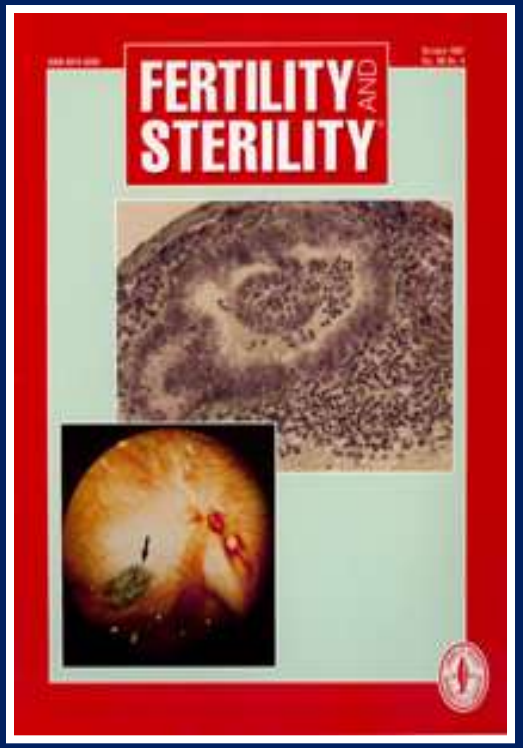
Endometriosis: how can we improve preoperative prediction of DIE?

Dr. Vered Eisenberg
Sheba Medical Center
June 2015

Etiology

- Peritoneal endometriosis
- Ovarian endometriosis
- Deep endometriosis

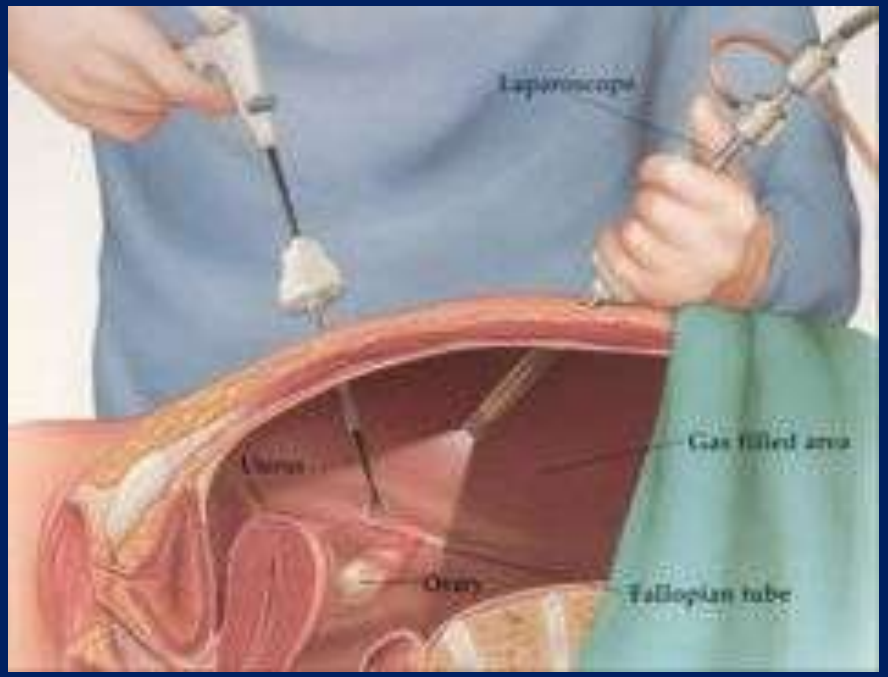


Nisolle and Donnez, 1997

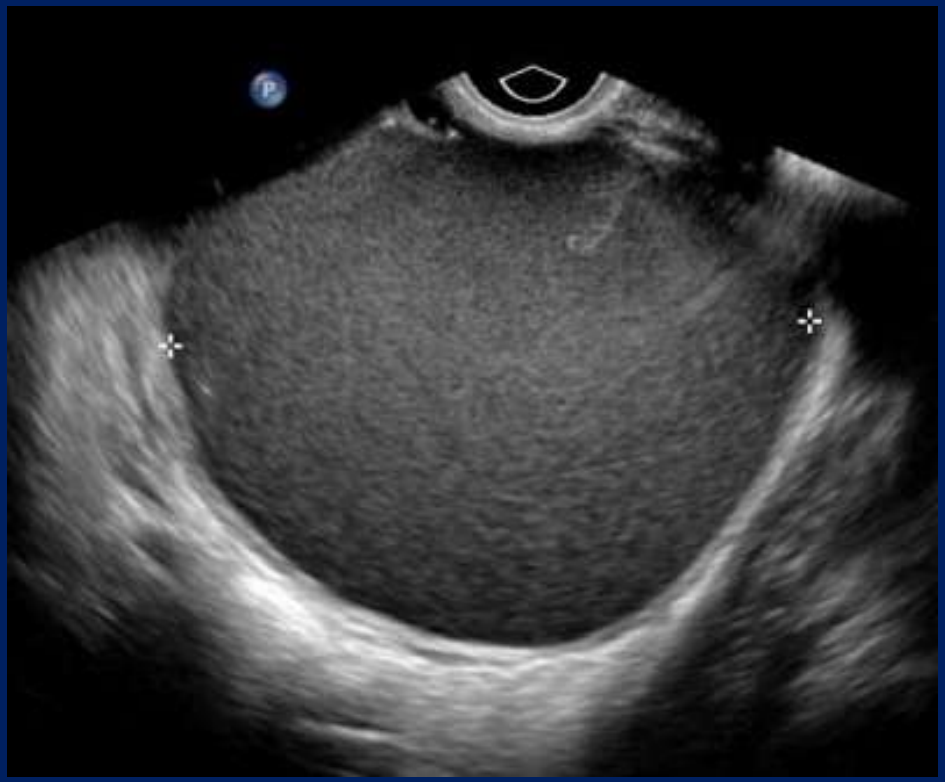
3 DIFFERENT ENTITIES

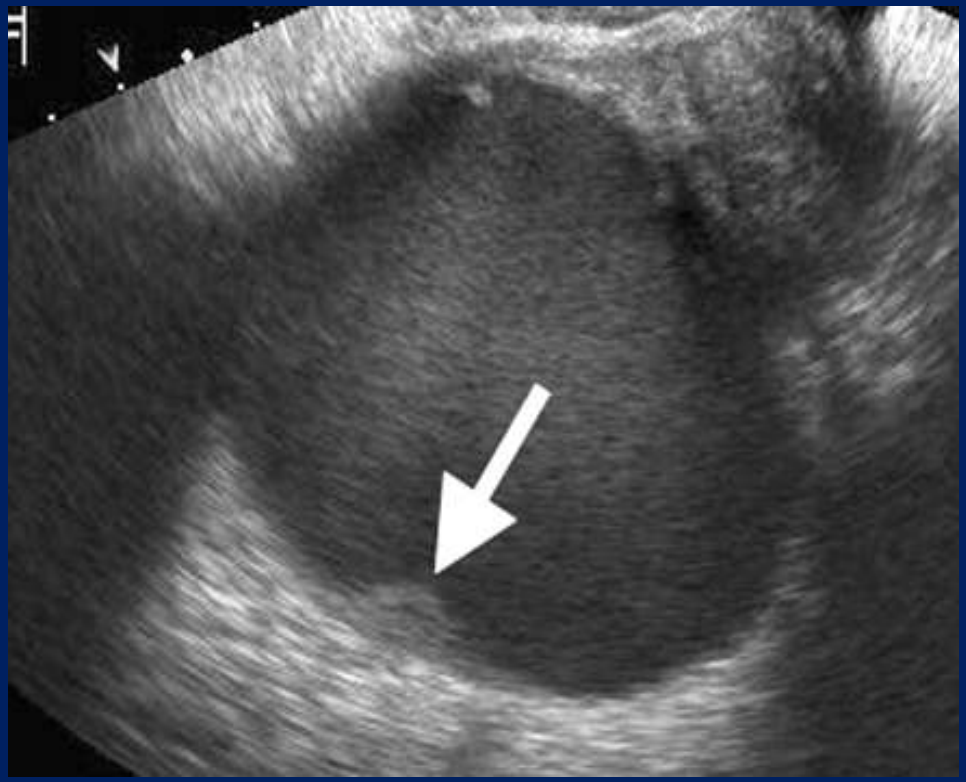
Ultrasound to optimize endometriosis surgery

- How does US add information for the surgeon?
- Affect preparation for surgery
- Plan multidisciplinary surgical involvement



