --> 00:01:03.090 Well, we've already seen a case where free

NOTE Confidence: 0.988957395714286

00:01:03.090 --> 00:01:05.850 fluid can clue you in to an abnormality

NOTE Confidence: 0.988957395714286

00:01:05.850 --> 00:01:07.842 that can also be helpful in trauma.

NOTE Confidence: 0.988957395714286

00:01:07.842 --> 00:01:12.018 We'll talk about early pregnancy and how to

NOTE Confidence: 0.988957395714286

00:01:12.018 --> 00:01:15.556 confirm an intrauterine pregnancy or IUP.

NOTE Confidence: 0.988957395714286

00:01:15.560 --> 00:01:17.800 We'll see some cases of

NOTE Confidence: 0.988957395714286

00:01:17.800 --> 00:01:19.592 ovarian torsion of infection,

NOTE Confidence: 0.988957395714286

00:01:19.600 --> 00:01:23.020 like appendicitis or tubo ovarian Abscess,

NOTE Confidence: 0.988957395714286

00:01:23.020 --> 00:01:24.760 and we'll talk briefly about bladder

NOTE Confidence: 0.988957395714286

00:01:24.760 --> 00:01:26.758 volume and how that can be helpful.

NOTE Confidence: 0.98778974

00:01:29.410 --> 00:01:31.745 Let's first talk about our

NOTE Confidence: 0.98778974

00:01:31.745 --> 00:01:33.613 approach to pelvic ultrasound.

NOTE Confidence: 0.98778974

00:01:33.620 --> 00:01:36.210 We're going to use a curvilinear low

NOTE Confidence: 0.98778974

00:01:36.210 --> 00:01:38.328 frequency probe because this will give

NOTE Confidence: 0.98778974

00:01:38.328 --> 00:01:40.526 us the deep penetration that we need

NOTE Confidence: 0.98778974

00:01:40.597 --> 00:01:42.816 to see the structures in the pelvis.

NOTE Confidence: 0.98778974

00:01:42.820 --> 00:01:44.645 We're going to fan through

NOTE Confidence: 0.98778974

00:01:44.645 --> 00:01:46.105 in two orthogonal planes,

NOTE Confidence: 0.98778974

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00:01:46.110 --> 00:01:47.337 transverse and sagittal.

NOTE Confidence: 0.98778974

00:01:47.337 --> 00:01:50.200 And we're going to aim the probe

NOTE Confidence: 0.98778974

00:01:50.272 --> 00:01:53.065 inferiorly to see under the pubic bone.

NOTE Confidence: 0.98778974

00:01:53.070 --> 00:01:54.540 The biggest mistake

NOTE Confidence: 0.98780051

00:01:54.550 --> 00:01:56.146 that I see folks make is

NOTE Confidence: 0.98780051

00:01:56.146 --> 00:01:57.640 that they place the probe.

NOTE Confidence: 0.98780051

00:01:57.640 --> 00:01:59.280 Two superiorly too high on

NOTE Confidence: 0.98780051

00:01:59.280 --> 00:02:01.317 the abdomen and can't see the

NOTE Confidence: 0.98780051

00:02:01.317 --> 00:02:03.285 bladder or they place the probe

NOTE Confidence: 0.98780051

00:02:03.285 --> 00:02:05.202 right where they need to be

NOTE Confidence: 0.98780051

00:02:05.202 --> 00:02:07.480 right above the pubic synthesis,

NOTE Confidence: 0.98780051

00:02:07.480 --> 00:02:09.395 and they don't sweep inferiorly

NOTE Confidence: 0.98780051

00:02:09.395 --> 00:02:12.030 to get under the pubic synthesis

NOTE Confidence: 0.98763194625

00:02:12.120 --> 00:02:15.488 to see the bladder, and they may mistake

NOTE Confidence: 0.98763194625

00:02:15.490 --> 00:02:17.870 something in the pelvis for the bladder,

NOTE Confidence: 0.984578788571429

00:02:18.440 --> 00:02:20.337 which would lead to a false negative

NOTE Confidence: 0.984578788571429

00:02:20.340 --> 00:02:22.310 interpretation. So for example,

NOTE Confidence: 0.986472010769231

00:02:22.320 --> 00:02:25.127 they might see free fluid and not

NOTE Confidence: 0.986472010769231

00:02:25.127 --> 00:02:27.650 see the bladder and thus think.

NOTE Confidence: 0.986472010769231

00:02:27.650 --> 00:02:30.450 That it is the bladder,

NOTE Confidence: 0.986472010769231

00:02:30.450 --> 00:02:34.244 and then interpret the scan as negative.

NOTE Confidence: 0.986472010769231

00:02:34.250 --> 00:02:36.585 So let's talk about these transverse and

NOTE Confidence: 0.986472010769231

00:02:36.585 --> 00:02:38.355 sagittal views that you're looking for.

NOTE Confidence: 0.9790215

00:02:41.490 --> 00:02:42.920 So first, the transversal probe

NOTE Confidence: 0.9790215

00:02:42.920 --> 00:02:45.062 we're going to have the probe marker

NOTE Confidence: 0.9790215

00:02:45.062 --> 00:02:46.697 towards the patients for eight,

NOTE Confidence: 0.9790215

00:02:46.700 --> 00:02:49.178 and we're going to be right above

NOTE Confidence: 0.9790215

00:02:49.178 --> 00:02:51.025 the pubic synthesis and tilt

NOTE Confidence: 0.9790215

00:02:51.025 --> 00:02:53.179 inferior Lee under the pubic bone.

NOTE Confidence: 0.986453

00:02:55.200 --> 00:02:56.850 Notice the shape of the bladder. In this

NOTE Confidence: 0.966152496666667

00:02:56.860 --> 00:02:59.680 view, it's a little bit rectangular.

NOTE Confidence: 0.966152496666667

00:02:59.680 --> 00:03:01.420 Look for this if you're not

NOTE Confidence: 0.966152496666667

00:03:01.420 --> 00:03:03.590 seeing this shape as expected,

NOTE Confidence: 0.966152496666667

00:03:03.590 --> 00:03:04.940 consider the possibility that

NOTE Confidence: 0.966152496666667

00:03:04.940 --> 00:03:07.260 you're purely looking at free fluid

NOTE Confidence: 0.966152496666667

00:03:07.260 --> 00:03:09.659 or an Abscess or something else.

NOTE Confidence: 0.980828541428571

00:03:10.660 --> 00:03:14.146 In fan through the area more fully,

NOTE Confidence: 0.980828541428571

00:03:14.150 --> 00:03:16.580 make sure to really interrogate

NOTE Confidence: 0.980828541428571

00:03:16.580 --> 00:03:19.010 inferiorly under that pubic synthesis.

NOTE Confidence: 0.982253072857143

00:03:23.640 --> 00:03:26.638 So take a look at this view and

NOTE Confidence: 0.982253072857143

00:03:26.638 --> 00:03:28.628 think to yourself what landmarks

NOTE Confidence: 0.982253072857143

00:03:28.628 --> 00:03:31.678 you see here in the female pelvis.

NOTE Confidence: 0.982253072857143

00:03:31.680 --> 00:03:33.550 The uterus and uterine stripe

NOTE Confidence: 0.982253072857143

00:03:33.550 --> 00:03:35.865 will be just posterior to the

NOTE Confidence: 0.982253072857143

00:03:35.865 --> 00:03:37.710 bladder or lower on the screen.

NOTE Confidence: 0.97710878

00:03:41.010 --> 00:03:43.434 Let's take a look at the sagittal view.

NOTE Confidence: 0.97710878

00:03:43.440 --> 00:03:44.865 We have the probe marker

NOTE Confidence: 0.97710878

00:03:44.865 --> 00:03:46.005 towards the patients head,

NOTE Confidence: 0.97710878

00:03:46.010 --> 00:03:47.840 and you're sweeping right to left.

NOTE Confidence: 0.93792885

00:03:50.940 --> 00:03:52.228 In sagittal orientation,

NOTE Confidence: 0.93792885

00:03:52.228 --> 00:03:54.568 the bladder is more triangular

NOTE Confidence: 0.979853821428571

00:03:54.580 --> 00:03:58.308 in shape. Again, look for this when you're

NOTE Confidence: 0.979853821428571

00:03:58.308 --> 00:04:01.550 viewing the bladder in the pelvic skin.

NOTE Confidence: 0.979596078333333

00:04:05.890 --> 00:04:08.920 What landmarks do you see here?

NOTE Confidence: 0.979596078333333

00:04:08.920 --> 00:04:10.080 So we have the bladder.

NOTE Confidence: 0.979596078333333

00:04:10.080 --> 00:04:12.936 We have the uterus, the uterine stripe,

NOTE Confidence: 0.979596078333333

00:04:12.940 --> 00:04:15.048 and the vaginal strength.

NOTE Confidence: 0.979596078333333

00:04:15.050 --> 00:04:16.510 So look for these landmarks when

NOTE Confidence: 0.979596078333333

00:04:16.510 --> 00:04:18.328 you're looking at the female pelvis.

NOTE Confidence: 0.986771202307692

00:04:18.360 --> 00:04:20.593 Make sure that you can identify all

NOTE Confidence: 0.986771202307692

00:04:20.593 --> 00:04:22.379 the structure that that you see.

NOTE Confidence: 0.986771202307692

00:04:22.380 --> 00:04:24.324 If you see something that you

NOTE Confidence: 0.986771202307692

00:04:24.324 --> 00:04:25.790 can't really identify, it might

NOTE Confidence: 0.971537215

00:04:25.800 --> 00:04:26.920 be something I'm normal.

NOTE Confidence: 0.982299

00:04:31.110 --> 00:04:32.669 Think to yourself where

NOTE Confidence: 0.98868485125

00:04:32.680 --> 00:04:35.288 free fluid will collect first in the pelvis.

NOTE Confidence: 0.9798387

00:04:37.010 --> 00:04:38.080 So free fluid is

NOTE Confidence: 0.9859135725

00:04:38.090 --> 00:04:40.175 going to first accumulate posterior

NOTE Confidence: 0.9859135725

00:04:40.175 --> 00:04:42.580 to the bladder, so in a female this

NOTE Confidence: 0.9859135725

00:04:42.580 --> 00:04:44.420 will be in the pouch of Douglas.

NOTE Confidence: 0.9919442

00:04:46.650 --> 00:04:48.862 Here's an example of a 15 year

NOTE Confidence: 0.9919442

00:04:48.862 --> 00:04:52.140 old girl status post MVC.

NOTE Confidence: 0.988571133333333

00:04:52.140 --> 00:04:55.579 So what orientation are we in?

NOTE Confidence: 0.988571133333333

00:04:55.580 --> 00:04:57.720 Well, you can tell based on

NOTE Confidence: 0.988571133333333

00:04:57.720 --> 00:04:59.264 the slightly more rectangular

NOTE Confidence: 0.97432285375

00:04:59.360 --> 00:05:02.580 as opposed to triangular shape of the

NOTE Confidence: 0.97432285375

00:05:02.580 --> 00:05:05.392 bladder. This is the transverse orientation.

