IUD Troubles: Best Practices for Difficult Insertions, Removals, and Malpositioned Devices

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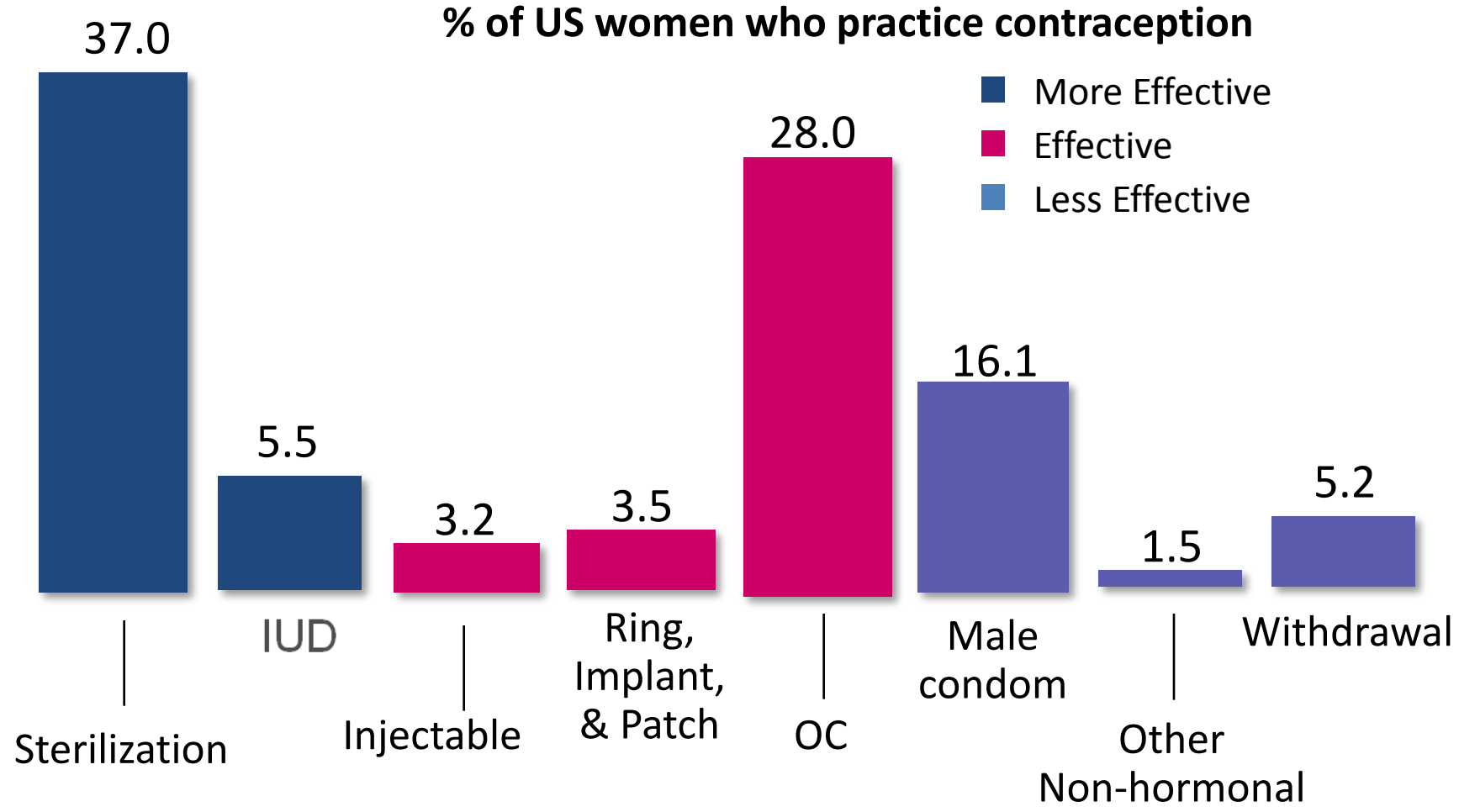
Disclaimer

- No conflicts of interests
- Use of misoprostol for IUD insertion or removal is a nonapproved FDA indication

Objectives

- Review techniques for difficult IUD insertions and removals
- Discuss evaluation of the woman whose IUD strings are not present at the cervix
- Management options for the IUD that is malpositioned in the uterus

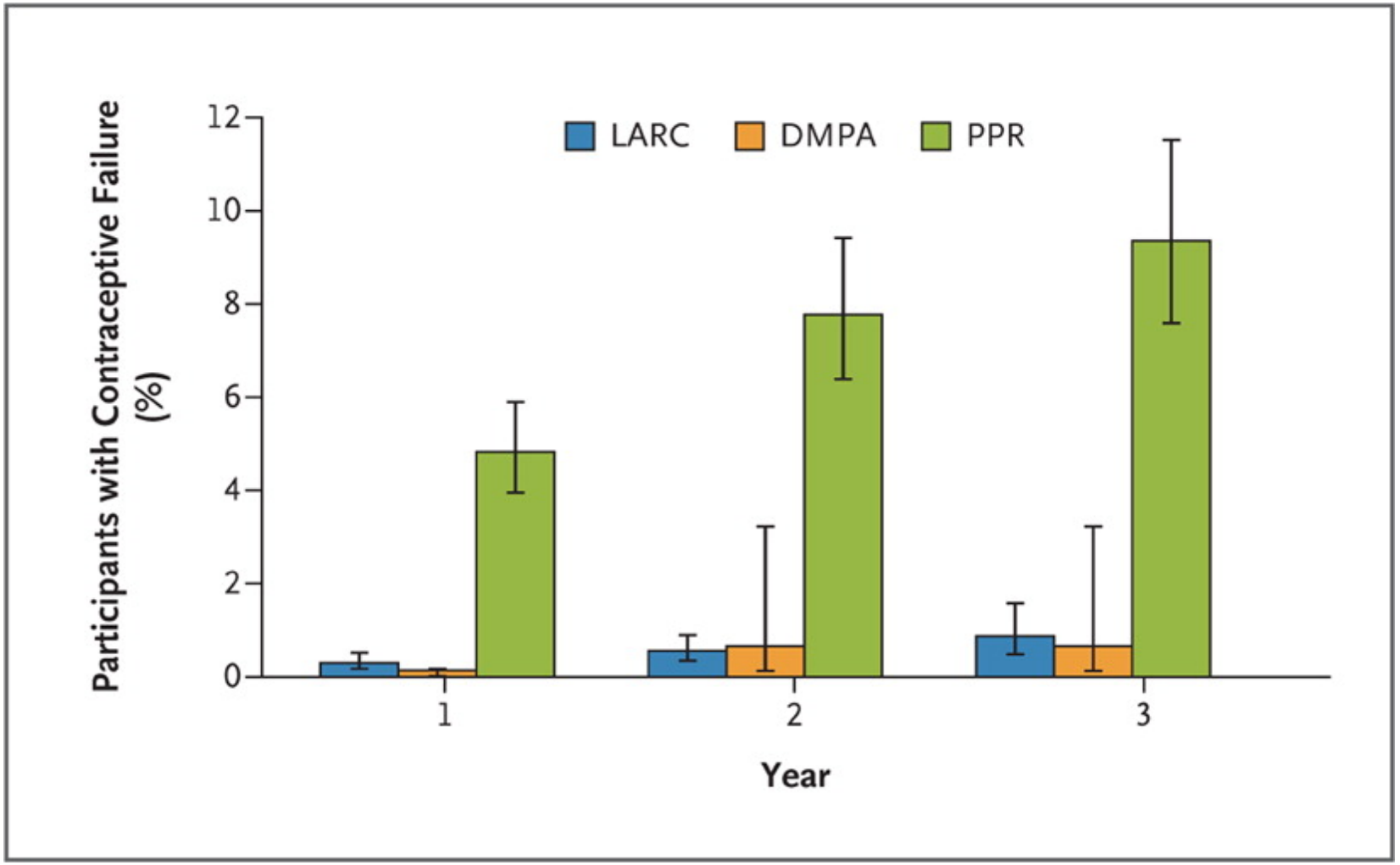
Contraceptive Use in the United States, 2006–2008



Mosher WD, 2010; Guttmacher, 2012.