Endometrioma

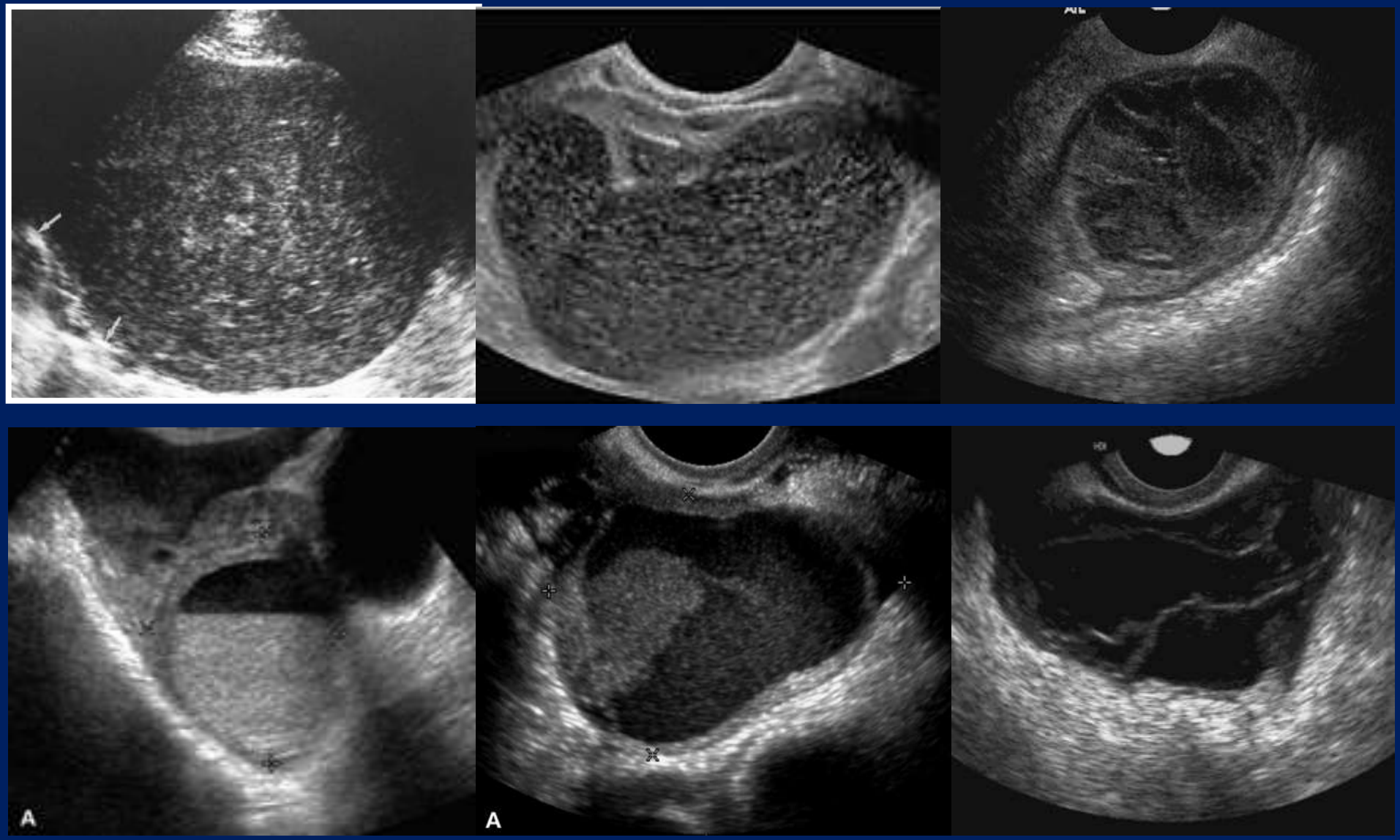




- 98% specificity

Van Holsbeke UOG 2011

Atypical endometriomas



Superficial endometriosis

- Almost 100% of patients with endometriomas have superficial disease elsewhere
- Up to 15% of normal asymptomatic healthy women
- Not visible by imaging?
- But in the absence of endometrioma?

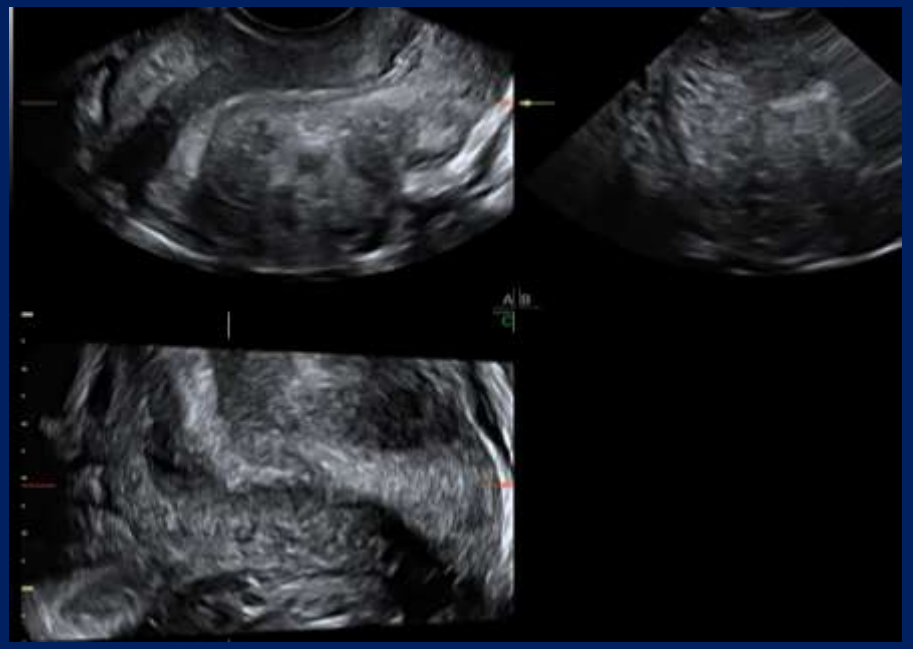
Soft markers and hard markers

- On transvaginal ultrasound - these markers are in correlation with endometriosis and adhesions at laparoscopy
- Soft markers:
  - Site specific tenderness
  - Reduced ovarian mobility
  - Loculated peritoneal fluid
- Hard markers:
  - Endometrioma
  - Hydrosalpinx

Soft marker analysis Improves sensitivity for peritoneal endometriosis From 34-87%, NPV 84%

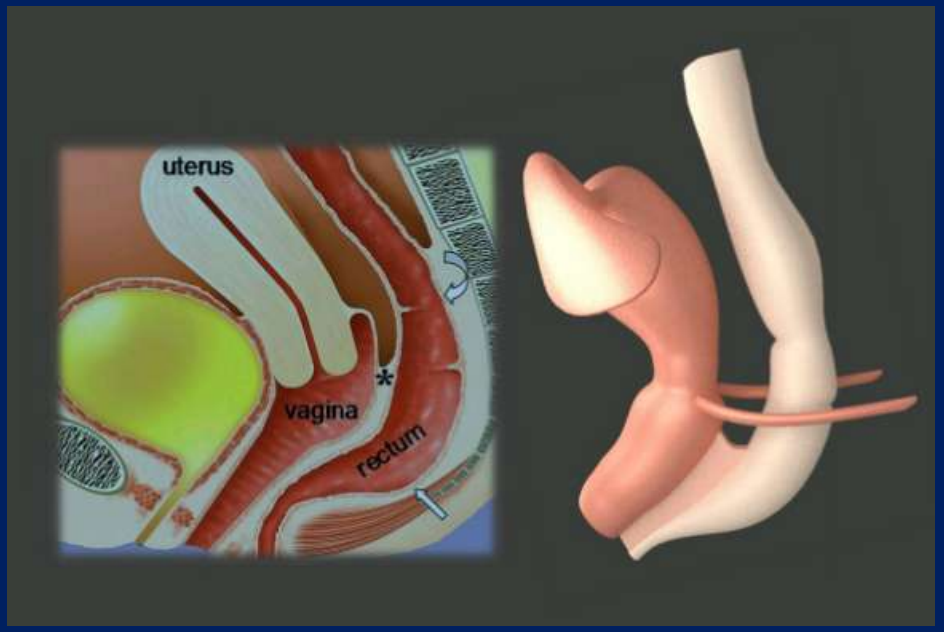
Okaro 2006

Abnormal uterine direction



Sliding sign and POD obliteration

- Sliding sign – anterior rectum glides over posterior aspect of cervix and posterior vaginal wall
- Prediction of POD obliteration
  - Increased risk for bowel endometriosis
  - DIE of rectum
    - Sensitivity 83.3-85%
    - Specificity 96-97.1%
    - Accuracy 93.1%
  - Anterior sliding sign – gliding over anterior plica