NOTE Confidence: 0.97432285375

00:05:05.392 --> 00:05:09.940 Now, does this look normal or abnormal? So

NOTE Confidence: 0.973610266

00:05:09.950 --> 00:05:10.990 I'll give you a hint, this

NOTE Confidence: 0.973610266

00:05:10.990 --> 00:05:13.958 is abnormal. We see some free

NOTE Confidence: 0.977819687894737

00:05:13.970 --> 00:05:16.766 fluid here posterior to the bladder

NOTE Confidence: 0.977819687894737

00:05:16.766 --> 00:05:19.469 and more anteriorly on the left

NOTE Confidence: 0.977819687894737

00:05:19.469 --> 00:05:22.094 of the screen in the later views.

NOTE Confidence: 0.977819687894737

00:05:22.100 --> 00:05:23.680 So actually in children

NOTE Confidence: 0.977819687894737

00:05:23.680 --> 00:05:24.865 and menstruating woman,

NOTE Confidence: 0.977819687894737

00:05:24.870 --> 00:05:26.718 a trace amount of free fluid just

NOTE Confidence: 0.977819687894737

00:05:26.718 --> 00:05:28.589 closer to the bladder is normal.

NOTE Confidence: 0.977819687894737

00:05:28.590 --> 00:05:30.774 But here it comes up all the

NOTE Confidence: 0.977819687894737

00:05:30.774 --> 00:05:32.370 way around the bladder.

NOTE Confidence: 0.977819687894737

00:05:32.370 --> 00:05:34.806 So this is a very concerning.

NOTE Confidence: 0.977819687894737

00:05:34.810 --> 00:05:36.610 Fast in this trauma,

NOTE Confidence: 0.977819687894737

00:05:36.610 --> 00:05:38.410 patient and highly concerning.

NOTE Confidence: 0.977819687894737

00:05:38.410 --> 00:05:40.198 For intra abdominal injury.

NOTE Confidence: 0.988713248571429

00:05:42.630 --> 00:05:46.120 Let's talk next about Pocus for pregnancy, so

NOTE Confidence: 0.982222847142857

00:05:46.130 --> 00:05:48.216 this can be used for a pregnant

NOTE Confidence: 0.935679435

00:05:48.250 --> 00:05:50.206 female with pelvic or abdominal pain,

NOTE Confidence: 0.935679435

00:05:50.210 --> 00:05:53.970 vaginal cleaning, or syncope. You're

NOTE Confidence: 0.983564001666667

00:05:53.980 --> 00:05:55.630 going to look for the following.

NOTE Confidence: 0.99173546

00:05:57.260 --> 00:06:00.830 When you're doing emergency department point

NOTE Confidence: 0.99173546

00:06:00.830 --> 00:06:03.348 of care ultrasound for pregnancy, your

NOTE Confidence: 0.985226642

00:06:03.360 --> 00:06:05.680 goal is to distinguish between

NOTE Confidence: 0.985226642

00:06:05.680 --> 00:06:08.080 intrauterine pregnancy, IUP,

NOTE Confidence: 0.985226642

00:06:08.080 --> 00:06:12.080 or no definitive inuki ndep.

NOTE Confidence: 0.985226642

00:06:12.080 --> 00:06:12.988 Those are your goals

NOTE Confidence: 0.977461218333333

00:06:13.960 --> 00:06:15.730 within intrauterine pregnancy.

NOTE Confidence: 0.977461218333333

00:06:15.730 --> 00:06:17.500 You can identify

NOTE Confidence: 0.762079091666667

00:06:17.850 --> 00:06:20.450 yolk SAC and or fetal pole, and

NOTE Confidence: 0.915112456666667

00:06:20.460 --> 00:06:22.629 then you want to distinguish is it alive IEP.

NOTE Confidence: 0.9589533625

00:06:22.640 --> 00:06:26.680 So is there fetal motion and feel healthy. No

NOTE Confidence: 0.968257102222222

00:06:26.690 --> 00:06:29.015 definitive value paid. This can

NOTE Confidence: 0.968257102222222

00:06:29.015 --> 00:06:30.875 happen being early pregnancy

NOTE Confidence: 0.969311116666667

00:06:31.350 --> 00:06:32.616 in ectopic pregnancy,

NOTE Confidence: 0.969311116666667

00:06:32.616 --> 00:06:35.148 particularly if you see free fluid.

NOTE Confidence: 0.969311116666667

00:06:35.150 --> 00:06:37.028 It can happen in a miscarriage.

NOTE Confidence: 0.969311116666667

00:06:37.030 --> 00:06:38.920 It can happen in molar pregnancy.

NOTE Confidence: 0.85536704

00:06:42.420 --> 00:06:47.140 If you have determined that this is no

NOTE Confidence: 0.85536704

00:06:47.140 --> 00:06:50.320 definitive intrauterine pregnancy or ND IUP,

NOTE Confidence: 0.85536704

00:06:50.320 --> 00:06:55.208 then you need to obtain a beta HCG.

NOTE Confidence: 0.85536704

00:06:55.210 --> 00:06:57.429 The number to know is the discrimina

NOTE Confidence: 0.85536704

00:06:57.429 --> 00:06:59.835 Tori zone, so this is the level

NOTE Confidence: 0.85536704

00:06:59.835 --> 00:07:02.249 at which you should see in IUP.

NOTE Confidence: 0.85536704

00:07:02.250 --> 00:07:06.432 So if you're doing a transabdominal

NOTE Confidence: 0.85536704

00:07:06.432 --> 00:07:12.738 ultrasound and the. Beta HCG is 800.

NOTE Confidence: 0.85536704

00:07:12.740 --> 00:07:16.076 Then this is probably early pregnancy,

NOTE Confidence: 0.85536704

00:07:16.080 --> 00:07:19.500 and it's probably too early to

NOTE Confidence: 0.85536704

00:07:19.500 --> 00:07:21.780 see the intrauterine pregnancy.

NOTE Confidence: 0.85536704

00:07:21.780 --> 00:07:24.548 This patient should receive

NOTE Confidence: 0.85536704

00:07:24.548 --> 00:07:27.570 another beta HCG in two days.

NOTE Confidence: 0.85536704

00:07:27.570 --> 00:07:32.010 However, if you're doing a transabdominal

NOTE Confidence: 0.85536704

00:07:32.010 --> 00:07:36.264 ultrasound and the beta HCG is 10,000.

NOTE Confidence: 0.85536704

00:07:36.264 --> 00:07:39.000 This is highly concerning.

NOTE Confidence: 0.85536704

00:07:39.000 --> 00:07:41.556 This could be an ectopic and

NOTE Confidence: 0.85536704

00:07:41.556 --> 00:07:44.688 you need to call OB right away.

NOTE Confidence: 0.897691461454545

00:07:48.640 --> 00:07:50.896 Let's talk a little bit more

NOTE Confidence: 0.897691461454545

00:07:50.896 --> 00:07:52.780 about what defines an IEP.

NOTE Confidence: 0.897691461454545

00:07:52.780 --> 00:07:55.832 First, we have the gestation ilsac this

NOTE Confidence: 0.897691461454545

00:07:55.832 --> 00:07:58.420 fluid collection embedded within the uterus.

NOTE Confidence: 0.897691461454545

00:07:58.420 --> 00:08:00.940 This has two layers and it's the

NOTE Confidence: 0.897691461454545

00:08:00.940 --> 00:08:03.979 first sign of pregnancy on ultrasound.

NOTE Confidence: 0.897691461454545

00:08:03.980 --> 00:08:06.916 It can be seen at five weeks on

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NOTE Confidence: 0.897691461454545

00:08:06.916 --> 00:08:08.908 trans vaginal ultrasound and

NOTE Confidence: 0.897691461454545

00:08:08.908 --> 00:08:11.248 six weeks on transabdominal.

NOTE Confidence: 0.897691461454545

00:08:11.250 --> 00:08:12.490 Here's the yolk SAC.

NOTE Confidence: 0.897691461454545

00:08:12.490 --> 00:08:15.210 It looks like a cheerio or a lifesaver,

NOTE Confidence: 0.897691461454545

00:08:15.210 --> 00:08:17.577 and it can be seen at five to six

NOTE Confidence: 0.897691461454545

00:08:17.577 --> 00:08:19.930 weeks on trans vaginal and usually a

NOTE Confidence: 0.897691461454545

00:08:19.930 --> 00:08:22.360 little bit later on transabdominal.

NOTE Confidence: 0.967985701111111

00:08:25.020 --> 00:08:26.472 Here's the fetal pole.

NOTE Confidence: 0.967985701111111

00:08:26.472 --> 00:08:28.566 It looks like a thickening on

NOTE Confidence: 0.967985701111111

00:08:28.566 --> 00:08:29.988 the margin of the yolk SAC,

NOTE Confidence: 0.967985701111111

00:08:29.988 --> 00:08:31.577 and it can be seen at five

NOTE Confidence: 0.967985701111111

00:08:31.577 --> 00:08:32.945 and a half to six weeks

NOTE Confidence: 0.9905060925

00:08:32.980 --> 00:08:34.748 on trans. Vaginal ultrasound

NOTE Confidence: 0.990946883333333

00:08:35.120 --> 00:08:38.048 and seven weeks on transabdominal ultrasound.

NOTE Confidence: 0.950225741666667

00:08:40.080 --> 00:08:41.820 What parts of an IEP can

NOTE Confidence: 0.950225741666667

00:08:41.820 --> 00:08:43.779 you make out in this clip?

NOTE Confidence: 0.950225741666667

00:08:43.780 --> 00:08:46.240 You can see the gestational SAC as

NOTE Confidence: 0.950225741666667

00:08:46.240 --> 00:08:48.993 the hyperechoic circles surrounding

NOTE Confidence: 0.950225741666667

00:08:48.993 --> 00:08:51.100 the anechoic fluid collection.

NOTE Confidence: 0.950225741666667

00:08:51.100 --> 00:08:52.913 In this uterus you can see the

NOTE Confidence: 0.950225741666667

00:08:52.913 --> 00:08:55.196 yolk SAC at about the seven o'clock

NOTE Confidence: 0.950225741666667

00:08:55.196 --> 00:08:57.620 position in there and the fetal pole

NOTE Confidence: 0.950225741666667

00:08:57.620 --> 00:08:59.828 just to the left of the yolk SAC

NOTE Confidence: 0.987015543333333

00:09:00.760 --> 00:09:03.028 and then. You can make out

NOTE Confidence: 0.9809810925

00:09:03.040 --> 00:09:05.928 the fetal heart rate.

NOTE Confidence: 0.9809810925

00:09:05.930 --> 00:09:07.640 So this fetal heart rate looks

NOTE Confidence: 0.9809810925

00:09:07.640 --> 00:09:09.360 like a flickering in the fetal

NOTE Confidence: 0.9809810925

00:09:09.360 --> 00:09:13.070 pole and is usually seen at six

NOTE Confidence: 0.9809810925

00:09:13.070 --> 00:09:15.220 weeks on trans vaginal ultrasound

NOTE Confidence: 0.99076263

00:09:15.440 --> 00:09:17.420 and about seven weeks on

NOTE Confidence: 0.99076263

00:09:17.420 --> 00:09:18.340 transabdominal ultrasound.