LARC Should Be First Line for Contraception

Rates of Contraceptive Failures (pregnancies) with LARC, Depo Provera, or Pills/Patch/Ring



Winner, 2012

Increased IUD use in last decade

- 2002: 1.2% of women using contraception had IUD
- 2007-2009: 8.5% using IUD
- In 1970's US use was close to 10%. This may be surpassed

Soper 2013. Finer, 2012

IUD Use in the United States Should Continue to Increase

Baseline Chosen Method in the CHOICE Project

	%
LNG-IUS	46.0
Copper IUD	11.9
Implant	16.9
DMPA	6.9
Pills	9.4
Ring	7.0
Patch	1.8
Other	<1.0

75%

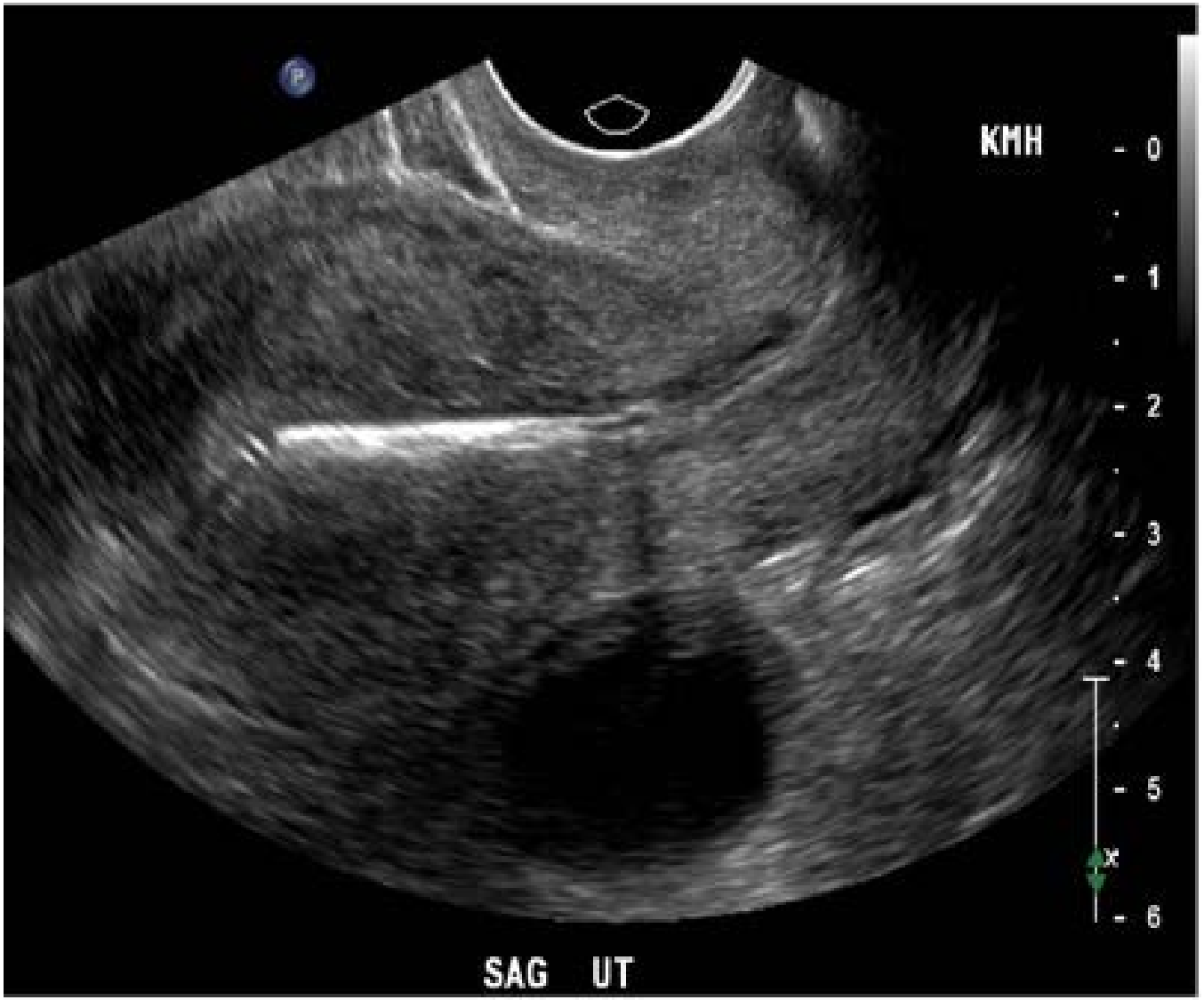
Peipert, 2012

Rising IUD use makes complications common

- Insertion in nulliparous woman usually not difficult but can be
- Lack of IUD strings on exam and malpositioned IUD seen more
- Increasing use of transvaginal ultrasound to locate and facilitate difficult insertion and removal