Guerriero 2010, Okaro 2006, Holland 2010, Hudelist 2013, Reid 2013

Anterior sliding sign

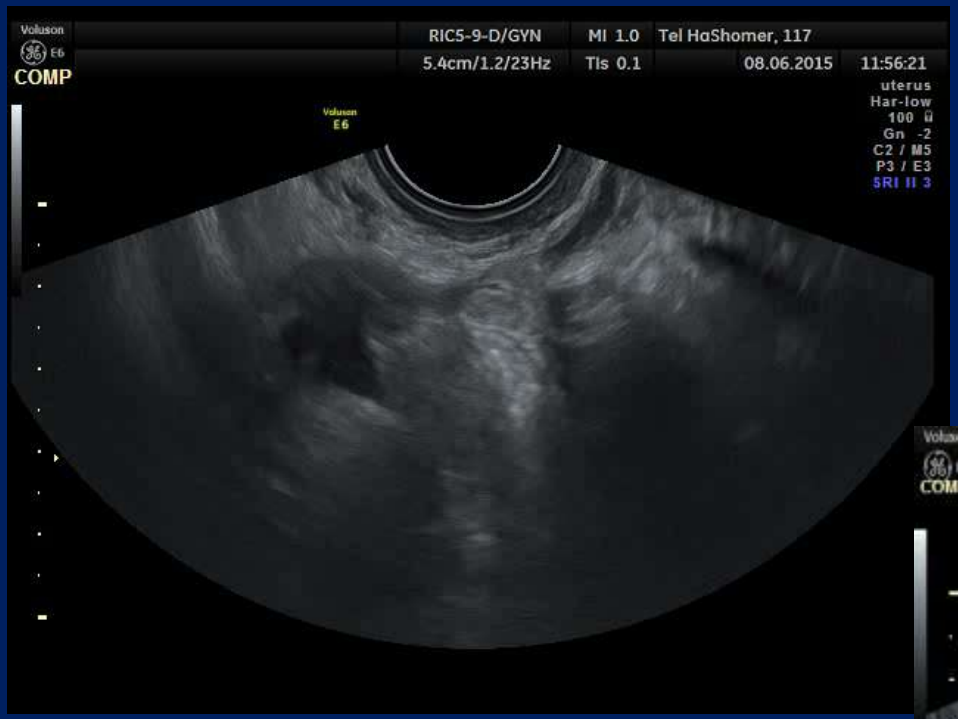
Posterior sliding sign

Adhesions to the ovaries

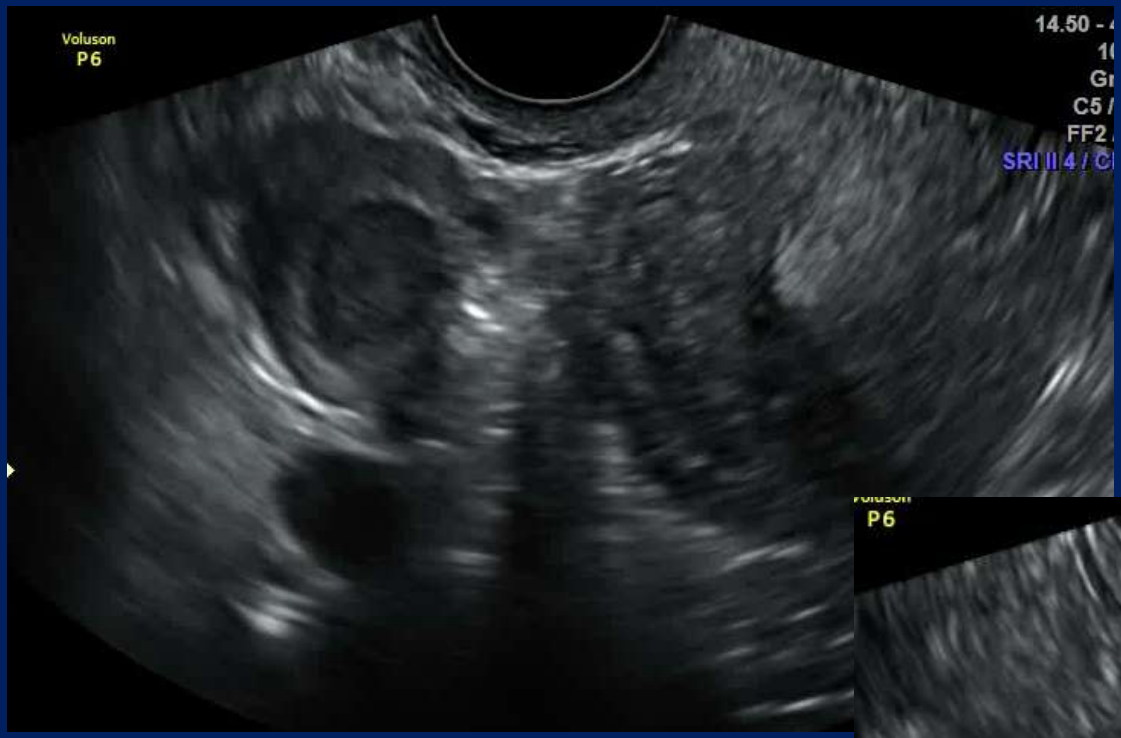
- Applying pressure between the uterus and ovary:
- 3 features are suggestive of ovarian adhesions:
  - Blurring of the ovarian margin
  - Inability to mobilize the ovary on palpation (fixation)
  - Increased distance from the probe
- Sensitivity and specificity of 89% and 90%, fixation of the ovaries to the uterus

Guerriero 2010

Adhesions to the ovaries

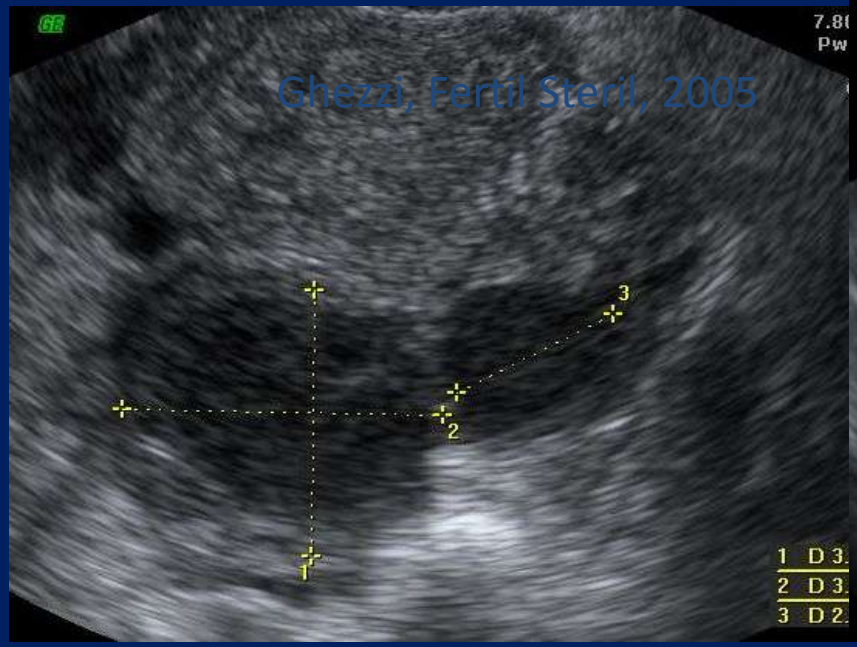


Adhesions to the ovaries



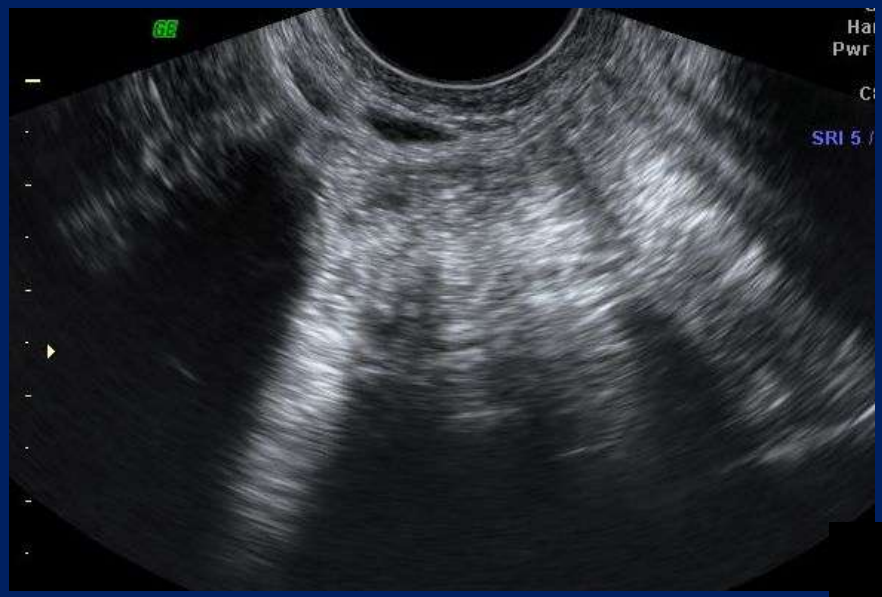
Kissing ovaries

Criteria	Kissing ovaries	Non kissing ovaries
Bowel involvement	18.5	2.5
Fallopian tube obstruction	80	8.6
AFS score	74	35
Operating time	115 min	50 min