NOTE Confidence: 0.9863993

00:09:22.250 --> 00:09:24.889 Now the last part to this entire

NOTE Confidence: 0.9863993

00:09:24.890 --> 00:09:27.159 definition of an intrauterine

NOTE Confidence: 0.981874755

00:09:27.170 --> 00:09:30.236 pregnancy is that all of these different

NOTE Confidence: 0.981874755

00:09:30.236 --> 00:09:33.339 items need to be within the uterus.

NOTE Confidence: 0.985233436

00:09:37.800 --> 00:09:40.165 For example, do you remember

NOTE Confidence: 0.985233436

00:09:40.165 --> 00:09:42.530 this example from the beginning?

NOTE Confidence: 0.985233436

00:09:42.530 --> 00:09:44.798 This is the pregnant patient who

NOTE Confidence: 0.988672982

00:09:44.810 --> 00:09:46.140 came in with abdominal pain.

NOTE Confidence: 0.98615798

00:09:46.650 --> 00:09:48.510 We're seeing all of those features

NOTE Confidence: 0.98615798

00:09:48.510 --> 00:09:51.548 that define in early pregnancy.

NOTE Confidence: 0.98615798

00:09:51.550 --> 00:09:52.678 We see the gestational

NOTE Confidence: 0.830571817142857

00:09:52.690 --> 00:09:56.295 SAC, the yolk SAC, the fetal pole,

NOTE Confidence: 0.988437516666667

00:09:56.570 --> 00:09:58.016 and we even see the flickering

NOTE Confidence: 0.9818651475

00:09:58.050 --> 00:10:01.280 of the fetal heart rate. But we don't

NOTE Confidence: 0.9758062

00:10:01.280 --> 00:10:04.449 see the uterine stripe or the adjacent

NOTE Confidence: 0.990298936

00:10:04.460 --> 00:10:06.460 bladder. To confirm to us

NOTE Confidence: 0.970343456666667

00:10:06.490 --> 00:10:08.410 that this is in the uterus,

NOTE Confidence: 0.970343456666667

00:10:08.410 --> 00:10:11.234 we also see a lot of free fluid here,

NOTE Confidence: 0.970343456666667

00:10:11.234 --> 00:10:13.458 which is an ominous finding and

NOTE Confidence: 0.970343456666667

00:10:13.458 --> 00:10:16.850 should prompt stat OB konsult. So

NOTE Confidence: 0.98057136875

00:10:17.060 --> 00:10:19.237 this patient went to the OR and

NOTE Confidence: 0.98057136875

00:10:19.237 --> 00:10:20.600 was found to have a ruptured

NOTE Confidence: 0.98057136875

00:10:20.600 --> 00:10:23.140 ectopic in the fallopian tube.

NOTE Confidence: 0.98057136875

00:10:23.140 --> 00:10:26.511 They drained 500CC's of Hemoperitoneum

NOTE Confidence: 0.98057136875

00:10:26.511 --> 00:10:29.296 and underwent to self inject.

NOTE Confidence: 0.98057136875

00:10:29.300 --> 00:10:31.000 With this case in mind,

NOTE Confidence: 0.98057136875

00:10:31.000 --> 00:10:32.668 what are some potential

NOTE Confidence: 0.98057136875

00:10:32.668 --> 00:10:34.753 pitfalls in defining an IEP?

NOTE Confidence: 0.9427056775

00:10:37.780 --> 00:10:39.690 Do you see a gestational SAC here?

NOTE Confidence: 0.98806751

00:10:41.950 --> 00:10:44.280 Does the scan seem normal or abnormal?

NOTE Confidence: 0.985421328333333

00:10:47.330 --> 00:10:50.828 So. Maybe the free fluid tipped

NOTE Confidence: 0.98758654

00:10:50.840 --> 00:10:52.972 you off to the fact that something

NOTE Confidence: 0.98758654

00:10:52.972 --> 00:10:55.230 isn't right here, but this is a

NOTE Confidence: 0.98110959125

00:10:55.240 --> 00:10:56.568 potential pitfall when you're

NOTE Confidence: 0.98110959125

00:10:56.568 --> 00:10:59.680 looking for a gestational SAC.

NOTE Confidence: 0.988772668

00:10:59.680 --> 00:11:01.370 What we're seeing here is

NOTE Confidence: 0.904836936

00:11:01.380 --> 00:11:03.810 a pseudo gestational SAC or

NOTE Confidence: 0.940795921428571

00:11:03.840 --> 00:11:07.214 a pseudo SAC. Basically it's a fluid

NOTE Confidence: 0.940795921428571

00:11:07.220 --> 00:11:09.276 collection within the uterus in the

NOTE Confidence: 0.940795921428571

00:11:09.276 --> 00:11:11.230 setting of a positive pregnancy test,

NOTE Confidence: 0.988509356666667

00:11:11.630 --> 00:11:13.520 but it does not actually contain

NOTE Confidence: 0.988509356666667

00:11:13.520 --> 00:11:15.950 the yolk SAC or the fetal pole. It's

NOTE Confidence: 0.985881801666667

00:11:15.960 --> 00:11:17.640 generally irregularly shaped,

NOTE Confidence: 0.985881801666667

00:11:17.640 --> 00:11:19.320 has pointed edges,

NOTE Confidence: 0.985881801666667

00:11:19.320 --> 00:11:21.438 and may be filled with debris,

NOTE Confidence: 0.985881801666667

00:11:21.440 --> 00:11:23.456 but I would say that if you're not

NOTE Confidence: 0.985881801666667

17

00:11:23.456 --> 00:11:25.742 at least seeing the yolk SAC within

NOTE Confidence: 0.985881801666667

00:11:25.742 --> 00:11:28.013 the gestational SAC, then I would

NOTE Confidence: 0.985881801666667

00:11:28.013 --> 00:11:30.890 not be totally reassured of an IEP.

NOTE Confidence: 0.985881801666667

00:11:30.890 --> 00:11:34.015 This clip was from a

NOTE Confidence: 0.985881801666667

00:11:34.015 --> 00:11:35.890 ruptured ectopic pregnancy.

NOTE Confidence: 0.985881801666667

00:11:35.890 --> 00:11:37.792 Here's a 30 year old woman

NOTE Confidence: 0.985881801666667

00:11:37.792 --> 00:11:39.430 with a positive pregnancy test.

NOTE Confidence: 0.985881801666667

00:11:39.430 --> 00:11:42.106 Six weeks by last menstrual period

NOTE Confidence: 0.985881801666667

00:11:42.106 --> 00:11:43.890 presenting with acute onset,

NOTE Confidence: 0.985881801666667

00:11:43.890 --> 00:11:45.345 lower abdominal pain.

NOTE Confidence: 0.985881801666667

00:11:45.345 --> 00:11:48.740 What do you think of this uterus?

NOTE Confidence: 0.985881801666667

00:11:48.740 --> 00:11:51.640 Again, our pseudo sack.

NOTE Confidence: 0.985881801666667

00:11:51.640 --> 00:11:53.160 Also the free fluid posterior

NOTE Confidence: 0.985881801666667

00:11:53.160 --> 00:11:54.810 to the uterus is another tip

NOTE Confidence: 0.985881801666667

00:11:54.868 --> 00:11:56.478 off that something isn't right.

NOTE Confidence: 0.985881801666667

00:11:56.480 --> 00:11:57.732 This was another ruptured

NOTE Confidence: 0.985881801666667

00:11:57.732 --> 00:11:59.610 ectopic and went to the OR.

NOTE Confidence: 0.984270355555556

00:12:02.090 --> 00:12:04.790 So let's move on to another type of pitfall.

NOTE Confidence: 0.984270355555556

00:12:04.790 --> 00:12:06.574 Do you see a just stational sack with

NOTE Confidence: 0.984270355555556

00:12:06.580 --> 00:12:08.250 a fetal pole within this uterus?

NOTE Confidence: 0.97956339

00:12:12.430 --> 00:12:14.110 So here's something that

NOTE Confidence: 0.97956339

00:12:14.110 --> 00:12:16.210 could be a gestational SAC,

NOTE Confidence: 0.97956339

00:12:16.210 --> 00:12:19.031 and if you decided that that's a

NOTE Confidence: 0.97956339

00:12:19.031 --> 00:12:21.772 gestational SAC, you would be correct,

NOTE Confidence: 0.97956339

00:12:21.772 --> 00:12:23.704 but there's a problem.

NOTE Confidence: 0.97956339

00:12:23.710 --> 00:12:25.685 The distance from the gestational

NOTE Confidence: 0.97956339

00:12:25.685 --> 00:12:28.866 SAC to the edge of the uterus or

NOTE Confidence: 0.97956339

00:12:28.866 --> 00:12:31.098 the myometrial mantle is too small

NOTE Confidence: 0.97956339

00:12:31.100 --> 00:12:33.020 for gestational SAC should be at

NOTE Confidence: 0.97956339

00:12:33.020 --> 00:12:34.849 least one centimeter from the edge

NOTE Confidence: 0.97956339

00:12:34.849 --> 00:12:37.276 of the uterus and below this the

NOTE Confidence: 0.97956339

00:12:37.276 --> 00:12:39.396 myometrial mantle is too small.

NOTE Confidence: 0.97956339

00:12:39.400 --> 00:12:41.536 This tells us that it's actually

NOTE Confidence: 0.97956339

00:12:41.536 --> 00:12:42.960 in the wrong place.

NOTE Confidence: 0.97956339

00:12:42.960 --> 00:12:45.918 This too is an ectopic pregnancy.

NOTE Confidence: 0.97956339

00:12:45.920 --> 00:12:49.358 It's what's called an interstitial pregnancy.

NOTE Confidence: 0.97956339

00:12:49.360 --> 00:12:51.048 These are very vascular.

NOTE Confidence: 0.97956339

00:12:51.048 --> 00:12:54.408 They can bleed a lot, and they have.

NOTE Confidence: 0.97956339

00:12:54.408 --> 00:12:56.488 Seven times the morbidity and

NOTE Confidence: 0.97956339

00:12:56.488 --> 00:12:58.460 mortality than tubal ectopics.

NOTE Confidence: 0.97956339

00:12:58.460 --> 00:13:01.664 It occurs in about 2 to 4% Divock topics.

NOTE Confidence: 0.97956339

00:13:01.664 --> 00:13:04.523 So it's rare, but it's deadly.

NOTE Confidence: 0.97956339

00:13:04.523 --> 00:13:06.449 Be suspicious if the distance from

NOTE Confidence: 0.97956339

00:13:06.449 --> 00:13:08.623 the Miami trim to the edge of the

NOTE Confidence: 0.97956339

00:13:08.623 --> 00:13:10.509 uterus is less than 1 centimeter.

NOTE Confidence: 0.987217568

00:13:13.330 --> 00:13:15.314 Let's practice does this

NOTE Confidence: 0.987217568

00:13:15.314 --> 00:13:17.424 myometrial mantle size look OK?

NOTE Confidence: 0.987217568

00:13:17.424 --> 00:13:20.440 Yeah, it's 1.48 centimeters,

NOTE Confidence: 0.987217568

00:13:20.440 --> 00:13:24.350 so it's over 1 centimeter so it looks great.