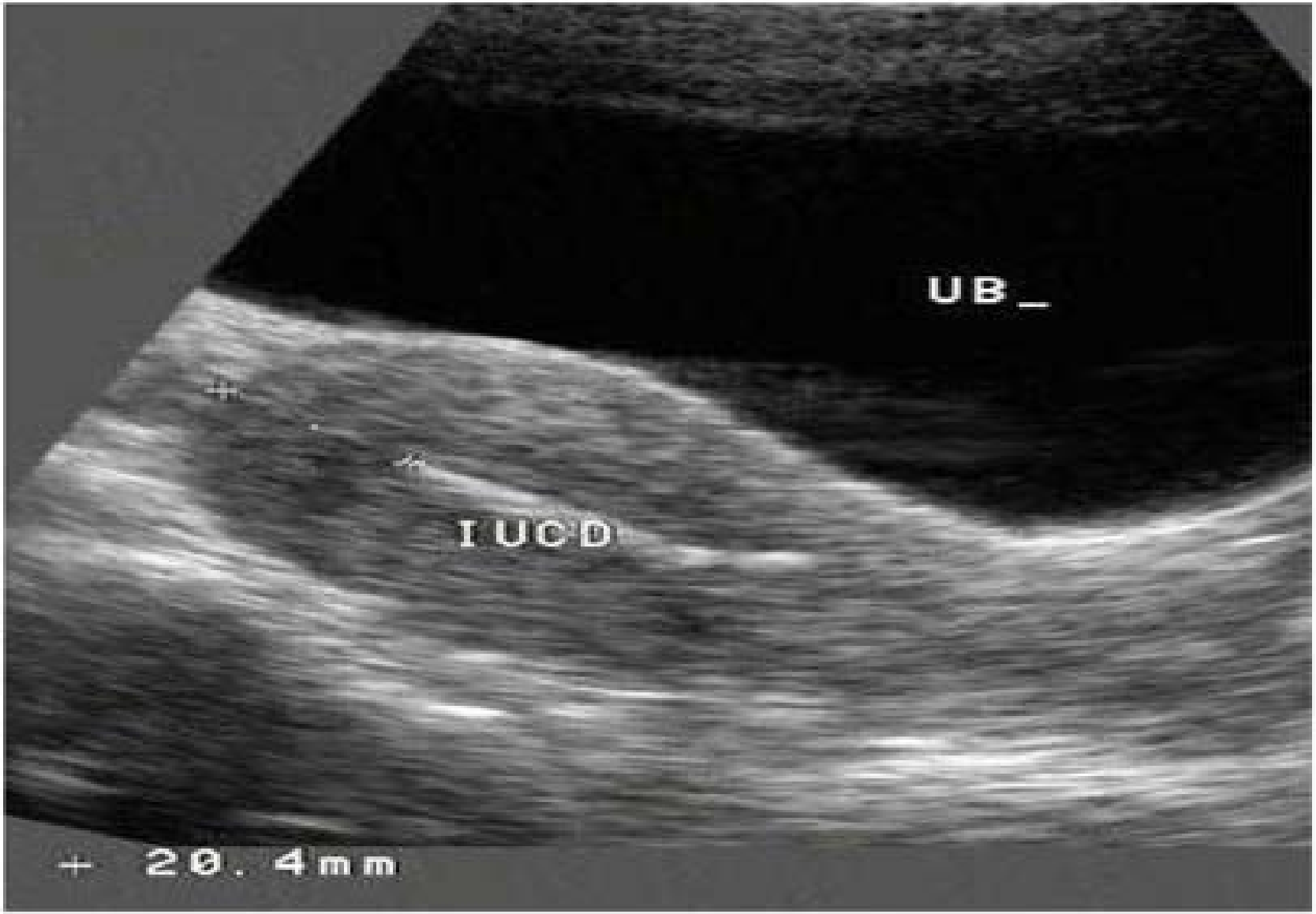
IUD Ultrasound and X-ray

- ParaGard easy to visualize on US due to copper
- LNG-IUD more difficult. Often easiest to see the shadowing and then follow to the IUD itself
- 3D US can be helpful for visualizing LNG-IUD if position is unclear
- IUD can be seen on KUB/Flat plate however can’t be sure if intrauterine
- Unusual orientation of IUD or location on x-ray suggests extrauterine location