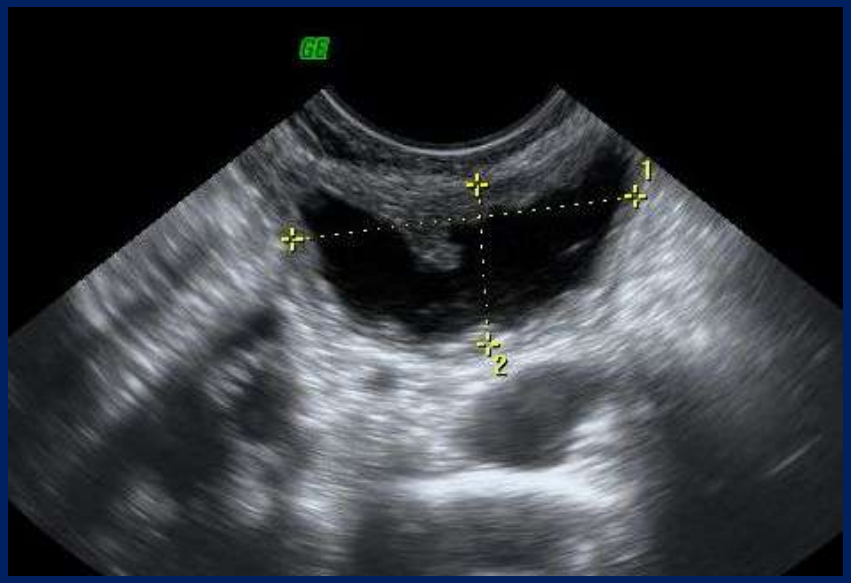


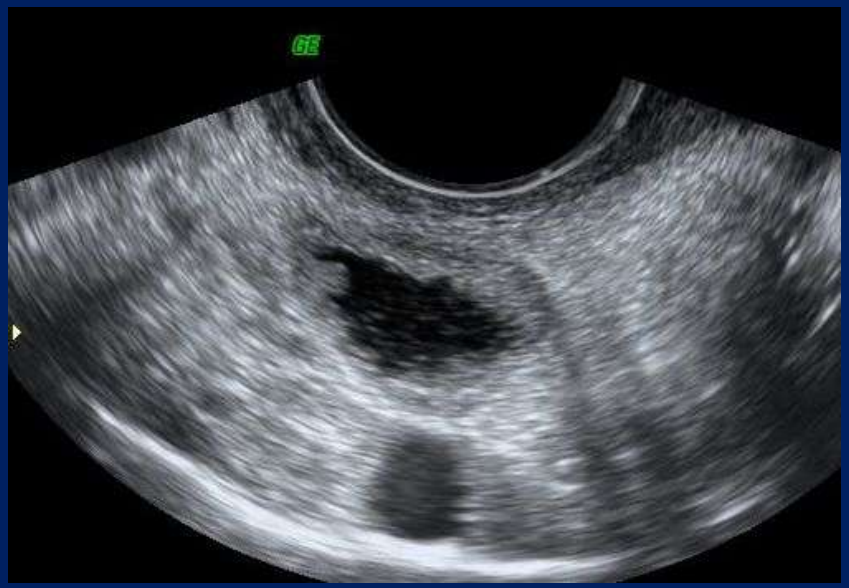
Ghezzi, Fertil Steril, 2005

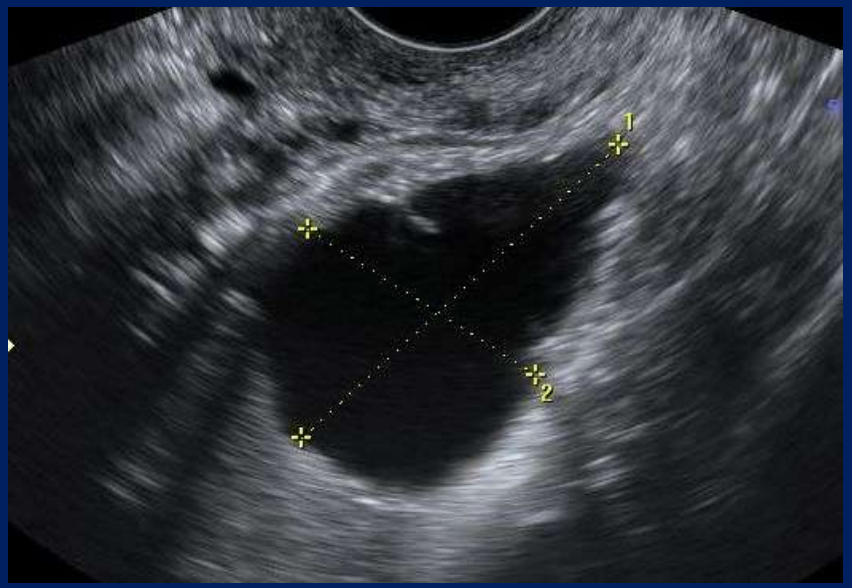
Intestinal adhesions



Tubal disease

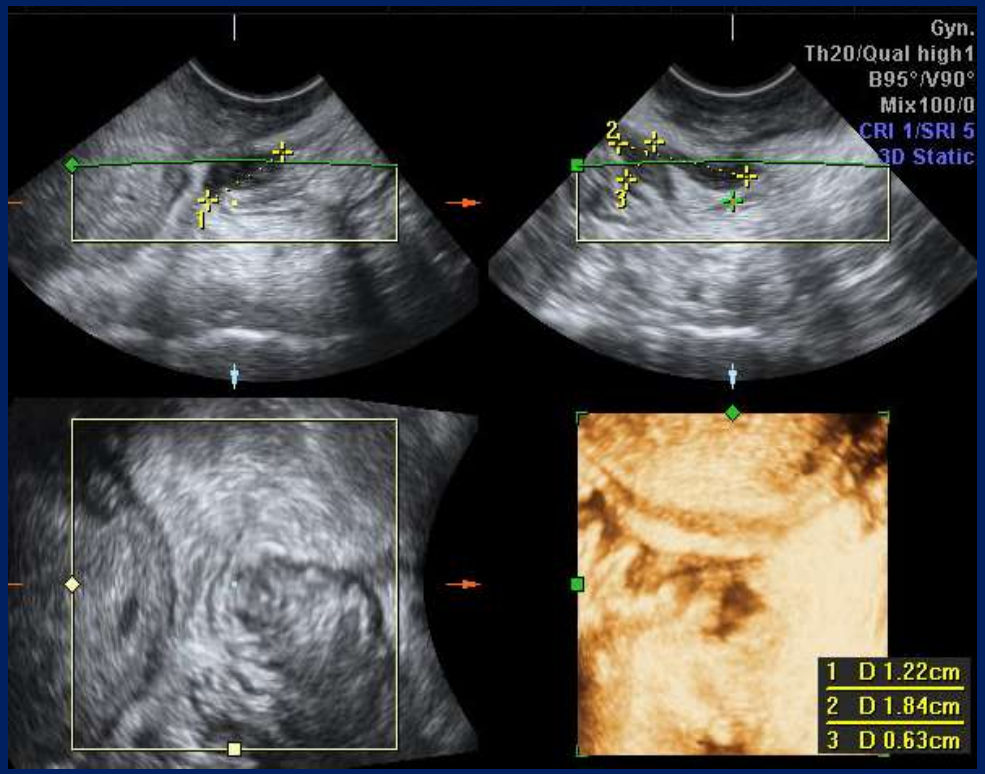