NOTE Confidence: 0.987217568

00:13:24.350 --> 00:13:27.000 This is an intrauterine pregnancy.

NOTE Confidence: 0.987217568

00:13:27.000 --> 00:13:30.297 Does this myometrial mantle size look OK?

NOTE Confidence: 0.987217568

00:13:30.300 --> 00:13:32.348 No, it's .6 centimeters,

NOTE Confidence: 0.987217568

00:13:32.348 --> 00:13:34.908 so less than one centimeter.

NOTE Confidence: 0.987217568

00:13:34.910 --> 00:13:36.722 This one concerns me.

NOTE Confidence: 0.987217568

00:13:36.722 --> 00:13:39.440 I'm concerned for an interstitial pregnancy.

NOTE Confidence: 0.987217568

00:13:39.440 --> 00:13:42.872 Let's call OB gyne Let's talk

NOTE Confidence: 0.987217568

00:13:42.872 --> 00:13:44.756 about another potential pitfall.

NOTE Confidence: 0.987217568

00:13:44.760 --> 00:13:47.298 Do you see an IEP here?

NOTE Confidence: 0.987217568

00:13:47.300 --> 00:13:49.980 Do you see something else?

NOTE Confidence: 0.987217568

00:13:49.980 --> 00:13:52.934 Do you see anything that concerns you?

NOTE Confidence: 0.987217568

00:13:52.940 --> 00:13:55.418 Are you confused?

NOTE Confidence: 0.987217568

00:13:55.420 --> 00:13:57.550 I guarantee that whatever you said

NOTE Confidence: 0.98493069

00:13:57.740 --> 00:13:58.748 you are correct.

NOTE Confidence: 0.9923693

00:14:01.160 --> 00:14:05.394 Here's your IUP. It has all the

NOTE Confidence: 0.9923693

00:14:05.394 --> 00:14:07.483 fetal components and with and

NOTE Confidence: 0.9923693

00:14:07.483 --> 00:14:09.850 is within the uterus. Here's

NOTE Confidence: 0.989816805

00:14:09.860 --> 00:14:12.680 another image from the same clip.

NOTE Confidence: 0.989816805

00:14:12.680 --> 00:14:16.754 And here we see and ectopic pregnancy.

NOTE Confidence: 0.989816805

00:14:16.760 --> 00:14:19.088 So this is an example of

NOTE Confidence: 0.989816805

00:14:19.088 --> 00:14:20.252 a heterotopic pregnancy.

NOTE Confidence: 0.989816805

00:14:20.260 --> 00:14:24.688 There are both intrauterine and extrauterine

NOTE Confidence: 0.989816805

00:14:24.688 --> 00:14:26.902 pregnancies occurring simultaneously.

NOTE Confidence: 0.989816805

00:14:26.910 --> 00:14:29.730 This is extremely rare in general,

NOTE Confidence: 0.989816805

00:14:29.730 --> 00:14:32.946 but there's increased risk in those

NOTE Confidence: 0.989816805

00:14:32.946 --> 00:14:35.090 receiving assistive reproductive techniques,

NOTE Confidence: 0.989816805

00:14:35.090 --> 00:14:38.072 so about one to one in 100

NOTE Confidence: 0.989816805

00:14:38.072 --> 00:14:40.672 to one in 500 patients.

NOTE Confidence: 0.989816805

00:14:40.672 --> 00:14:41.994 Experience this.

NOTE Confidence: 0.989816805

00:14:41.994 --> 00:14:44.638 Be suspicious for it,

NOTE Confidence: 0.989816805

00:14:44.640 --> 00:14:46.350 particularly in the right clinical

NOTE Confidence: 0.98248353

00:14:46.360 --> 00:14:48.770 setting and in a patient

NOTE Confidence: 0.98248353

00:14:48.770 --> 00:14:50.216 with fertility treatments.

NOTE Confidence: 0.98248353

00:14:50.220 --> 00:14:52.790 And don't be reassured by the

NOTE Confidence: 0.98248353

00:14:52.790 --> 00:14:56.001 presence of an IUP until you have

NOTE Confidence: 0.98248353

00:14:56.001 --> 00:14:59.170 fanned fully through the pelvis

NOTE Confidence: 0.9890990725

00:14:59.200 --> 00:15:02.168 and interrogated to determine

NOTE Confidence: 0.98738911

00:15:02.200 --> 00:15:03.530 that there is only one

NOTE Confidence: 0.867365903333333

00:15:03.620 --> 00:15:06.050 IUP and nothing else that's concerning.

NOTE Confidence: 0.9911198775

00:15:09.750 --> 00:15:11.715 Let's talk next about fetal

NOTE Confidence: 0.9911198775

00:15:11.715 --> 00:15:13.280 dating and department.

NOTE Confidence: 0.985639356

00:15:15.500 --> 00:15:17.230 Let's talk briefly about fetal

NOTE Confidence: 0.98822222

00:15:17.240 --> 00:15:19.400 dating first. Four

NOTE Confidence: 0.976034285

00:15:19.410 --> 00:15:22.040 of fetus of less than 13 weeks

NOTE Confidence: 0.976034285

00:15:22.040 --> 00:15:25.030 will use crown rump length or CRL.

NOTE Confidence: 0.976034285

00:15:25.030 --> 00:15:27.560 We'll use the OB setting

NOTE Confidence: 0.989418496666667

00:15:27.570 --> 00:15:28.398 on our machine.

NOTE Confidence: 0.9756415

00:15:28.690 --> 00:15:31.530 Use the calculation package

NOTE Confidence: 0.9756415

00:15:31.530 --> 00:15:34.950 to click on curl and

NOTE Confidence: 0.98393854

00:15:34.950 --> 00:15:36.730 will measure the baby in the plane

NOTE Confidence: 0.98393854

00:15:36.730 --> 00:15:38.810 in which it looks the longest.

NOTE Confidence: 0.98393854

00:15:38.810 --> 00:15:40.279 And remember, don't include

NOTE Confidence: 0.925476155

00:15:40.290 --> 00:15:41.398 the arms or legs.

NOTE Confidence: 0.9903169

00:15:44.270 --> 00:15:45.780 For a fetus that's greater

NOTE Confidence: 0.987431223333333

00:15:45.780 --> 00:15:47.968 than 13 weeks and age, we're going

NOTE Confidence: 0.919125048333333

00:15:47.980 --> 00:15:51.088 to use the biparietal diameter orbed.

NOTE Confidence: 0.9888743

00:15:52.110 --> 00:15:54.016 What we're going to do is fan

NOTE Confidence: 0.982033835

00:15:54.030 --> 00:15:56.490 until we find the septum pellucida.

NOTE Confidence: 0.982033835

00:15:56.490 --> 00:15:58.246 It's this line here, running anterior

NOTE Confidence: 0.982033835

00:15:58.246 --> 00:16:00.610 to post area across the cranium.

NOTE Confidence: 0.982033835

00:16:00.610 --> 00:16:02.598 The hemisphere should appear symmetric

NOTE Confidence: 0.982033835

00:16:02.600 --> 00:16:04.196 on either side of this line,

NOTE Confidence: 0.982033835

00:16:04.200 --> 00:16:06.578 and we're going to measure in axial plane

NOTE Confidence: 0.982033835

00:16:06.578 --> 00:16:08.998 across the septum pellucida perpendicular

NOTE Confidence: 0.982033835

00:16:08.998 --> 00:16:11.740 to the central axis of the head.

NOTE Confidence: 0.982033835

00:16:11.740 --> 00:16:13.910 We're going to place the calibres outer

NOTE Confidence: 0.957168925

00:16:13.920 --> 00:16:14.768 edge of the interior

NOTE Confidence: 0.968648777777778

00:16:14.780 --> 00:16:17.461 wall to the inner edge of the

NOTE Confidence: 0.968648777777778

00:16:17.461 --> 00:16:20.002 posterior wall, so outer to inner

NOTE Confidence: 0.968648777777778

00:16:20.002 --> 00:16:22.660 or leading edge to leading edge.

NOTE Confidence: 0.968648777777778

00:16:22.660 --> 00:16:24.615 In order to maintain the

NOTE Confidence: 0.968648777777778

00:16:24.615 --> 00:16:25.788 standard of management.

NOTE Confidence: 0.97869965

00:16:29.020 --> 00:16:30.580 Let's talk now about calculating

NOTE Confidence: 0.97869965

00:16:30.580 --> 00:16:31.828 the fetal heart rate.

NOTE Confidence: 0.97869965

00:16:31.830 --> 00:16:34.678 So first we're going to find a plane

NOTE Confidence: 0.97869965

00:16:34.678 --> 00:16:37.073 that slices through the heart such

NOTE Confidence: 0.97869965

00:16:37.073 --> 00:16:39.479 that you can see it flickering.

NOTE Confidence: 0.97869965

00:16:39.480 --> 00:16:41.030 Now let's talk about calculating

NOTE Confidence: 0.97869965

00:16:41.030 --> 00:16:43.870 the fetal heart rate. So first

NOTE Confidence: 0.974764612

00:16:43.870 --> 00:16:46.030 find a plane that slices through

NOTE Confidence: 0.974764612

00:16:46.030 --> 00:16:47.642 the heart such that you can

NOTE Confidence: 0.974764612

00:16:47.642 --> 00:16:49.709 see it flickering like this.

NOTE Confidence: 0.98982118

00:16:53.760 --> 00:16:55.959 Here's another example.

NOTE Confidence: 0.98982118

00:16:55.960 --> 00:16:57.640 See how you can really clearly

NOTE Confidence: 0.98982118

00:16:57.640 --> 00:16:58.748 see that flickering heart.

NOTE Confidence: 0.98948185

00:17:01.190 --> 00:17:03.820 So once we find that plane will

NOTE Confidence: 0.9524946475

00:17:03.830 --> 00:17:06.399 click on end mode and put that

NOTE Confidence: 0.9524946475

00:17:06.399 --> 00:17:08.334 icepick right through the heart where

NOTE Confidence: 0.9524946475

00:17:08.334 --> 00:17:10.670 you're seeing cardiac activity.

NOTE Confidence: 0.9524946475

00:17:10.670 --> 00:17:12.590 This will allow us to capture the

NOTE Confidence: 0.9524946475

00:17:12.590 --> 00:17:15.380 movement of the heart with time and

NOTE Confidence: 0.98438258

00:17:15.390 --> 00:17:18.760 then could freeze. When we click measure,

NOTE Confidence: 0.950310756666667

00:17:18.790 --> 00:17:21.550 we'll get those calibers and will

NOTE Confidence: 0.950310756666667

00:17:21.550 --> 00:17:25.020 choose two beats peak to peak.

NOTE Confidence: 0.9864504

00:17:27.680 --> 00:17:28.846 I don't know if you can tell

NOTE Confidence: 0.9864504

00:17:28.846 --> 00:17:29.740 that they've done that here,

NOTE Confidence: 0.986373188

00:17:29.740 --> 00:17:31.730 so I've highlighted their calibers

NOTE Confidence: 0.989563081666667

00:17:32.200 --> 00:17:33.766 and then the machine will calculate

NOTE Confidence: 0.989563081666667

00:17:33.770 --> 00:17:35.588 for you the fetal heart rate.