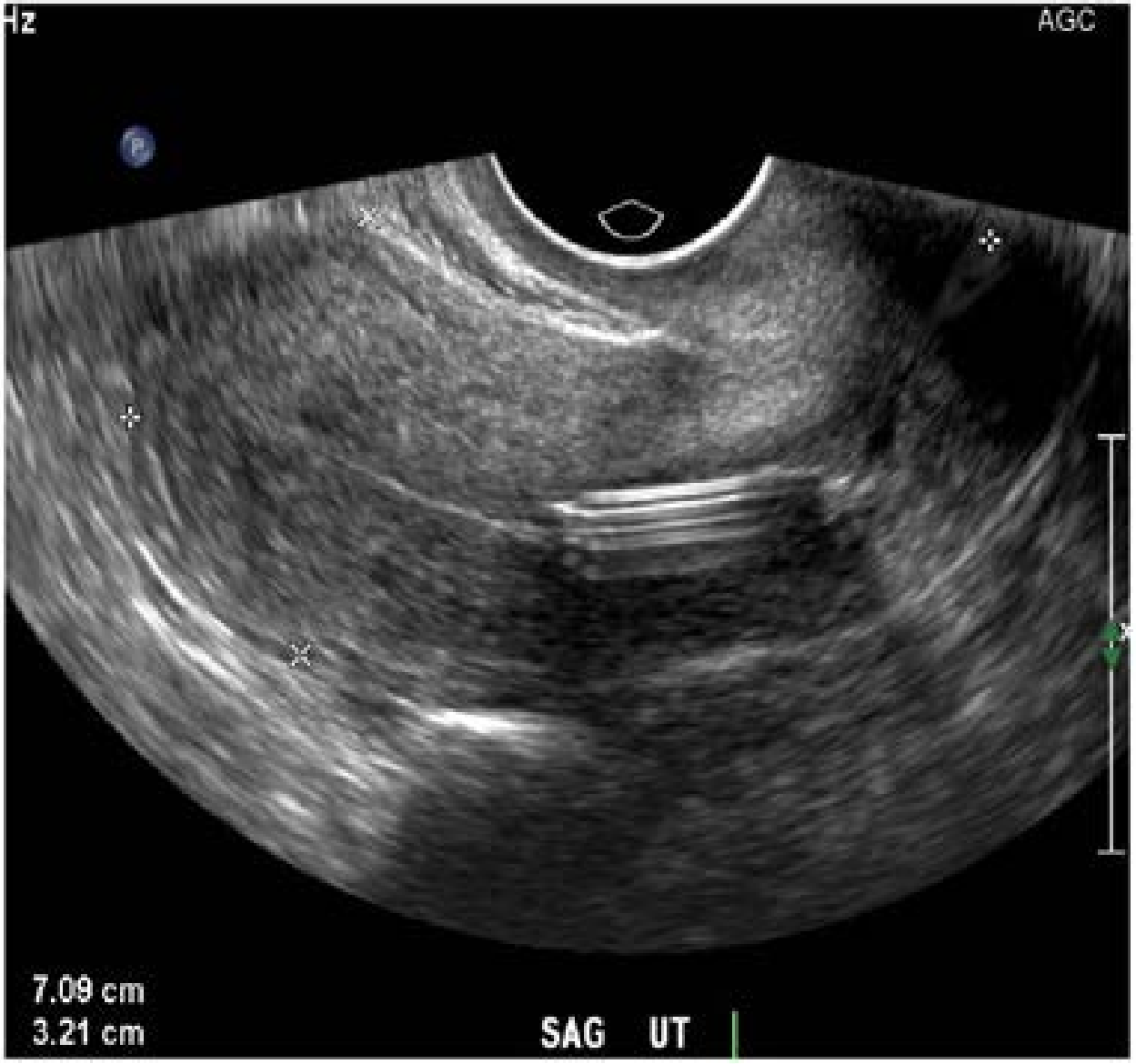
Intrauterine copper T

Prabhakaran, 2011



Intrauterine Mirena IUD

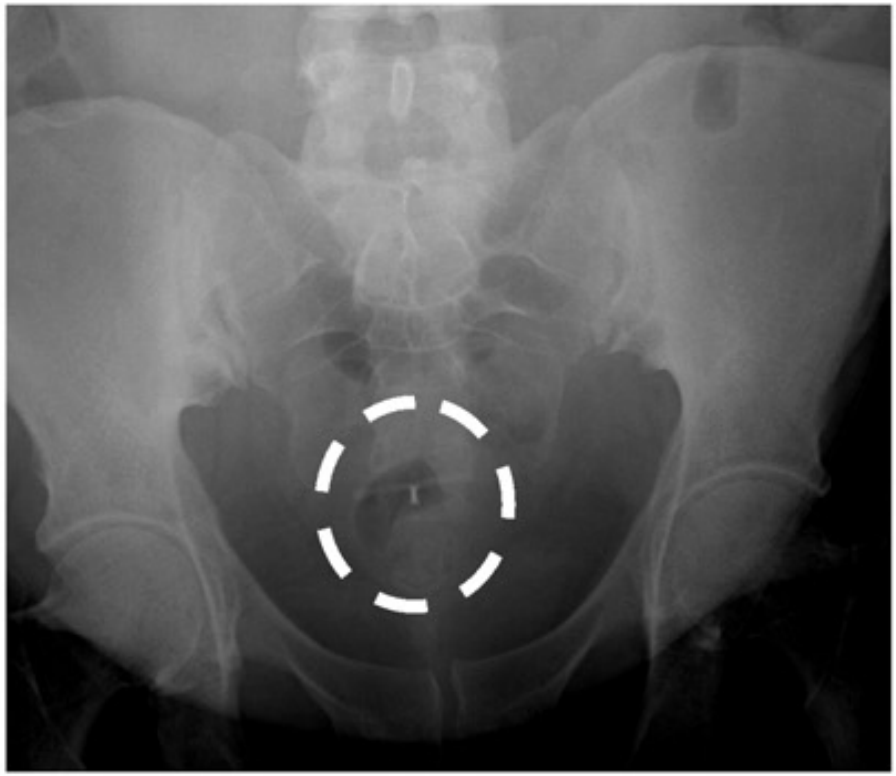
Prabhakaran, 2011



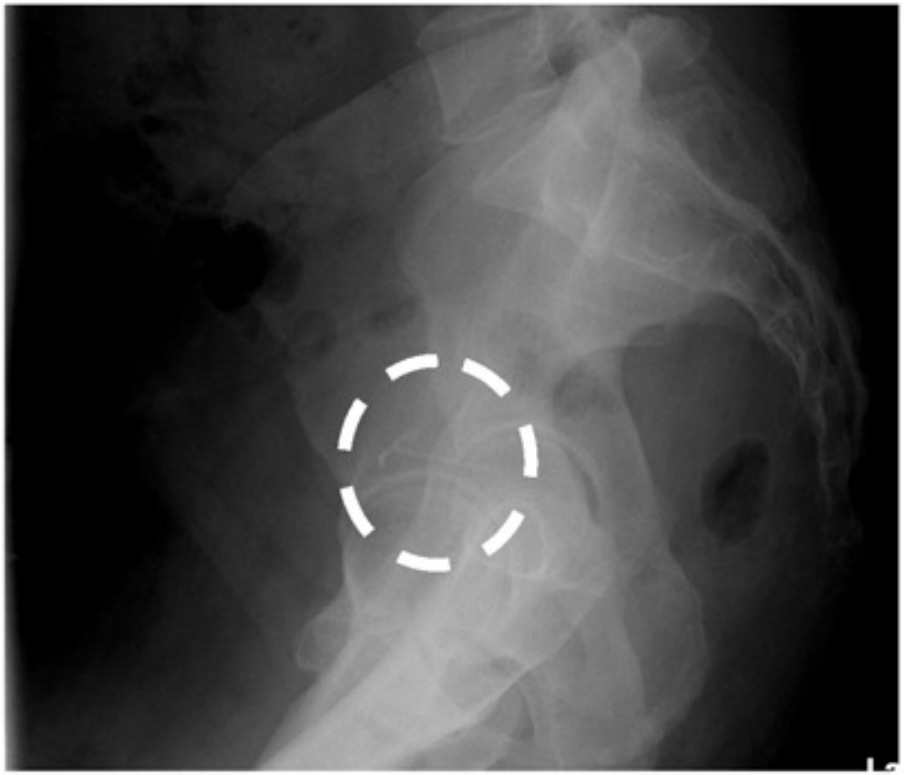
Mirena IUD in lower uterine segment

Prabhakaran, 2011

Radiographic images of IUD properly placed



Anterior/posterior



Lateral

Prabhakaran, 2011

Case # One

- 18 yo G0 is interested in getting a ParaGard IUD
  - Failed attempt at ParaGard IUD insertion at local the public health clinic
  - Unable to pass through endocervical canal
  - Patient reports the experience as being very painful
  - States she is adamant about wanting a ParaGard because she does not want any hormones.

Options for difficult nulliparous IUD insertion

- Recommend a different method?
- Referral to a more experienced provider?
- Misoprostol to soften/dilate cervix?
- Pain medications: oral/IV/paracervical
- Mechanical assistance: os finder, endometrial biopsy cannula (“Pipelle”), cervical dilators

Difficult Insertion: Nulliparous vs. Parous

- A retrospective cohort study comparing nulliparous and parous women found:
  - IUDs were rated as commonly as “easy to insert” in nulliparous women as parous women (~80% each group)
  - Dilators used more commonly among nulliparous than parous women (7.7% vs. 3.1%)
  - Cervical misoprostol preparation was used to aid insertion in more often in parous women (2.5% vs. 0.6%)
  - Hx of c-section was associated with difficult insertion in parous women

Bahamondes, 2011

Difficult Insertion

Factors related to complications or difficult IUD insertion (n=545):

- No previous history of a vaginal delivery
- Older nullips were at greatest risk of difficult insertion
- Inexperienced physicians had 3x (1.5-6.2 95%CI) the failure rate
- Bradycardia (vasovagal) in 1.8%; 8.7% nullip vs. 0.2% parous

Farmer, 2003

Difficult Insertion: Misoprostol?

- Internet survey with 2211 respondents
- 1905 (86%) reported providing IUDs to nulliparous women.
- 947/1905 (49.7%) reported using misoprostol
- 380 (40%) of 947 of misoprostol users reported using the treatment empirically with all nulliparous IUD insertions.
- Dose , route , timing varied widely
- Providers adopted based on “word of mouth” not medical literature

Ward, 2011

Difficult Insertion: Misoprostol?

- No evidence supports benefit
- 2 double blind RCTs of nulliparous women to receive preparation with misoprostol resulted in increased side effects with no decrease in pain or ease of insertions
- Preinsertion Nausea (29% vs. 5%, p=.05) and cramping (47% vs. 16%, p=.04) in miso vs. placebo group. (Edelman)
- Pain with speculum prior to IUD insertion greater in misoprostol on VAS 17.1 v 4.7 P=0.003 (Swenson)
- One study showed a slightly decreased use of dilators in the misoprostol group, while the other study showed no difference.

Edelman, 2011. Swenson, 2012

Difficult Insertion: Misoprostol?