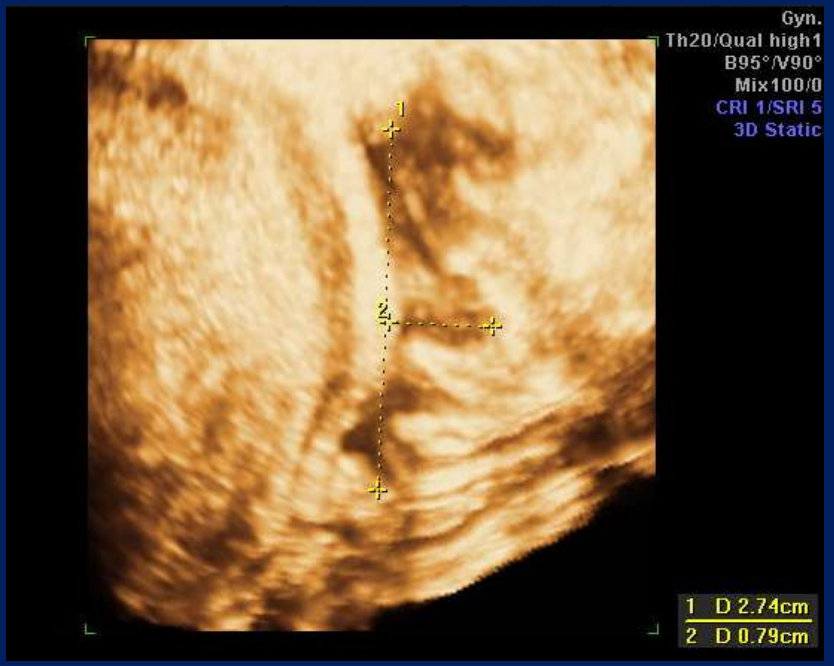




Diagnosis of deep endometriosis: DIE

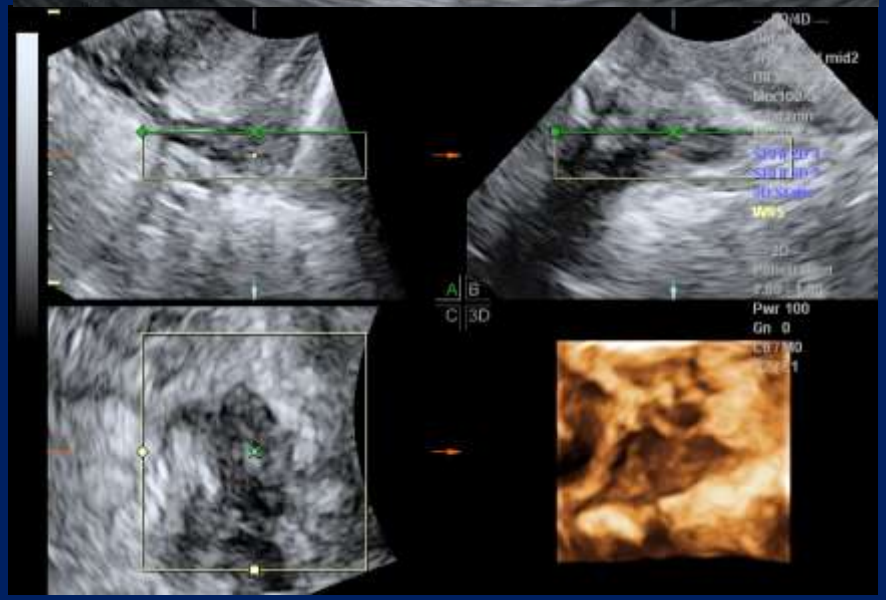
Rectosigmoid nodules

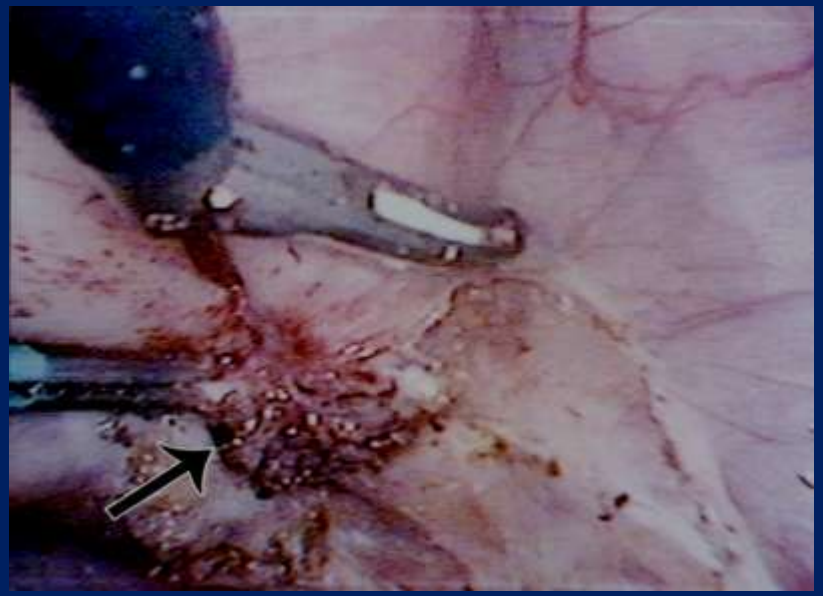




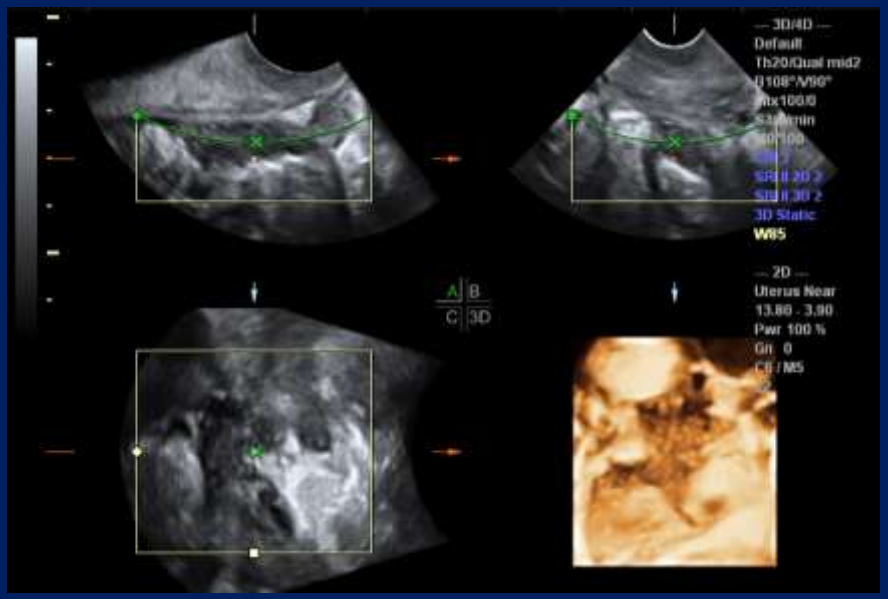
Indian headdress sign