NOTE Confidence: 0.989563081666667

00:17:35.590 --> 00:17:39.689 A normal heart rate is 120 to 160

NOTE Confidence: 0.9026648

00:17:39.700 --> 00:17:42.598 beats per minute, so this fake fetal

NOTE Confidence: 0.9026648

00:17:42.598 --> 00:17:45.068 heart rate is 143, so that's normal.

NOTE Confidence: 0.983475521363637

00:17:49.600 --> 00:17:52.156 Now one thing I want to talk about is

NOTE Confidence: 0.983475521363637

00:17:52.156 --> 00:17:54.675 the concept of using Doppler for fetal

NOTE Confidence: 0.983475521363637

00:17:54.675 --> 00:17:57.649 heart rate in the emergency department.

NOTE Confidence: 0.983475521363637

00:17:57.650 --> 00:17:59.760 In the Ed, we're abiding

NOTE Confidence: 0.983475521363637

00:17:59.760 --> 00:18:01.870 by the principle of ALARA,

NOTE Confidence: 0.983475521363637

00:18:01.870 --> 00:18:04.234 meaning we're using the amount of

NOTE Confidence: 0.983475521363637

00:18:04.234 --> 00:18:07.128 energy from the machine that's as low

NOTE Confidence: 0.983475521363637

00:18:07.128 --> 00:18:09.203 as reasonably achievable for what

NOTE Confidence: 0.983475521363637

00:18:09.203 --> 00:18:12.146 we're trying to do when we use Doppler,

NOTE Confidence: 0.983475521363637

00:18:12.146 --> 00:18:13.842 we're sending more intense

NOTE Confidence: 0.983475521363637

00:18:13.842 --> 00:18:16.039 energy to the heart itself,

NOTE Confidence: 0.983475521363637

00:18:16.040 --> 00:18:18.074 which could hypothetically

NOTE Confidence: 0.983475521363637

00:18:18.074 --> 00:18:21.464 result in fetal heart defects.

NOTE Confidence: 0.983475521363637

00:18:21.470 --> 00:18:23.895 The OBSE use this for

NOTE Confidence: 0.983475521363637

00:18:23.895 --> 00:18:25.350 their purposes sometimes,

NOTE Confidence: 0.983475521363637

00:18:25.350 --> 00:18:28.234 but any emergency department all we're doing.

NOTE Confidence: 0.983475521363637

00:18:28.240 --> 00:18:29.680 Is measuring fetal heart rate,

NOTE Confidence: 0.983475521363637

00:18:29.680 --> 00:18:32.512 which could just be done with M mode

NOTE Confidence: 0.983475521363637

00:18:32.512 --> 00:18:35.480 using a lot lower amount of energy.

NOTE Confidence: 0.983475521363637

00:18:35.480 --> 00:18:39.228 So when it comes to Doppler I say no.

NOTE Confidence: 0.99146425

00:18:41.720 --> 00:18:44.060 Let's talk through some cases.

NOTE Confidence: 0.99146425

00:18:44.060 --> 00:18:45.880 We have a 25 year old woman

NOTE Confidence: 0.99146425

00:18:45.880 --> 00:18:48.099 with a beta HCG presenting with

NOTE Confidence: 0.99146425

00:18:48.099 --> 00:18:49.927 severe lower abdominal pain.

NOTE Confidence: 0.987263076666667

00:18:53.580 --> 00:18:55.620 Where is this clip being recorded?

NOTE Confidence: 0.987263076666667

00:18:55.620 --> 00:18:56.825 This is in Morrison's pouch

NOTE Confidence: 0.987263076666667

00:18:56.825 --> 00:18:58.030 in the right upper quadrant.

NOTE Confidence: 0.978463057777778

00:19:00.130 --> 00:19:03.235 We're seeing a little bit of free fluid here.

NOTE Confidence: 0.978463057777778

00:19:03.240 --> 00:19:05.430 Now, free fluid in Morrison's

NOTE Confidence: 0.978463057777778

00:19:05.430 --> 00:19:08.090 pouch is always an ominous sign.

NOTE Confidence: 0.98486494875

00:19:10.750 --> 00:19:13.892 So now we move down to the pelvis in

NOTE Confidence: 0.98486494875

00:19:13.892 --> 00:19:17.348 our sagittal plane. And what do you see?

NOTE Confidence: 0.98271937631579

00:19:20.630 --> 00:19:22.438 So here are landmarks,

NOTE Confidence: 0.98271937631579

00:19:22.438 --> 00:19:25.150 the bladder and the uterus there

NOTE Confidence: 0.98271937631579

00:19:25.238 --> 00:19:27.478 with the uterine stripe telling

NOTE Confidence: 0.98271937631579

29

00:19:27.478 --> 00:19:30.556 you where we are. This is clott.

NOTE Confidence: 0.98271937631579

00:19:30.556 --> 00:19:33.034 This is a ruptured ectopic pregnancy

NOTE Confidence: 0.98271937631579

00:19:33.034 --> 00:19:35.666 and this patient went to the ER.

NOTE Confidence: 0.982475125714286

00:19:38.670 --> 00:19:41.190 Our next patient is a 20 year old

NOTE Confidence: 0.982475125714286

00:19:41.190 --> 00:19:43.467 girl who is 10 weeks pregnant,

NOTE Confidence: 0.982475125714286

00:19:43.470 --> 00:19:44.948 presenting with lower abdominal

NOTE Confidence: 0.982475125714286

00:19:44.950 --> 00:19:46.258 pain starting this morning.

NOTE Confidence: 0.982492534285714

00:19:50.960 --> 00:19:52.444 What do you see in this clip?

NOTE Confidence: 0.961526046666667

00:19:54.960 --> 00:19:58.020 We see the fetus within the gestational SAC,

NOTE Confidence: 0.961526046666667

00:19:58.020 --> 00:20:00.120 which is within the uterus.

NOTE Confidence: 0.961526046666667

00:20:00.120 --> 00:20:03.305 But we also see an anechoic stripe

NOTE Confidence: 0.961526046666667

00:20:03.310 --> 00:20:06.740 below the gestational SAC and

NOTE Confidence: 0.961526046666667

00:20:06.740 --> 00:20:08.240 with it still within the uterus.

NOTE Confidence: 0.984117398

00:20:11.170 --> 00:20:12.960 This is a subchorionic hemorrhage.

NOTE Confidence: 0.984117398

00:20:12.960 --> 00:20:14.855 It's an accumulation of broad blood

NOTE Confidence: 0.984117398

00:20:14.855 --> 00:20:18.050 between the uterine lining and the Korean.

NOTE Confidence: 0.984117398

00:20:18.050 --> 00:20:19.350 Subchorionic hemorrhage

NOTE Confidence: 0.95512822

00:20:19.350 --> 00:20:21.482 and subchorionic matoma are the

NOTE Confidence: 0.95512822

00:20:21.482 --> 00:20:22.825 most common cause of vaginal

NOTE Confidence: 0.95512822

00:20:22.825 --> 00:20:24.508 bleeding in patients or 10 to

NOTE Confidence: 0.95512822

00:20:24.508 --> 00:20:26.620 20 weeks of gestational age. It

NOTE Confidence: 0.9901201725

00:20:26.630 --> 00:20:27.958 can increase the risk

NOTE Confidence: 0.982693608571429

00:20:27.970 --> 00:20:30.280 of an array of pregnancy complications and

NOTE Confidence: 0.89993417

00:20:30.290 --> 00:20:31.480 should be referred to OB.

NOTE Confidence: 0.982383086

00:20:37.260 --> 00:20:38.240 What do you see here?

NOTE Confidence: 0.98974225

00:20:40.450 --> 00:20:45.730 It's twins. All right, let's move on. Now

NOTE Confidence: 0.986878294285714

00:20:45.740 --> 00:20:47.805 we're going to talk about some non

NOTE Confidence: 0.99065407

00:20:47.840 --> 00:20:50.295 pregnant patients. Will talk about

NOTE Confidence: 0.99065407

00:20:50.295 --> 00:20:53.730 some kids with abdominal pain.

NOTE Confidence: 0.99065407

00:20:53.730 --> 00:20:55.606 Spoiler Alert you'll soon

NOTE Confidence: 0.99065407

00:20:55.606 --> 00:20:57.482 notice a pattern connecting

NOTE Confidence: 0.99065407

00:20:57.482 --> 00:20:59.468 the following slew of cases,

NOTE Confidence: 0.99065407

00:20:59.470 --> 00:21:00.660 but I won't regulate yet.

NOTE Confidence: 0.9877687

00:21:03.210 --> 00:21:07.045 So we have some young women with pelvic pain.

NOTE Confidence: 0.9877687

00:21:07.045 --> 00:21:09.872 Our first case is a 9 year old girl with

NOTE Confidence: 0.9877687

00:21:09.872 --> 00:21:11.660 vomiting and right lower quadrant pain

NOTE Confidence: 0.9877687

00:21:11.721 --> 00:21:14.036 referred to the emergency department by her

NOTE Confidence: 0.9877687

00:21:14.036 --> 00:21:17.258 pediatrician to rule out appendicitis. She

NOTE Confidence: 0.987233746666667

00:21:17.270 --> 00:21:18.158 had an acute

NOTE Confidence: 0.98909709625

00:21:18.170 --> 00:21:21.370 onset of her symptoms about 12 hours ago.

NOTE Confidence: 0.98909709625

00:21:21.370 --> 00:21:23.750 On exam she has rebound tenderness.

NOTE Confidence: 0.98909709625

00:21:23.750 --> 00:21:26.150 Localising to the right lower quadrant,

NOTE Confidence: 0.98909709625

00:21:26.150 --> 00:21:29.556 her labs demonstrate a white count

NOTE Confidence: 0.98909709625

00:21:29.556 --> 00:21:34.210 of 12.983% neutrophils so ever

NOTE Confidence: 0.984261336

00:21:32.330 --> 00:21:34.180 in search of an inflamed. Appendix

NOTE Confidence: 0.986862388

00:21:34.210 --> 00:21:35.464 captured on purpose.

NOTE Confidence: 0.986862388

00:21:35.464 --> 00:21:37.580 We pulled out the machine into the

NOTE Confidence: 0.986862388

00:21:37.580 --> 00:21:40.388 room and went right for the right lower

NOTE Confidence: 0.986862388

00:21:40.388 --> 00:21:42.817 quadrant to get that appendix right.

NOTE Confidence: 0.986862388

00:21:42.820 --> 00:21:44.160 So we actually started

NOTE Confidence: 0.986862388

00:21:44.160 --> 00:21:45.844 with some pelvic views.

NOTE Confidence: 0.986862388

00:21:45.844 --> 00:21:48.370 Take a look at this sagittal

NOTE Confidence: 0.986862388

00:21:48.451 --> 00:21:50.068 and transverse view.

NOTE Confidence: 0.986862388

00:21:50.070 --> 00:21:52.118 See if you could pick out the bladder

NOTE Confidence: 0.986807683333333

00:21:52.220 --> 00:21:53.288 in each view.

NOTE Confidence: 0.984898763333333

00:21:55.470 --> 00:21:58.060 And you'll notice on the left that there

NOTE Confidence: 0.984898763333333

00:21:58.060 --> 00:22:01.420 are two anechoic cystic looking structures.