- Failures in nulliparous women were infrequent: IUD placement was successful in all but one patient in one study, and IUD placement was successful in ~95% of patients in the other
- Expulsion rates were slightly higher in the misoprostol group in one study (Swenson)
- It is postulated that the lack of effect could be due to non-pregnant uterus not having prostaglandin receptors (Swenson)

Edelman, 2011. Swenson, 2012

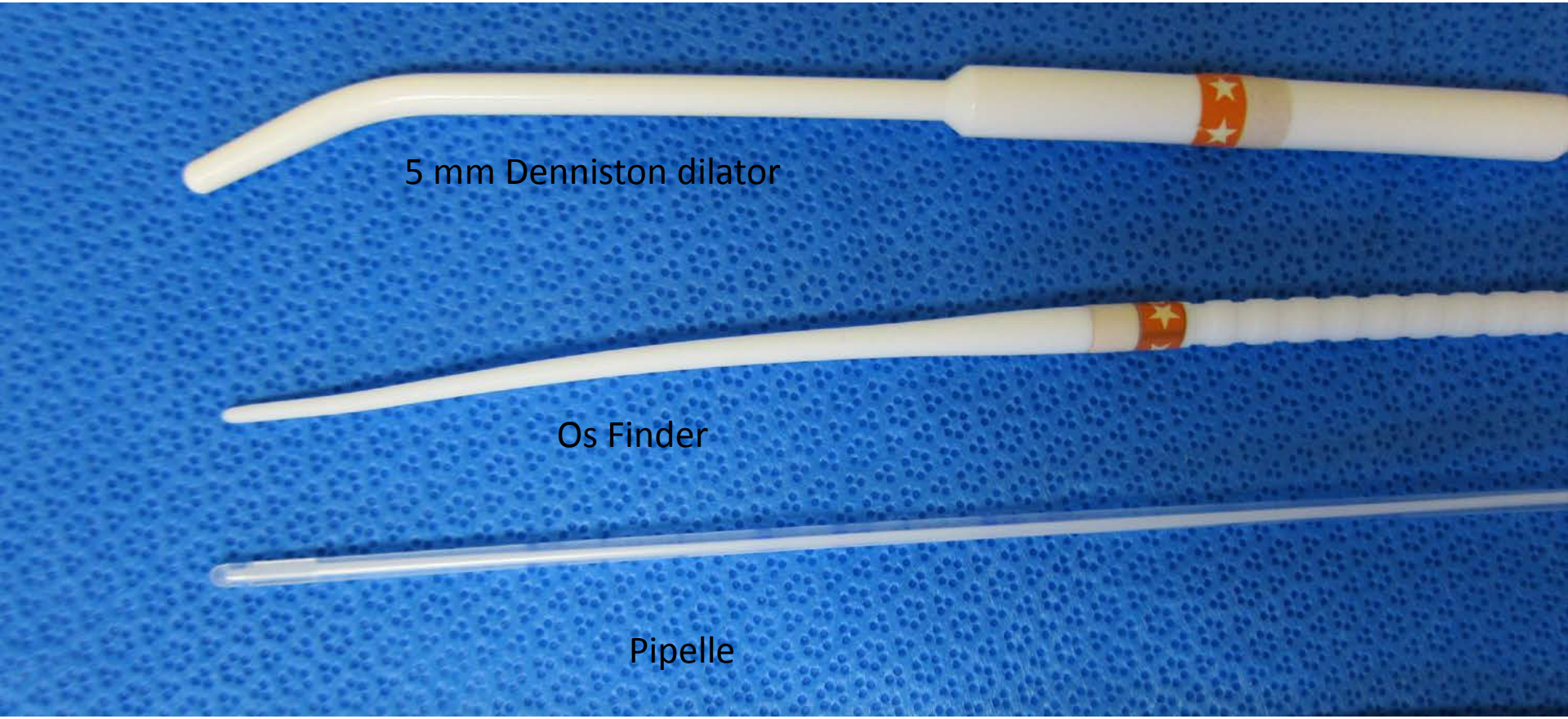
Difficult Insertion: Pain control

- Paracervical block is an option especially if need cervical dilation
- Pretreatment NSAIDs
- If procedure will be differed to a future time consider oral narcotics or benzodiazepine or intravenous conscious sedation

Difficult insertion: mechanical help

- Os finder when cervical opening difficult to identify
- Pipelle to identify path of endocervical canal
- Adequate traction with tenaculum; on posterior lip if extreme retroversion
- Small 5 mm Denniston dilator. May need greater dilation.

Tools for Difficult Insertion



Ultrasound guidance

- May be helpful to ensure not creating false passage and/or post-procedure to confirm intrauterine placement
- Metal sound easy to see on abdominal ultrasound if not obese
- If in uterus but not at fundus consider rescanning in 2-4 weeks with backup contraception as may migrate into optimal position

Still try misoprostol?

- Even though RCTs show no benefit and more side effects these are of randomized nullips and still possible beneficial with difficult cases
- Recommend 400 mcg two hours prior sublingual or 400 mcg three hours prior vaginal/buccal
- Not first line due to lack of evidence

Case # Two

- 32 yo G0 presented for routine pap smear
  - LNG-IUD placed 1 year ago
  - Mild cramping during and after insertion, no problems since then
  - Did not have string check
  - During pap, incidentally notice IUD strings are missing
  - Happy with IUD
  - Has been amenorrheic for last 9 months

Missing IUD strings

- Missing IUD strings is not uncommon
  - 5 to 15% of women with IUD have missing strings
- Increased likelihood for uterine perforation and undetected expulsion
- Most common reason not seen is IUD strings are retracted into cervix or uterine cavity
  - Differential diagnosis:
    - Expulsion, perforation, broken strings or strings retracted into endometrial cavity
      - 98% found normally positioned
      - 1.2% expelled
      - 0.7% uterine perforation

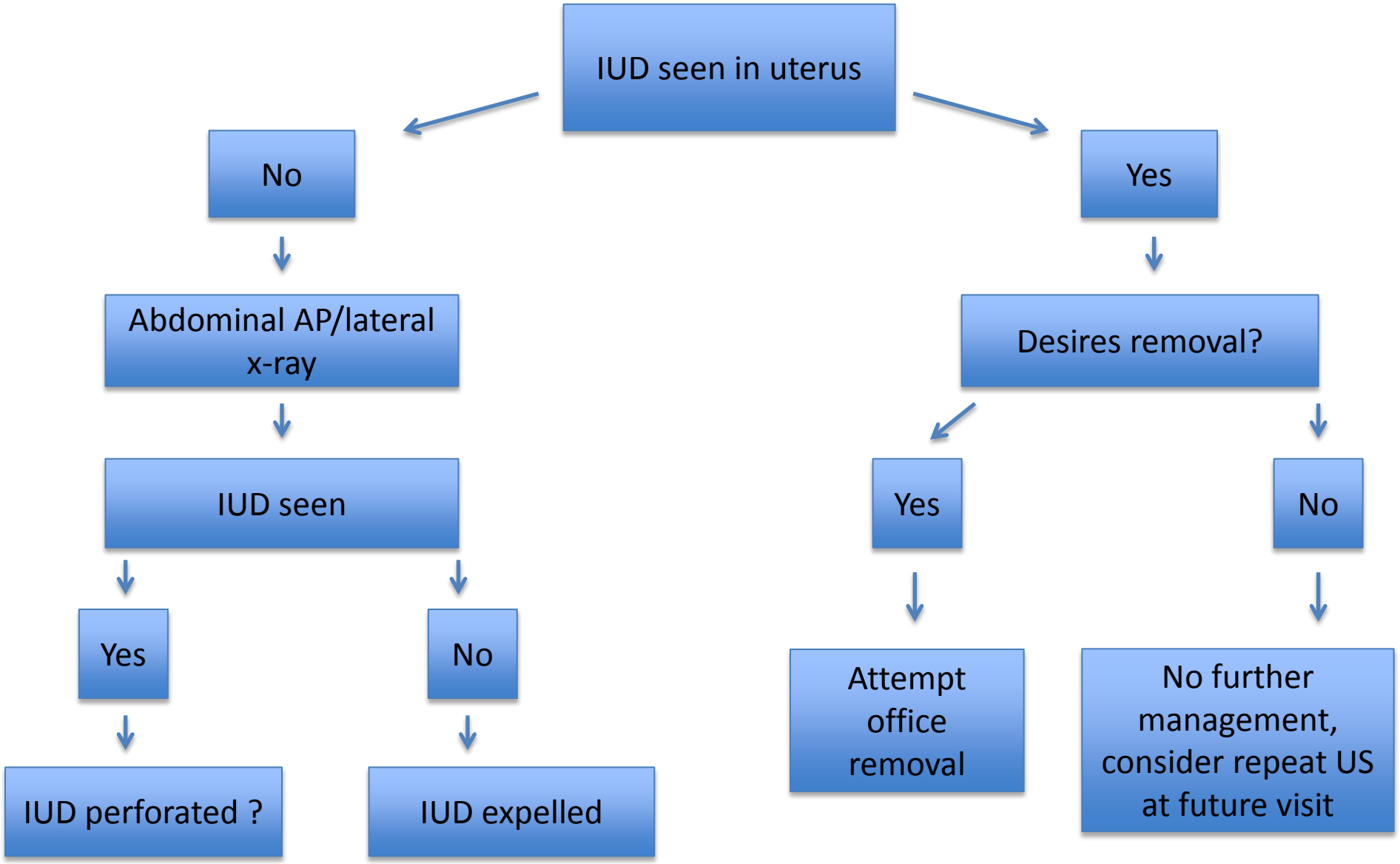
Marchi, 2012. Tugrul, 2005.