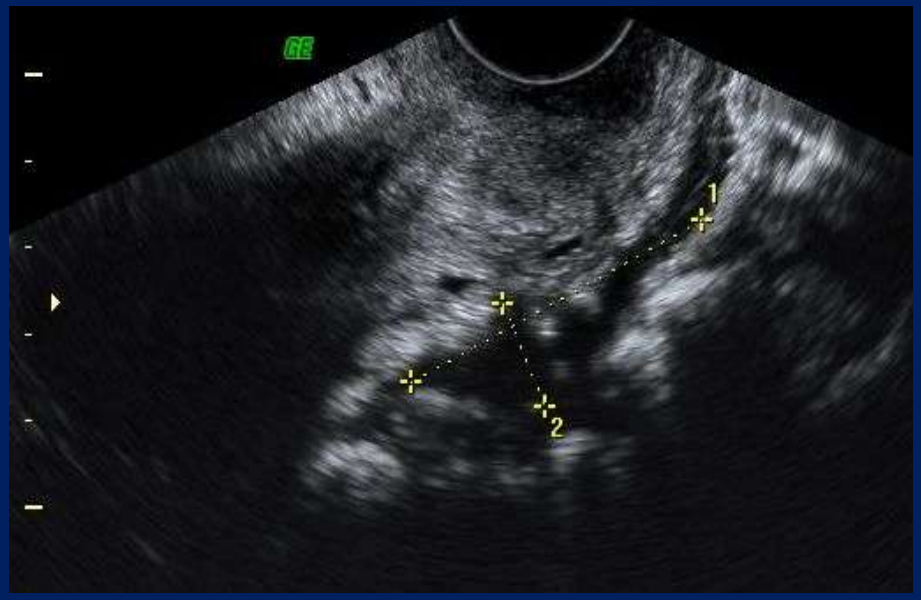
Rectosigmoid nodules

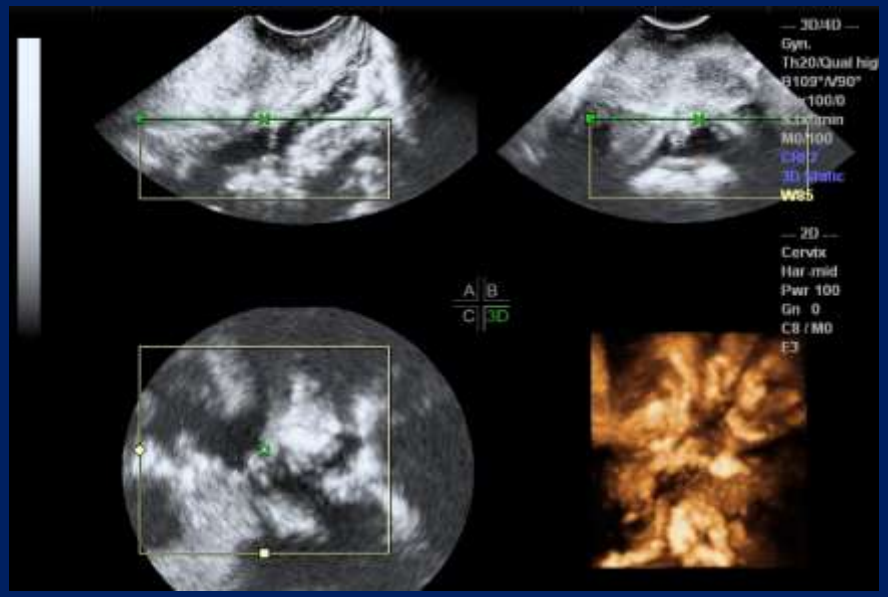




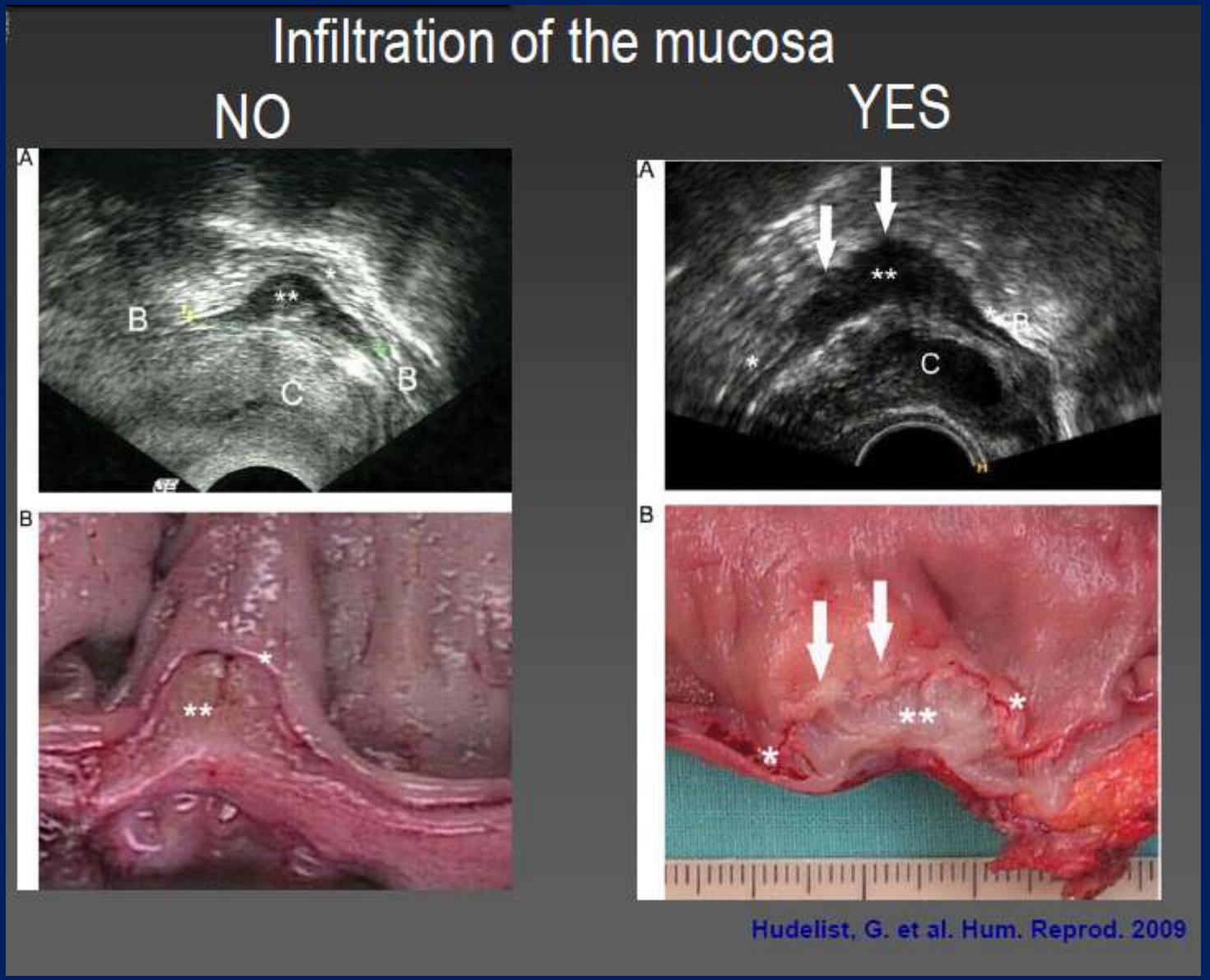
Rectosigmoid nodules



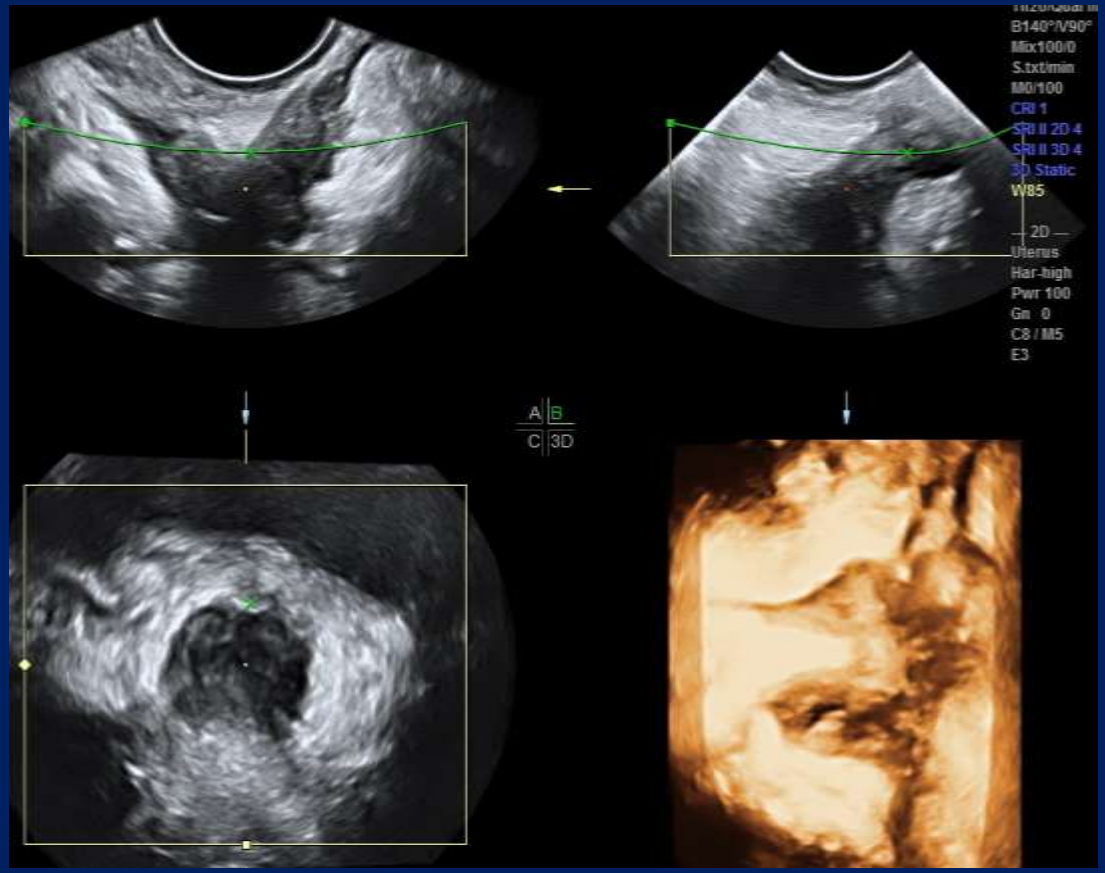