NOTE Confidence: 0.98688237

00:22:04.950 --> 00:22:07.410 So here they are labeled.

NOTE Confidence: 0.98688237

00:22:07.410 --> 00:22:09.590 The bladder is the triangular

NOTE Confidence: 0.98688237

00:22:09.590 --> 00:22:12.050 structure to the right to the

NOTE Confidence: 0.98688237

00:22:12.050 --> 00:22:13.980 left of the platter or superior

NOTE Confidence: 0.98688237

00:22:13.980 --> 00:22:18.110 to it is a large cystic lesion.

NOTE Confidence: 0.98688237

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00:22:18.110 --> 00:22:19.280 On the bottom of the screen

NOTE Confidence: 0.969386326

00:22:19.290 --> 00:22:21.530 you'll see the ovary marked,

NOTE Confidence: 0.969386326

00:22:21.530 --> 00:22:26.390 so this pocus expedited this patients

NOTE Confidence: 0.969386326

00:22:26.390 --> 00:22:28.820 radiology performed ultrasound.

NOTE Confidence: 0.969386326

00:22:28.820 --> 00:22:31.124 Let's take a look at the results of

NOTE Confidence: 0.969386326

00:22:31.124 --> 00:22:33.000 the radiology performed ultrasound.

NOTE Confidence: 0.969386326

00:22:33.000 --> 00:22:34.830 They read the peripheral right,

NOTE Confidence: 0.969386326

00:22:34.830 --> 00:22:37.608 ovary is of normal appearance with

NOTE Confidence: 0.969386326

00:22:37.608 --> 00:22:38.997 normal follicles demonstrated.

NOTE Confidence: 0.969386326

00:22:39.000 --> 00:22:41.280 They mentioned that the resistive index,

NOTE Confidence: 0.969386326

00:22:41.280 --> 00:22:44.256 or RI is .68 and then they measure

NOTE Confidence: 0.969386326

00:22:44.256 --> 00:22:46.598 the dimensions which appear normal.

NOTE Confidence: 0.969386326

00:22:46.600 --> 00:22:49.204 The impression is a large right sided

NOTE Confidence: 0.969386326

00:22:49.204 --> 00:22:51.700 simple cyst arising from the right ovary

NOTE Confidence: 0.969386326

00:22:51.700 --> 00:22:53.916 with no associated evidence for torsion.

NOTE Confidence: 0.969386326

00:22:53.916 --> 00:22:56.512 Now you may be looking at this resistive

NOTE Confidence: 0.969386326

00:22:56.512 --> 00:22:59.288 index and wondering what the heck this is,

NOTE Confidence: 0.969386326

00:22:59.290 --> 00:23:01.762 so I just want to take a tangent

NOTE Confidence: 0.969386326

00:23:01.762 --> 00:23:03.899 to discuss the resistive index.

NOTE Confidence: 0.969386326

00:23:03.900 --> 00:23:05.745 This is really important to

NOTE Confidence: 0.969386326

00:23:05.745 --> 00:23:07.221 understand when we're evaluating

NOTE Confidence: 0.969386326

00:23:07.221 --> 00:23:09.007 flow in an ovary or testicle.

NOTE Confidence: 0.969386326

00:23:09.010 --> 00:23:10.865 It's a measure of flow in the

NOTE Confidence: 0.969386326

00:23:10.865 --> 00:23:12.510 organ through the cardiac cycle,

NOTE Confidence: 0.969386326

00:23:12.510 --> 00:23:14.500 calculated as the peak systolic

NOTE Confidence: 0.969386326

00:23:14.500 --> 00:23:16.490 velocity minus the end diastolic

NOTE Confidence: 0.969386326

00:23:16.558 --> 00:23:17.990 velocity over the peak,

NOTE Confidence: 0.969386326

00:23:17.990 --> 00:23:18.798 systolic velocity.

NOTE Confidence: 0.969386326

00:23:18.798 --> 00:23:20.818 Arterial waveforms are pulsatile and

NOTE Confidence: 0.969386326

00:23:20.818 --> 00:23:24.056 have a high flow pattern while the bean

NOTE Confidence: 0.969386326

00:23:24.056 --> 00:23:26.016 is typically continuous with minimal.

NOTE Confidence: 0.969386326

00:23:26.020 --> 00:23:28.204 Changes in the velocity of flow and any

00:23:28.204 --> 00:23:30.736 kind of outflow obstruction is going to

00:23:30.736 --> 00:23:33.010 cause resistance to arterial blood flow,

00:23:33.010 --> 00:23:37.576 so it increases the resistive index.

00:23:37.580 --> 00:23:40.490 A value of greater than Queen

00:23:40.490 --> 00:23:42.211 Devon indicates high resistance,

00:23:42.211 --> 00:23:44.296 which is concerning for torsion.

00:23:44.300 --> 00:23:46.136 Here you can see that the

00:23:46.136 --> 00:23:47.483 resistive index was .68,

00:23:47.483 --> 00:23:51.290 so it's just at the upper limit of normal.

00:23:51.290 --> 00:23:51.786 Well,

00:23:51.786 --> 00:23:54.266 this patient based on her

00:23:54.270 --> 00:23:55.940 clinical presentation

00:23:56.130 --> 00:23:59.546 and this large simple cyst was taken to

00:23:59.580 --> 00:24:02.298 the operating room.

00:24:02.300 --> 00:24:04.670 There on laparoscopy they

NOTE Confidence: 0.977969421428571

00:24:04.680 --> 00:24:06.600 found that the fallopian tube and

NOTE Confidence: 0.977969421428571

00:24:06.600 --> 00:24:10.080 ovary had a 180 degree of torsion

NOTE Confidence: 0.977969421428571

00:24:10.080 --> 00:24:11.790 and was dusky in appearance.

NOTE Confidence: 0.989252912

00:24:12.510 --> 00:24:14.550 So unfortunately, the operating

NOTE Confidence: 0.989252912

00:24:14.550 --> 00:24:17.610 room findings did not correlate with

NOTE Confidence: 0.983542733333333

00:24:17.620 --> 00:24:19.489 the reassuring radiology

NOTE Confidence: 0.992610566666667

00:24:19.500 --> 00:24:23.960 performed ultrasound findings. What

NOTE Confidence: 0.980915108571429

00:24:23.970 --> 00:24:26.784 is the evidence show for ovarian torsion?

NOTE Confidence: 0.980915108571429

00:24:26.790 --> 00:24:28.798 This is a retrospective review of

NOTE Confidence: 0.980915108571429

00:24:28.798 --> 00:24:30.568 SONOGRAPHIC reports compared to 41

NOTE Confidence: 0.980915108571429

00:24:30.568 --> 00:24:32.410 cases of surgically or pathology.

NOTE Confidence: 0.980915108571429

00:24:32.410 --> 00:24:34.330 Proven ovarian torsion

NOTE Confidence: 0.980915108571429

00:24:34.330 --> 00:24:36.890 all had abnormal adnexa,

NOTE Confidence: 0.980915108571429

00:24:36.890 --> 00:24:40.058 so that's important to note the

NOTE Confidence: 0.980915108571429

00:24:40.058 --> 00:24:42.634 most common finding was in a large,

NOTE Confidence: 0.980915108571429

00:24:42.640 --> 00:24:45.739 heterogeneous appearing ovary.

NOTE Confidence: 0.980915108571429

00:24:45.740 --> 00:24:47.756 All of these other aspects of ultrasound,

NOTE Confidence: 0.980915108571429

00:24:47.760 --> 00:24:49.740 though may not be present.

NOTE Confidence: 0.980915108571429

00:24:49.740 --> 00:24:52.345 Particularly important is the fact

NOTE Confidence: 0.980915108571429

00:24:52.345 --> 00:24:54.950 that Colorflow was present in

NOTE Confidence: 0.9892413075

00:24:55.830 --> 00:25:00.210 62% of cases. We see this over and over

NOTE Confidence: 0.9892413075

00:25:00.210 --> 00:25:02.386 again and it's because of the dual blood

NOTE Confidence: 0.9892413075

00:25:02.390 --> 00:25:04.720 supply to the ovaries. I'd love to

NOTE Confidence: 0.961947015

00:25:04.730 --> 00:25:07.940 show a couple of other examples.

NOTE Confidence: 0.961947015

00:25:07.940 --> 00:25:10.250 So this is a 16 year old girl

NOTE Confidence: 0.961947015

00:25:10.250 --> 00:25:11.713 presenting with worsening right

NOTE Confidence: 0.961947015

00:25:11.713 --> 00:25:13.500 lower quadrant pain for two days.

NOTE Confidence: 0.961947015

00:25:13.500 --> 00:25:14.924 She was diagnosed with

NOTE Confidence: 0.961947015

00:25:14.924 --> 00:25:17.008 ovarian cyst the day before.

NOTE Confidence: 0.961546475

00:25:20.180 --> 00:25:21.580 Here's her sagittal view.

NOTE Confidence: 0.971101874

00:25:23.940 --> 00:25:25.500 And here's her transverse view.

NOTE Confidence: 0.983167388

00:25:28.730 --> 00:25:31.530 What do you see here?

NOTE Confidence: 0.983167388

00:25:31.530 --> 00:25:33.565 This large cystic structure was

NOTE Confidence: 0.983167388

00:25:33.565 --> 00:25:35.999 interpreted by a well meaning team

NOTE Confidence: 0.983167388

00:25:35.999 --> 00:25:38.288 member as the bladder and it was

NOTE Confidence: 0.983167388

00:25:38.288 --> 00:25:40.498 measured as such to determine if

NOTE Confidence: 0.983167388

00:25:40.498 --> 00:25:42.934 this patient had a full enough

NOTE Confidence: 0.983167388

00:25:42.934 --> 00:25:45.084 bladder to undergo transabdominal

NOTE Confidence: 0.983167388

00:25:45.084 --> 00:25:47.859 ultrasound to evaluate the ovary.

NOTE Confidence: 0.983167388

00:25:47.860 --> 00:25:50.146 Unfortunately, as you might have predicted,

NOTE Confidence: 0.983167388

00:25:50.146 --> 00:25:52.240 this is not the bladder.

NOTE Confidence: 0.983167388

00:25:52.240 --> 00:25:54.448 This is an ovarian cyst.

NOTE Confidence: 0.937148839

00:25:55.660 --> 00:25:56.800 In this sagittal view,

NOTE Confidence: 0.937148839

00:25:56.800 --> 00:25:59.160 you can get a sense of where the

NOTE Confidence: 0.937148839

00:25:59.160 --> 00:26:00.846 bladder actually lies by where

NOTE Confidence: 0.937148839

00:26:00.846 --> 00:26:03.940 I've traced it out in red. This

NOTE Confidence: 0.978253821428571

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00:26:03.950 --> 00:26:06.687 is the pitfall that I mentioned before

NOTE Confidence: 0.978253821428571

00:26:06.690 --> 00:26:11.438 where a ovarian cystic structure or another

NOTE Confidence: 0.988360368

00:26:11.590 --> 00:26:14.000 abnormal finding in the pelvis

NOTE Confidence: 0.988360368

00:26:14.000 --> 00:26:15.688 is mistaken for the bladder.