Locating IUD

- Try sweeping strings with cytobrush from endocervical canal
  - Cytobrush can be gently placed into cervix and withdrawn to try and bring strings down
  - May be safely used regardless of pregnancy
  - May be used without a prior US to confirm IUD in uterus
- Use colposcopy to visualize strings
- Is ultrasound available?

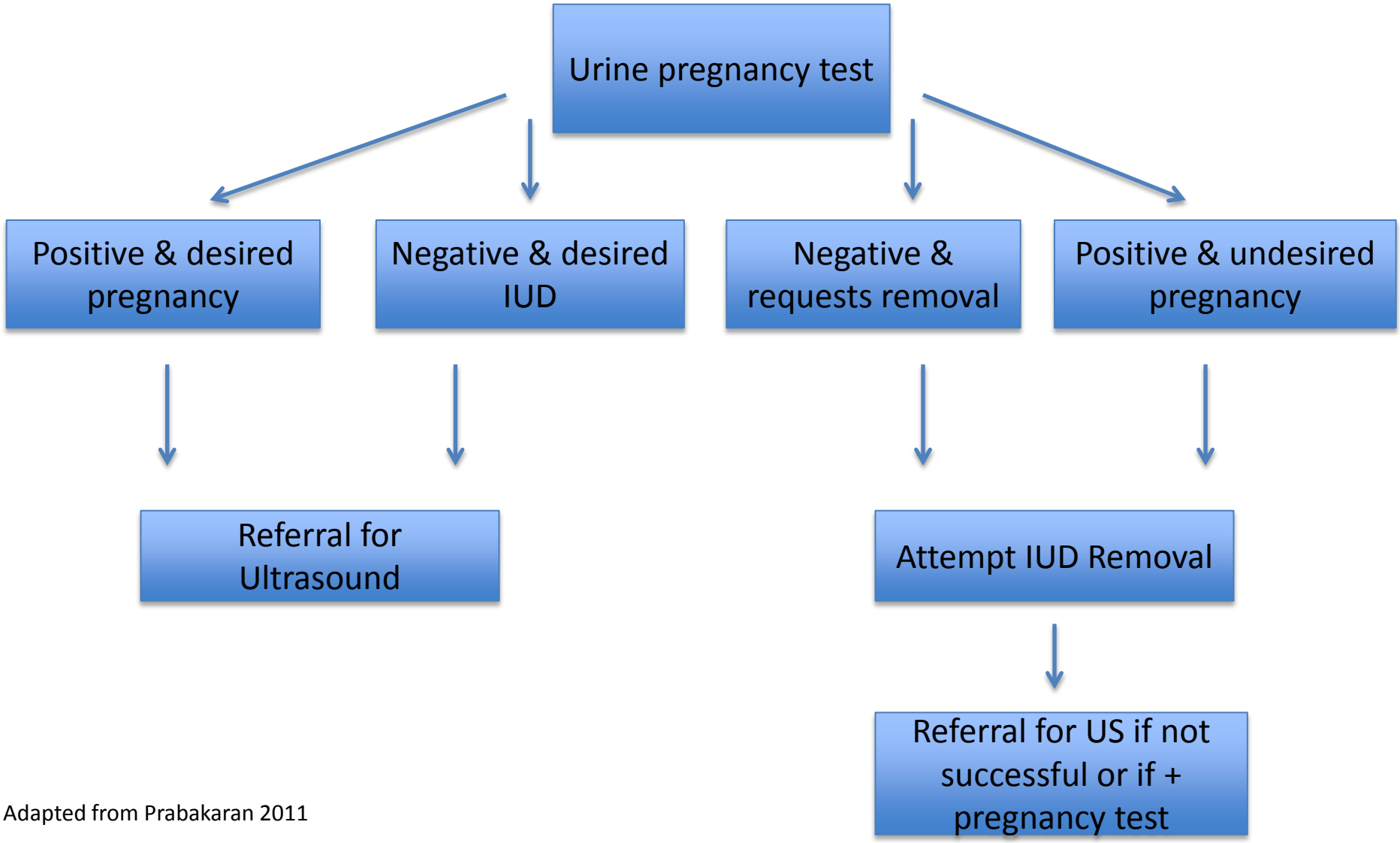
Ben-Rafael, 1996

Ultrasound Available



Adapted from Prabakaran 2011

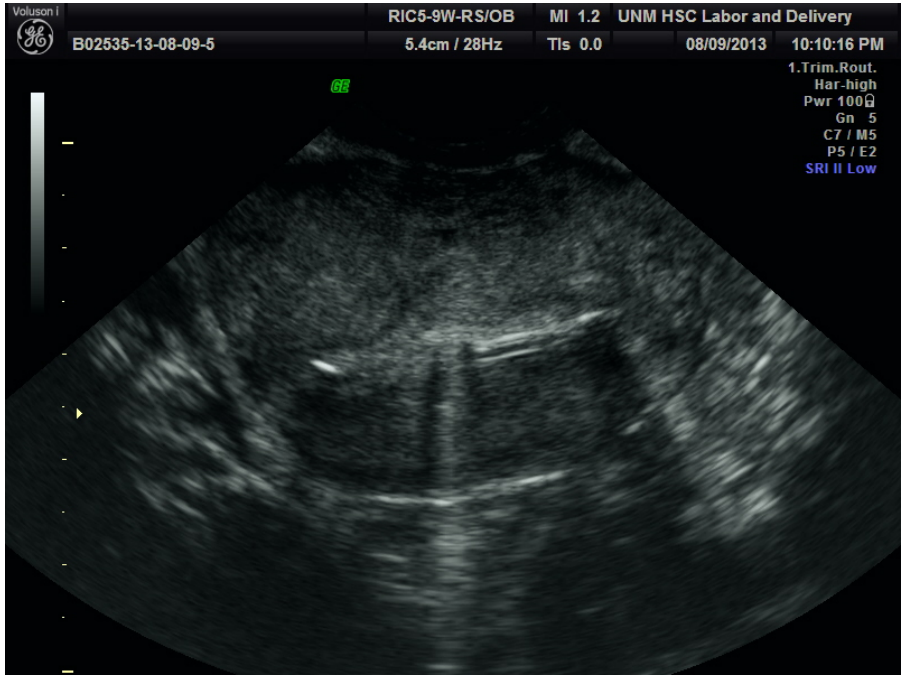
Ultrasound Not Available



Adapted from Prabakaran 2011

LNG-IUD

UNM, August 2013



UNM, August 2013

Does she need an US at her next visit?