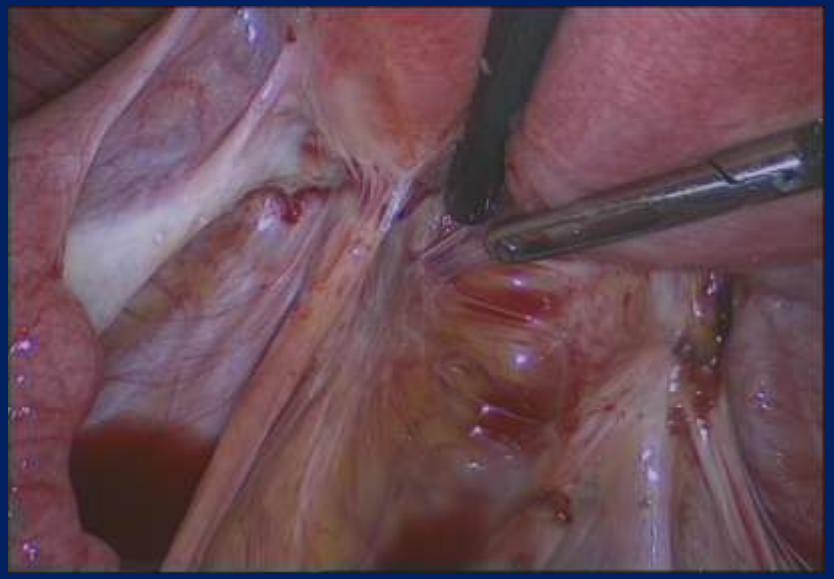
Mucosal infiltration

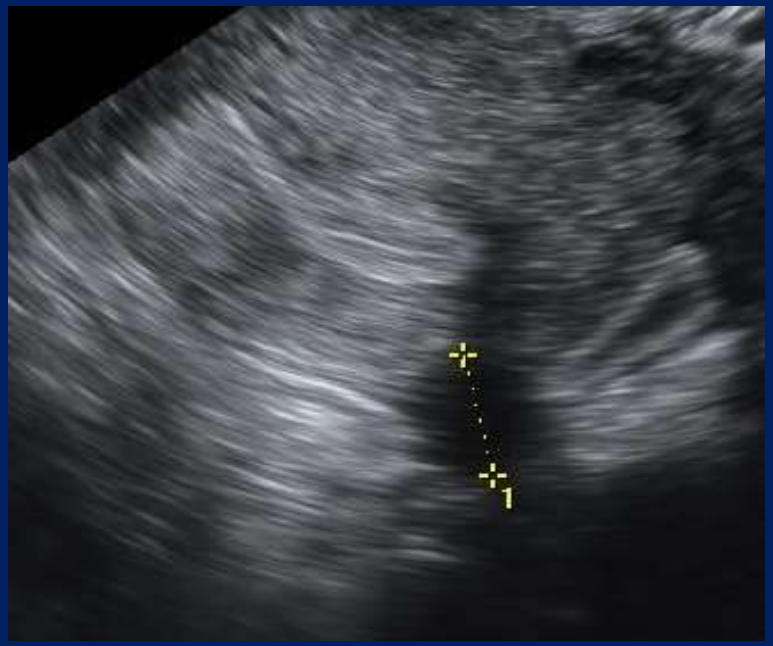


Bowel endometriosis

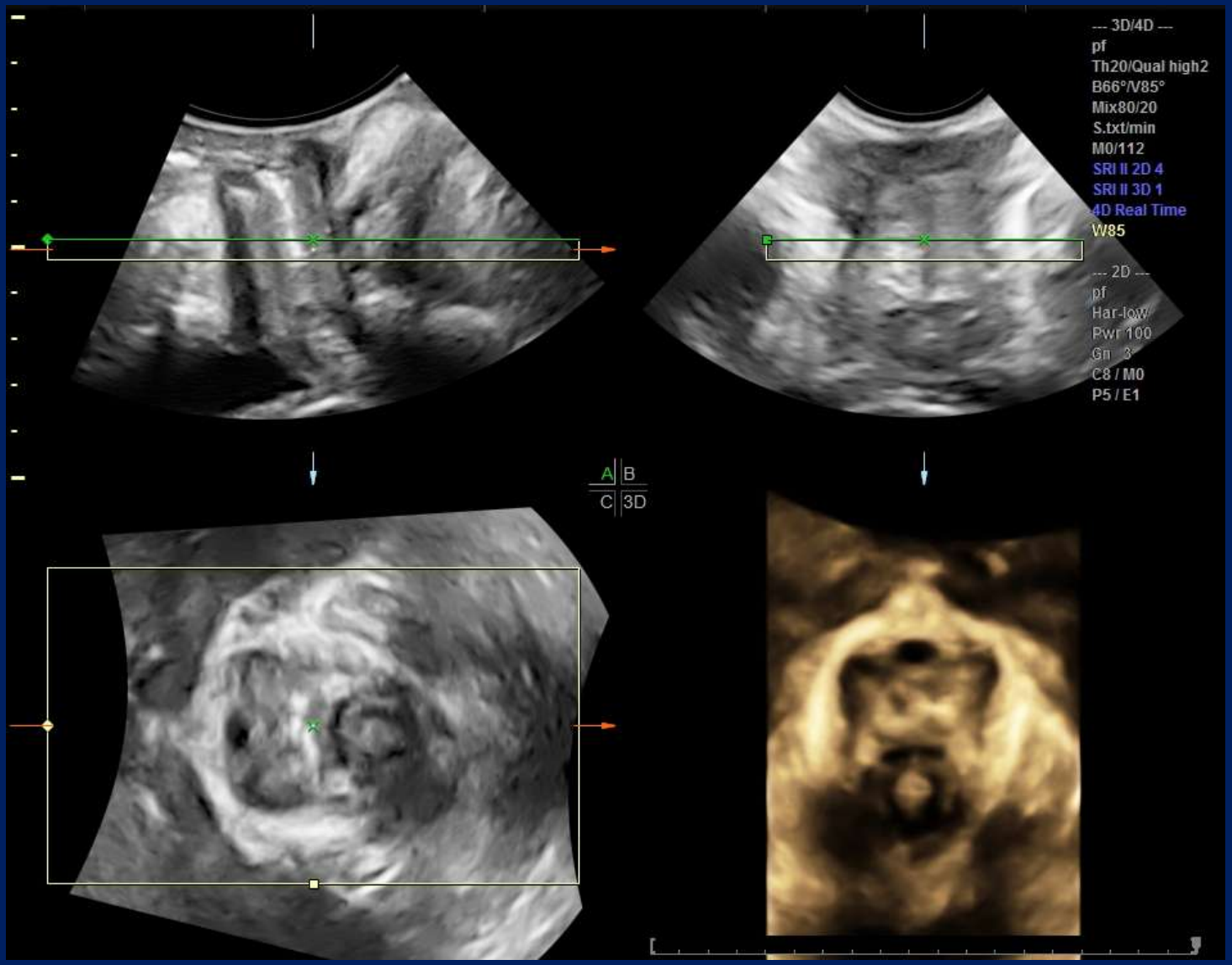


Uterosacral ligament involvement

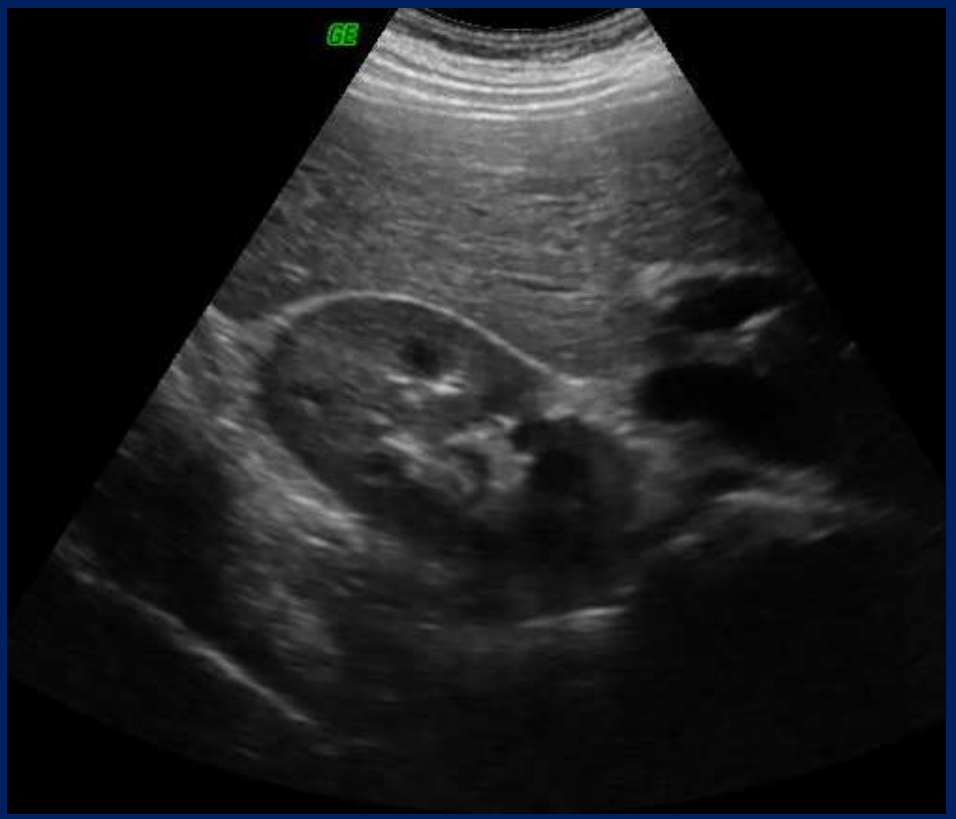