NOTE Confidence: 0.98373972875

00:26:19.150 --> 00:26:21.432 The other clue to what's going on

NOTE Confidence: 0.98373972875

00:26:21.432 --> 00:26:23.943 here is that you're noticing the

NOTE Confidence: 0.98373972875

00:26:23.943 --> 00:26:26.489 uterus just posterior to the bladder.

NOTE Confidence: 0.98373972875

00:26:26.490 --> 00:26:27.590 As we know the structure.

NOTE Confidence: 0.98373972875

00:26:27.590 --> 00:26:28.990 That course is just posterior

NOTE Confidence: 0.982733544285714

00:26:29.000 --> 00:26:31.220 to the bladder should be the vagina, and

NOTE Confidence: 0.920544008333333

00:26:31.230 --> 00:26:33.530 the uterus should lie just

NOTE Confidence: 0.920544008333333

00:26:33.530 --> 00:26:35.280 superior to the bladder.

NOTE Confidence: 0.920544008333333

00:26:35.280 --> 00:26:37.740 The relationship between these

NOTE Confidence: 0.920544008333333

00:26:37.740 --> 00:26:39.714 structures clues you in to

NOTE Confidence: 0.920544008333333

00:26:39.714 --> 00:26:42.450 what's normal and abnormal. This

NOTE Confidence: 0.986356596

00:26:42.450 --> 00:26:44.130 next case is a 16 year old

NOTE Confidence: 0.986356596

00:26:44.130 --> 00:26:45.330 woman with lower abdominal pain,

NOTE Confidence: 0.986356596

00:26:45.330 --> 00:26:46.680 nausea and vomiting.

NOTE Confidence: 0.986356596

00:26:46.680 --> 00:26:48.350 She has a history of an

NOTE Confidence: 0.986356596

00:26:48.350 --> 00:26:50.490 ovarian cyst three years ago.

NOTE Confidence: 0.986356596

00:26:50.490 --> 00:26:52.298 Here on the left in the sagittal pelvis

NOTE Confidence: 0.953539264

00:26:52.310 --> 00:26:53.500 view you see the bladder

NOTE Confidence: 0.9883626025

00:26:53.510 --> 00:26:54.638 as this large cystic

NOTE Confidence: 0.987451987142857

00:26:54.650 --> 00:26:56.474 structure in the center of the

NOTE Confidence: 0.987451987142857

00:26:56.474 --> 00:26:58.600 screen, with the vagina coursing

NOTE Confidence: 0.984558832

00:26:58.610 --> 00:27:01.835 below it posterior to the bladder

NOTE Confidence: 0.984558832

00:27:01.835 --> 00:27:05.200 and the uterus just comes into view.

NOTE Confidence: 0.984558832

00:27:05.490 --> 00:27:08.930 But we also see this heterogeneous

NOTE Confidence: 0.984558832

00:27:08.930 --> 00:27:10.880 looking structure just

NOTE Confidence: 0.9844091525

00:27:10.880 --> 00:27:12.428 superior to the bladder

NOTE Confidence: 0.9844091525

00:27:12.430 --> 00:27:14.020 and sort of pressing on it.

NOTE Confidence: 0.952381905

00:27:15.930 --> 00:27:17.480 Here in the transverse pelvic

NOTE Confidence: 0.952381905

00:27:17.480 --> 00:27:19.668 view we see it again a little

NOTE Confidence: 0.952381905

00:27:19.668 --> 00:27:21.390 bit to the right of midline.

NOTE Confidence: 0.952381905

00:27:21.390 --> 00:27:23.874 This heterogeneous looking structure

NOTE Confidence: 0.952381905

00:27:23.874 --> 00:27:26.979 just superior to the bladder.

NOTE Confidence: 0.952381905

00:27:26.980 --> 00:27:30.830 Now, what is this structure?

NOTE Confidence: 0.952381905

00:27:30.830 --> 00:27:33.510 This is a tourist over.

NOTE Confidence: 0.952381905

00:27:33.510 --> 00:27:35.079 It is enlarged.

NOTE Confidence: 0.952381905

00:27:35.079 --> 00:27:36.648 It is medialize,

NOTE Confidence: 0.952381905

00:27:36.650 --> 00:27:39.040 meaning that it has shifted

NOTE Confidence: 0.952381905

00:27:39.040 --> 00:27:41.430 medially and it has no.

NOTE Confidence: 0.952381905

00:27:41.430 --> 00:27:42.918 This is Victor Stover.

NOTE Confidence: 0.99097235

00:27:51.160 --> 00:27:53.520 Here's another young woman with

NOTE Confidence: 0.99097235

00:27:53.520 --> 00:27:55.140 acute onset of right lower quadrant

NOTE Confidence: 0.99097235

00:27:55.140 --> 00:27:56.928 pain and emesis for one day

NOTE Confidence: 0.98233214

00:27:57.760 --> 00:27:59.069 and take a look at the anatomy

NOTE Confidence: 0.9783846225

00:27:59.080 --> 00:28:02.408 that you see in this transverse pelvis view.

NOTE Confidence: 0.974693527333333

00:28:04.960 --> 00:28:06.792 And think to yourself,

NOTE Confidence: 0.974693527333333

00:28:06.792 --> 00:28:09.540 are you seeing the correct anatomy

NOTE Confidence: 0.974693527333333

00:28:09.626 --> 00:28:12.036 or is there anything abnormal?

NOTE Confidence: 0.974693527333333

00:28:12.040 --> 00:28:16.428 He said that this does not appear to be the

NOTE Confidence: 0.98283684

00:28:16.480 --> 00:28:18.948 bladder. You are correct.

NOTE Confidence: 0.98128139

00:28:19.440 --> 00:28:21.040 It has some heterogeneous

NOTE Confidence: 0.98128139

00:28:21.040 --> 00:28:22.480 structures around the periphery.

NOTE Confidence: 0.98128139

00:28:22.480 --> 00:28:27.150 This is an ovarian teratoma with torsion.

NOTE Confidence: 0.99113244

00:28:32.450 --> 00:28:35.710 Just to pause the image and

NOTE Confidence: 0.986295707272727

00:28:35.710 --> 00:28:37.761 take a look at the structures that

NOTE Confidence: 0.986295707272727

00:28:37.761 --> 00:28:39.380 we're actually seeing anatomically,

NOTE Confidence: 0.986295707272727

00:28:39.380 --> 00:28:41.740 we're seeing again the uterus

NOTE Confidence: 0.970882365

00:28:41.750 --> 00:28:44.718 here, below, or posterior

NOTE Confidence: 0.970882365

00:28:44.718 --> 00:28:47.686 to the cystic structure.

NOTE Confidence: 0.970882365

00:28:47.690 --> 00:28:51.002 So if you were looking at this at bedside,

NOTE Confidence: 0.970882365

00:28:51.010 --> 00:28:53.275 you could be clued in to the

NOTE Confidence: 0.970882365

00:28:53.275 --> 00:28:55.170 fact that this this cystic

NOTE Confidence: 0.970882365

00:28:55.170 --> 00:28:57.370 structure is not the bladder,

NOTE Confidence: 0.970882365

00:28:57.370 --> 00:28:59.118 but actually an adnexal.

NOTE Confidence: 0.970882365

00:28:59.118 --> 00:29:01.303 Structure based on the fact

NOTE Confidence: 0.970882365

00:29:01.303 --> 00:29:03.477 that the uterus is coursing

NOTE Confidence: 0.970882365

00:29:03.477 --> 00:29:05.961 posteriores to it as opposed to

NOTE Confidence: 0.970882365

00:29:06.041 --> 00:29:08.645 more a little more superior to it.

NOTE Confidence: 0.986768177058823

00:29:11.730 --> 00:29:13.501 Let's take a look at this 17

NOTE Confidence: 0.986768177058823

00:29:13.501 --> 00:29:15.175 year old woman presenting with

NOTE Confidence: 0.986768177058823

00:29:15.175 --> 00:29:17.315 stabbing right lower quadrant pain.

NOTE Confidence: 0.986768177058823

00:29:17.320 --> 00:29:20.280 This patient is takach Arctic to 120.

NOTE Confidence: 0.986768177058823

00:29:20.280 --> 00:29:21.840 She's tender in the right lower

NOTE Confidence: 0.986768177058823

00:29:21.840 --> 00:29:23.400 quadrant and left lower quadrant.

NOTE Confidence: 0.986768177058823

00:29:23.400 --> 00:29:25.578 She is a positive Rob Zing.

00:29:25.580 --> 00:29:28.070 If you were preparing this patient

00:29:28.070 --> 00:29:29.315 for transabdominal ultrasound,

00:29:29.320 --> 00:29:31.350 you might ask her if she feels

00:29:31.350 --> 00:29:33.456 like she has to avoid and based

00:29:33.456 --> 00:29:35.615 on the size of this tiny little

00:29:35.615 --> 00:29:38.023 bladder that you see on the upper

00:29:38.023 --> 00:29:39.944 right hand portion of this screen,

00:29:39.944 --> 00:29:41.780 she might just tell you that

00:29:41.846 --> 00:29:43.316 she does not have to pee,

00:29:43.320 --> 00:29:44.993 and then you might fill her with more

00:29:44.993 --> 00:29:47.951 fluids to prepare her for transabdominal

00:29:47.951 --> 00:29:50.220 ultrasound performed by radiology,

00:29:50.220 --> 00:29:51.980 however.

00:29:51.980 --> 00:29:53.690 Take a look at the pelvis.

00:29:53.690 --> 00:29:55.650 There is a heterogeneous structure

00:29:55.650 --> 00:29:58.898 in here in the middle of the screen

NOTE Confidence: 0.986768177058823

00:29:58.898 --> 00:30:00.928 that's pushing the uterus anteriorly

NOTE Confidence: 0.986768177058823

00:30:00.928 --> 00:30:03.630 and the uterus itself is acting as

NOTE Confidence: 0.986768177058823

00:30:03.630 --> 00:30:06.110 an acoustic window to see the pelvis.

NOTE Confidence: 0.986768177058823

00:30:06.110 --> 00:30:08.420 So while you're taking a look with

NOTE Confidence: 0.986768177058823

00:30:08.420 --> 00:30:10.560 your ultrasound with your bedside

NOTE Confidence: 0.986768177058823

00:30:10.560 --> 00:30:13.164 ultrasound to check for bladder volume

NOTE Confidence: 0.986768177058823

00:30:13.236 --> 00:30:15.595 to see if this patient is ready

NOTE Confidence: 0.986768177058823

00:30:15.595 --> 00:30:17.006 for a transabdominal ultrasound,

NOTE Confidence: 0.986768177058823

00:30:17.006 --> 00:30:19.778 you're also looking in the pelvis to

NOTE Confidence: 0.986768177058823

00:30:19.778 --> 00:30:22.959 see if there's anything abnormal large.

NOTE Confidence: 0.986768177058823

00:30:22.960 --> 00:30:27.628 Heterogeneous and abnormal anatomic.