- 2.4% chance that expulsion can occur between now and time of subsequent visit.
- Can consider repeat ultrasound at follow-up

Marchi, 2012

Case # Three

- The same patient returns 2 years later, she would like to have her IUD removed.

- What are options for removal?

In Office Removal

- Try coaxing strings with cytobrush and/or hook
- Grasp strings in the endocervical canal using alligator forceps
- Grasp IUD itself within the uterus if strings are no longer within the canal (can try this with ultrasound guidance)
  - Holding the alligator forceps with your hand pronated can make them easier to operate
- Can try suctioning the IUD from the uterus using an MVA and 5-6mm cannula.
- If procedure is painful, can consider a paracervical block or PO or IV sedation in more extreme cases

Prabhakaran, 2011

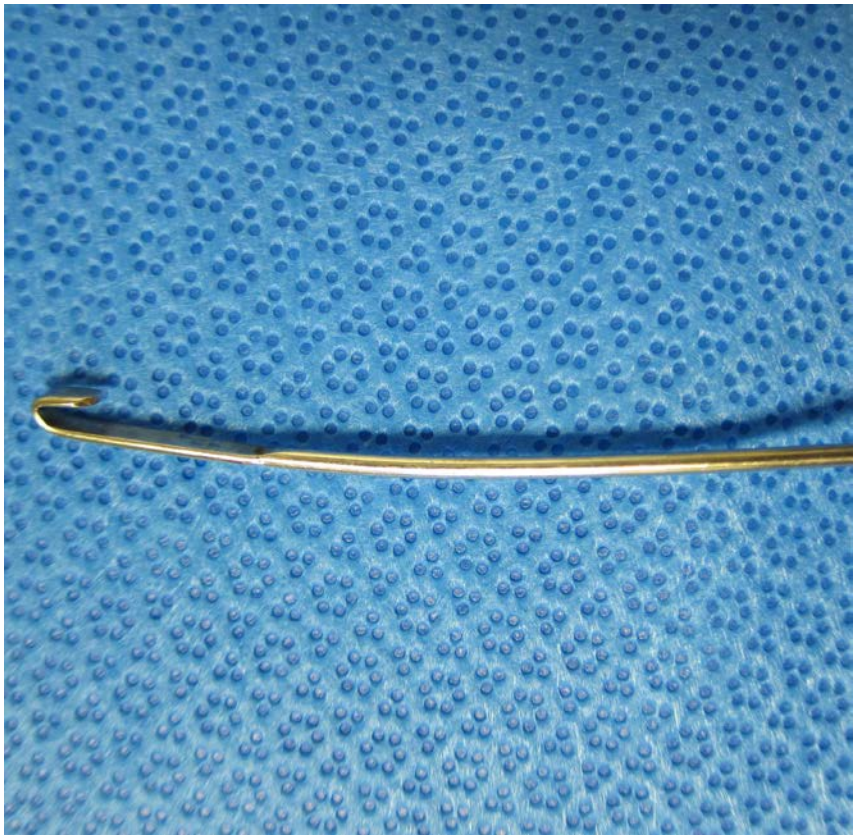
Alligator Forceps

UNM 2013

Fulcrum is located at distal point faciliating wide opening despite narrow cervical canal

In Office Removal

IUD Hook



Suction with 5F curette

UNM 2013

Other Removal Options

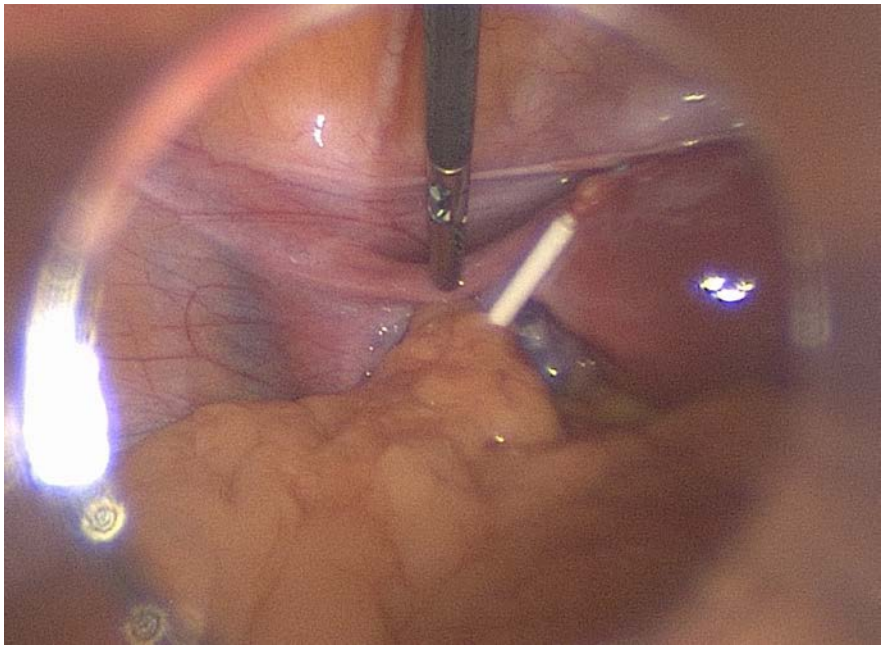
- Hysteroscopy
- Misoprostol
  - Case series of 3 women with missing strings and IUD in uterus on US
  - Took 200 mcg of misoprostol vaginally the night before and morning before planned removal
  - IUD strings seen through os morning of procedure

Cowman, 2012.