NOTE Confidence: 0.986768177058823

00:30:27.630 --> 00:30:30.442 Arrangement of these structures

NOTE Confidence: 0.986768177058823

00:30:30.442 --> 00:30:33.957 because this will expedite your

NOTE Confidence: 0.986768177058823

00:30:33.957 --> 00:30:36.825 care and and this patient can go

NOTE Confidence: 0.986768177058823

00:30:36.825 --> 00:30:39.680 to the OR as soon as possible.

00:30:39.680 --> 00:30:42.190 This is a tourist ovary.

00:30:42.190 --> 00:30:43.960 It is enlarged,

00:30:43.960 --> 00:30:45.816 heterogeneous and it needs to

00:30:45.816 --> 00:30:49.140 go to the OR stat.

00:30:49.140 --> 00:30:51.360 So there is actually this interesting

00:30:51.360 --> 00:30:53.686 article that's worth a look by

00:30:53.686 --> 00:30:55.626 letter and Constantine was published

00:30:55.640 --> 00:30:59.910 in 2020 and it gives an algorithmic

00:30:59.910 --> 00:31:01.640 approach for undifferentiated

00:31:01.640 --> 00:31:04.700 abdominal pain in a pediatric patient.

00:31:04.700 --> 00:31:07.748 So this left side of the algorithm gives

00:31:07.748 --> 00:31:10.380 an approach to lower abdominal pain,

00:31:10.380 --> 00:31:12.810 and as we all know,

00:31:12.810 --> 00:31:14.925 rule any rule out appendicitis is

00:31:14.925 --> 00:31:18.112 also a rule out gonadal torsion, so.

00:31:18.112 --> 00:31:20.716 This algorithm does advocate for

NOTE Confidence: 0.987292088888889

00:31:20.716 --> 00:31:22.370 starting in the right lower quadrant,

NOTE Confidence: 0.987292088888889

00:31:22.370 --> 00:31:22.940 and if you don't see

NOTE Confidence: 0.974435738

00:31:22.950 --> 00:31:25.090 a positive appendix to continue

NOTE Confidence: 0.974435738

00:31:25.090 --> 00:31:27.060 on to the pelvis. But I've

NOTE Confidence: 0.99074415

00:31:27.070 --> 00:31:28.258 actually since changed

NOTE Confidence: 0.968695246666667

00:31:28.270 --> 00:31:30.004 my thinking and I've started to

NOTE Confidence: 0.968695246666667

00:31:30.004 --> 00:31:31.930 go right for that pelvic view,

NOTE Confidence: 0.968695246666667

00:31:31.930 --> 00:31:33.874 and this serves several purposes.

NOTE Confidence: 0.968695246666667

00:31:33.874 --> 00:31:36.853 First of all, it prioritizes looking

NOTE Confidence: 0.968695246666667

00:31:36.853 --> 00:31:39.394 for free fluid in the most sensitive

NOTE Confidence: 0.968695246666667

00:31:39.394 --> 00:31:41.638 place of the pediatric pelvis.

NOTE Confidence: 0.968695246666667

00:31:41.640 --> 00:31:43.530 It also allows you to check the

NOTE Confidence: 0.968695246666667

00:31:43.530 --> 00:31:45.182 bladder volume to see if it's

NOTE Confidence: 0.968695246666667

00:31:45.182 --> 00:31:47.300 full in preparation for going

NOTE Confidence: 0.987283843333333

00:31:47.310 --> 00:31:49.520 over to radiology performed.

NOTE Confidence: 0.987283843333333

00:31:49.520 --> 00:31:53.740 Ultrasound transabdominal, pelvic view, and

NOTE Confidence: 0.989259866666667

00:31:53.740 --> 00:31:55.094 it also gives you an

NOTE Confidence: 0.989259866666667

00:31:55.094 --> 00:31:56.829 opportunity to note any time

NOTE Confidence: 0.98609663

00:31:56.840 --> 00:31:58.890 sensitive abnormalities of the pelvis.

NOTE Confidence: 0.98750731

00:32:01.680 --> 00:32:02.379 Now I also

NOTE Confidence: 0.986849038333333

00:32:02.390 --> 00:32:03.926 want to talk about this concept

NOTE Confidence: 0.98893785

00:32:04.200 --> 00:32:07.478 of performing point of care ultrasound

NOTE Confidence: 0.98893785

00:32:07.480 --> 00:32:10.950 for assessing bladder fullness in female

NOTE Confidence: 0.98893785

00:32:10.950 --> 00:32:13.020 patients awaiting radiology performed

NOTE Confidence: 0.98893785

00:32:13.020 --> 00:32:15.360 transabdominal pelvic ultrasound

NOTE Confidence: 0.98893785

00:32:15.360 --> 00:32:17.190 in pediatric emergency department.

NOTE Confidence: 0.989960886666667

00:32:17.510 --> 00:32:20.590 This randomized control trial

NOTE Confidence: 0.986498887142857

00:32:20.590 --> 00:32:23.152 looked at 120 patients age 8 to

NOTE Confidence: 0.986498887142857

00:32:23.152 --> 00:32:25.463 18 to report subjective bladder

NOTE Confidence: 0.986498887142857

00:32:25.463 --> 00:32:28.288 fullness or receive pocus to

NOTE Confidence: 0.986498887142857

49

00:32:28.288 --> 00:32:30.820 assess their bladder fullness.

NOTE Confidence: 0.986498887142857

00:32:30.820 --> 00:32:34.300 Sonographically the median time to

NOTE Confidence: 0.986498887142857

00:32:34.300 --> 00:32:37.084 pelvic ultrasound completion was

NOTE Confidence: 0.986498887142857

00:32:37.090 --> 00:32:39.442 139 minutes and usual care group

NOTE Confidence: 0.986498887142857

00:32:39.442 --> 00:32:42.096 and 87 minutes in the focus group.

NOTE Confidence: 0.986498887142857

00:32:42.100 --> 00:32:44.242 All patients in the focus group

NOTE Confidence: 0.986498887142857

00:32:44.242 --> 00:32:46.187 had a successful pelvic ultrasound

NOTE Confidence: 0.986498887142857

00:32:46.187 --> 00:32:48.407 on first attempt compared with

NOTE Confidence: 0.986498887142857

00:32:48.410 --> 00:32:50.900 85% in the usual care group,

NOTE Confidence: 0.986498887142857

00:32:50.900 --> 00:32:52.388 so they found that

NOTE Confidence: 0.98557922

00:32:52.400 --> 00:32:54.615 pokas assessment of bladder fullness

NOTE Confidence: 0.98557922

00:32:54.615 --> 00:32:57.388 decreases the time to pelvic ultrasound

NOTE Confidence: 0.98557922

00:32:57.388 --> 00:32:59.808 and improves first attempt success

NOTE Confidence: 0.98557922

00:32:59.808 --> 00:33:02.740 rate for female patients. In the PVD.

NOTE Confidence: 0.9884262

00:33:04.980 --> 00:33:06.196 So this is what I want you

NOTE Confidence: 0.982871045555556

00:33:06.210 --> 00:33:08.026 to go. Do I want you to focus

NOTE Confidence: 0.982871045555556

00:33:08.026 --> 00:33:10.880 the pelvis. Find the bladder,

NOTE Confidence: 0.982871045555556

00:33:10.880 --> 00:33:12.920 make sure it's really the bladder,

NOTE Confidence: 0.982871045555556

00:33:12.920 --> 00:33:15.200 and then assess for abnormalities.

NOTE Confidence: 0.982871045555556

00:33:15.200 --> 00:33:17.150 I want you to really identify those

NOTE Confidence: 0.987794564

00:33:17.160 --> 00:33:18.930 anatomic structures that you're seeing

NOTE Confidence: 0.984934081538462

00:33:19.140 --> 00:33:20.874 and make sure you're seeing what

NOTE Confidence: 0.984934081538462

00:33:20.874 --> 00:33:22.909 you're supposed to be seeing and

NOTE Confidence: 0.984934081538462

00:33:22.909 --> 00:33:25.280 interpreting everything correctly.

NOTE Confidence: 0.984934081538462

00:33:25.280 --> 00:33:26.895 The other thing that you can do

NOTE Confidence: 0.984934081538462

00:33:26.895 --> 00:33:29.385 is assess the bladder size for

NOTE Confidence: 0.984934081538462

00:33:29.385 --> 00:33:30.630 readiness for transabdominal

NOTE Confidence: 0.984934081538462

00:33:30.630 --> 00:33:32.940 radiology performance ultrasound in

NOTE Confidence: 0.984934081538462

00:33:32.940 --> 00:33:36.550 the pediatric emergency department.

NOTE Confidence: 0.984934081538462

00:33:36.550 --> 00:33:38.798 Will end with this 11 year old boy

NOTE Confidence: 0.980896295555555

00:33:38.810 --> 00:33:40.182 with vomiting, diarrhea and

NOTE Confidence: 0.980896295555555

00:33:40.182 --> 00:33:41.897 abdominal pain for five days.

NOTE Confidence: 0.98212671

00:33:43.250 --> 00:33:45.140 This kid had been diagnosed

NOTE Confidence: 0.98212671

00:33:45.140 --> 00:33:45.896 with gastroenteritis.

NOTE Confidence: 0.987542072

00:33:46.560 --> 00:33:48.765 Was pain free at this point and was just

NOTE Confidence: 0.987542072

00:33:48.765 --> 00:33:50.437 waiting to be admitted upstairs for

NOTE Confidence: 0.953150825

00:33:50.450 --> 00:33:52.730 some Ivy hydration. He was scanned

NOTE Confidence: 0.953150825

00:33:52.730 --> 00:33:54.680 really more for educational purposes.

NOTE Confidence: 0.981768748571428

00:33:55.250 --> 00:33:58.127 What do you see in the pelvis?

NOTE Confidence: 0.981768748571428

00:33:58.130 --> 00:33:59.460 You look posterior

NOTE Confidence: 0.978544181666667

00:33:59.470 --> 00:34:02.380 to the bladder. You'll see some echogenic

NOTE Confidence: 0.9208738875

00:34:02.390 --> 00:34:04.838 folk, I some shadow

NOTE Confidence: 0.842921424

00:34:05.890 --> 00:34:09.586 the in a fluid collection. This is a

NOTE Confidence: 0.842921424

00:34:09.586 --> 00:34:11.869 perforated appendicitis with Abscess.

NOTE Confidence: 0.842921424

00:34:11.870 --> 00:34:14.830 So once again Pokus gave clues that were

NOTE Confidence: 0.842921424

00:34:14.830 --> 00:34:16.900 not appreciated clinically and this

NOTE Confidence: 0.97338484

00:34:17.330 --> 00:34:19.050 patient's diagnosis was made in

NOTE Confidence: 0.97338484

00:34:19.050 --> 00:34:21.060 a timely fashion thanks to focus.

NOTE Confidence: 0.98002310125

00:34:24.210 --> 00:34:26.730 Thank you so much for watching this video.

NOTE Confidence: 0.98002310125

00:34:26.730 --> 00:34:28.830 I would love to hear your questions,

NOTE Confidence: 0.9813602425

00:34:28.840 --> 00:34:31.464 comments and stories. You can email me at

NOTE Confidence: 0.90541309

00:34:33.250 --> 00:34:34.770 julie.leviter@yale.edu. Thank you again.