Case #4

- 24 year G1P1 with LNG-IUD placed 2 months postpartum
- Exclusively breastfeeding
- Presents 1 month after insertion with cramping
- US demonstrates empty uterus
- X-ray with IUD in abdomen

Perforation



UNM 2013

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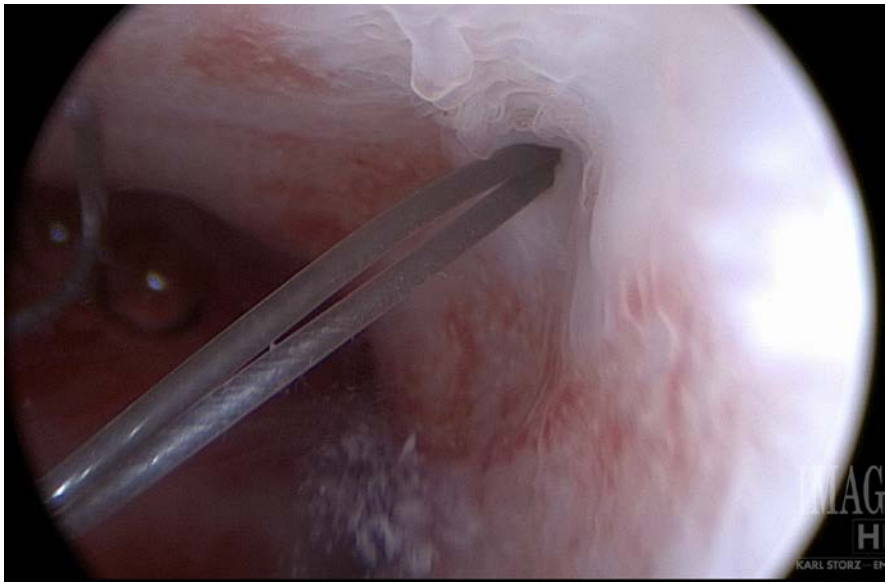


Perforation

- Incidence
  - LNG-IUD IUD 0.7-2.6 per 1000 insertions
  - Copper IUD 0.6-2.2 per 1000 insertions
- Symptoms
  - 13 - 32% of women were asymptomatic
  - 71% symptomatic
    - 47-76% pelvic pain
    - 23-27% abnormal vaginal spotting
    - 15-18% pregnancy
      - 10 had IUP, 1 ectopic pregnancy
      - More common with Copper than LNG-IUD(33% compared to 7% of perforations)
- Diagnosis
  - Missing IUD strings
  - Empty uterus on ultrasound
  - IUD seen on abdominal x-ray
- Time to diagnosis
  - 8.4% suspected at time of insertion
  - Median time to diagnosis was 5 months to 306 days with a range of 0 days to 69 months. 25% diagnosed greater than 1 year after insertion

Caliskan, 2003. Heinemann, 2011. Kaislasuo, 2012. Kaislasuo 2013. van Grootheest, 2011. Van Houdenhoven, 2006.

Perforation

- Risk Factors
  - Insertion Postpartum
    - < 24 weeks since last delivery RR 7.7 (95% CI: 3.8-15.9)
    - 6-9 weeks postpartum OR 8.77 (95% CI 2.41-31.88)
  - Insertion while breastfeeding
    - RR 11.1 (95% CI: 5.4-22.6)
    - OR 11.81 (95% CI 2.03-68.79)
  - Inserted by health care provider doing < 50 insertions per year in breastfeeding compared to non-breastfeeding woman
    - RR 3.9 (95% CI: 1.5-10.1)
  - Risk not affected by type of healthcare provider

Braaten, 2011. Heinemann, 2011. Caliskan, 2003.

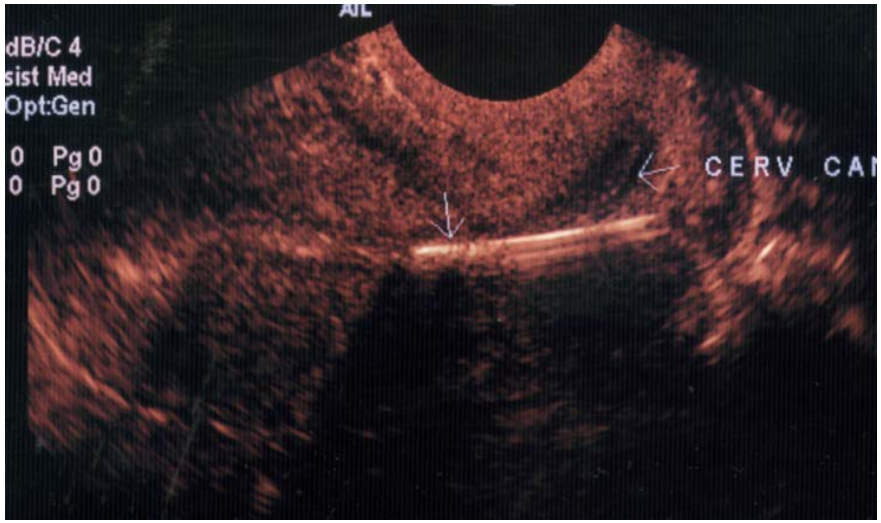
Perforation

- Removal
  - Laparascopy as first-line treatment
- Complications
  - Adhesions in 28-75% of removal, more common with Copper IUD
  - Abscess or perforation of bowel
  - Intraperitoneal LNG-IUD can have much higher plasma LNG concentrations of 4.7 nmol/l compared to 0.4 nmol/l of an in utero device
    - High LNG levels my suppress ovulation so that women may continue to have amenorrhea

Gill, 2012. Kaislasuo, 2013. Haimov-Kochman, 2003.

Case # Four

- 24 year old IUD placed
- Difficult insertion
- US immediately after insertion found IUD to 25 mm from fundus
- Should it be removed?



UNM 2000

Malposition

- 10% of IUDs are malpositioned
- IUD not at fundus at higher risk for expulsion
- Risk Factors
  - Not associated with post-abortion or 6-9 week postpartum insertion
  - More common if adenomyosis suspected OR 3.04 (1.08-8.52)
    - Possibly due to change in contractility of uterus
  - Prior vaginal delivery OR 0.53 (0.32-0.87) and private insurance protective OR 0.38 (0.24-0.59)

Braaten, 2011. Petta, 1996.

Does an IUD move after insertion?

- Study comparing position of IUD by US at insertion and 2-3 months after insertion (Morales-Rosello, 2005)
  - IUD moved upward mean of 4.9 mm, more commonly in women with less children
  - 97% moved up in 2-3 months
- Study evaluated IUD position by US in 214 women (Faundes 2000)
  - 2/3 of misplaced IUDs at insertion will move to normal position within 3 months
  - Movement of IUD can be upward or downward, but more commonly upward
  - Repeat US in 2-3 months to re-assess position

Malposition & IUD Failure

- Failure Incidence of malpositioned IUD
  - Copper IUD: OR for pregnancy with intracervical insertion 12.93 (95% CI 4.13-48.96)
    - Recommendation has been replacement
  - LNG-IUC: RTC of intracervical versus fundal placement. No difference in failure between groups.

Anteby, 1993. Pakarinen, 2005.

Should it be removed?

- No pregnancies with malpositioned IUD while in place
  - Malpositioned IUDs have higher rates of discontinuation
    - 66.5% had IUD removed, 77% planned to initiate other method, but only 30% received another LARC or sterilization
    - Pregnancies occurred at higher incidence in malpositioned group due to removal of IUD

- Management of malpositioned LNG-IUD
  - Alligator clamp readjusted 18 low lying IUDs with lower tip in cervix, but not protruding out of os.
  - Verified position by US after adjusting IUD. 14 of 17 had IUS in place, 3 were back in lower position at follow-up.
  - 78% successful
  - Consider moving device instead of removal especially if financial barrier to a new IUD

Braaten, 2011. Ber, 2012.

Recommendations for Malposition of IUD in lower uterine

- If symptomatic with pain or bleeding may removal and reinsertion as this may resolve shown to help
- Levonorgesterol IUD in lower uterine segment. Counsel/encourage woman to leave in place.
- ParaGard (Copper IUD) in lower uterine segment encourage replacement to increase efficacy although likely more effective than other methods such as OCPS

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Summary

- Rising IUD use will make these variations and complications common
- Need more evidence to guide us in optimal approach
- Having office ultrasound and training are very helpful