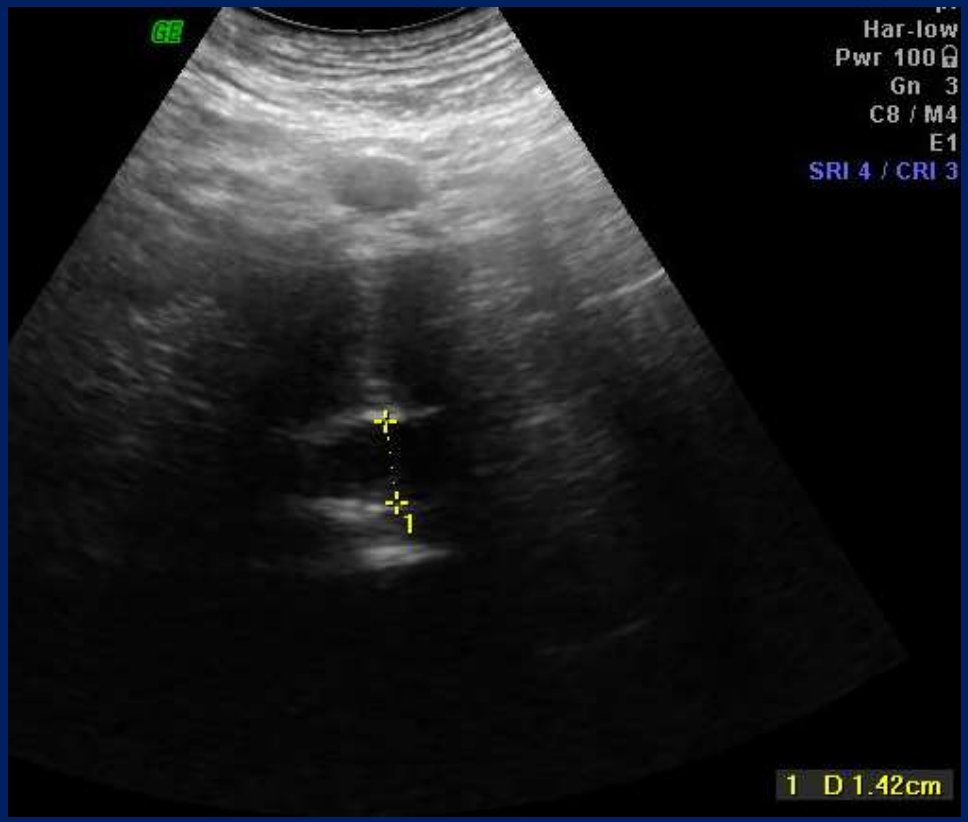


Rectovaginal nodule

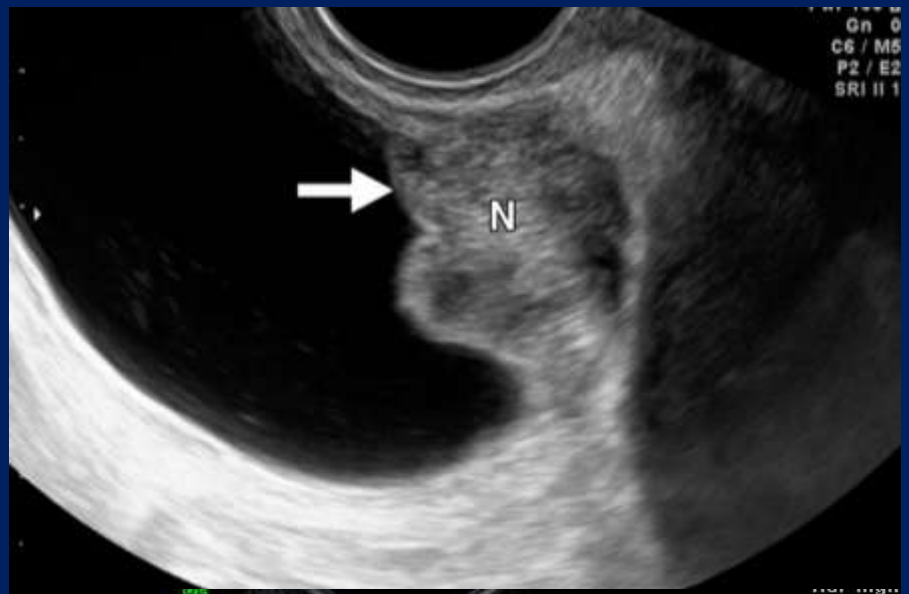


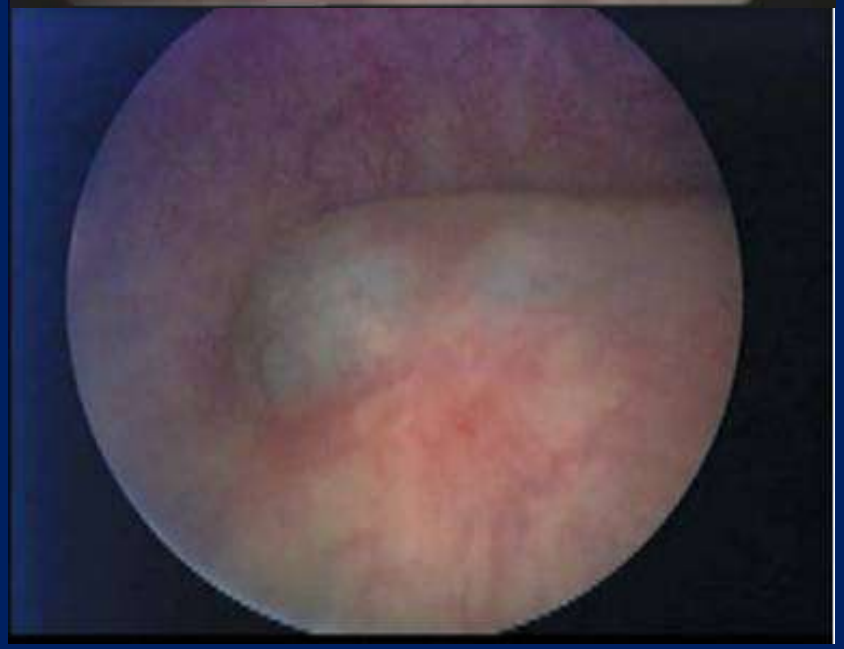
Hydronephrosis





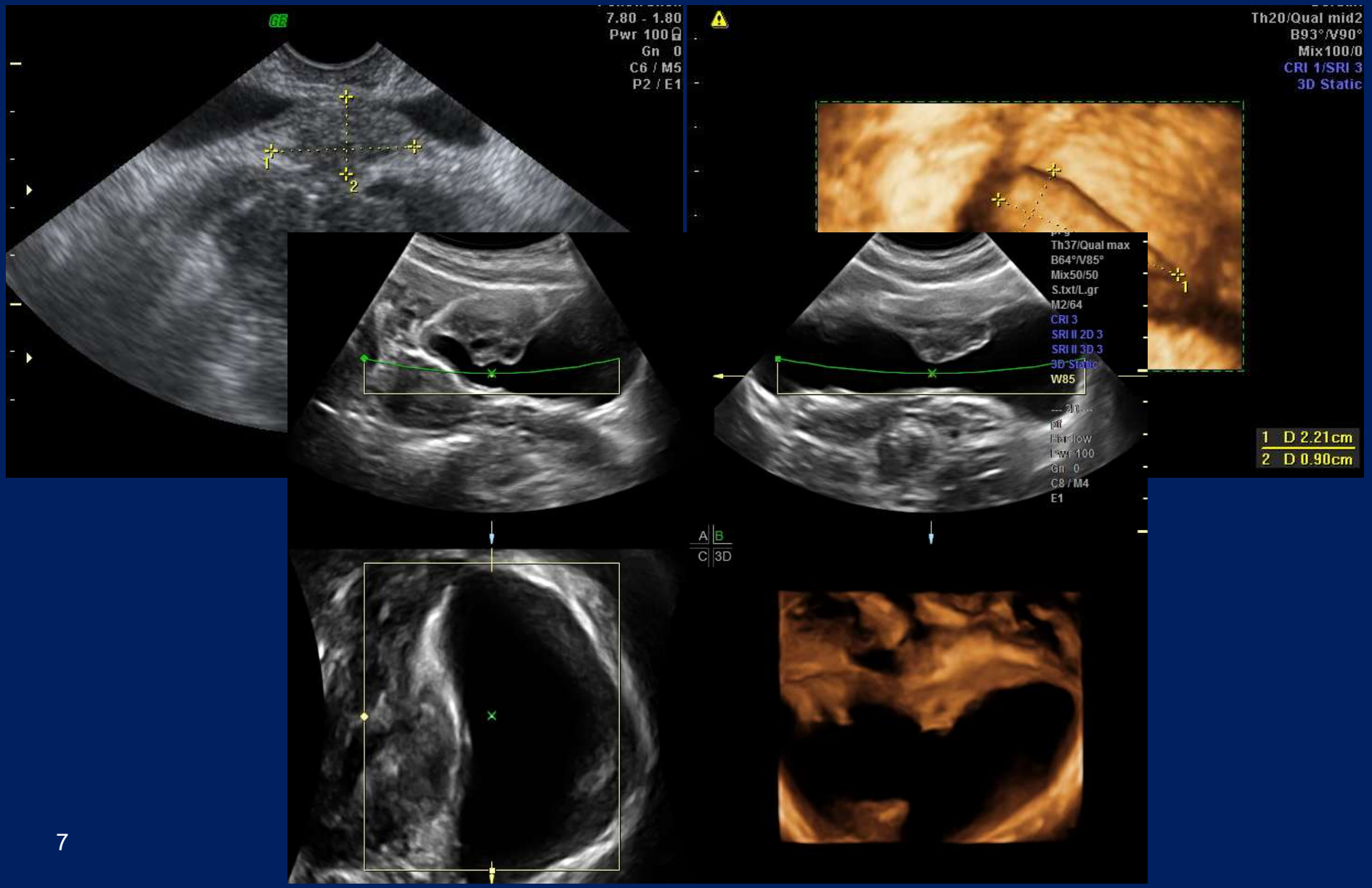
Anterior compartment involvement



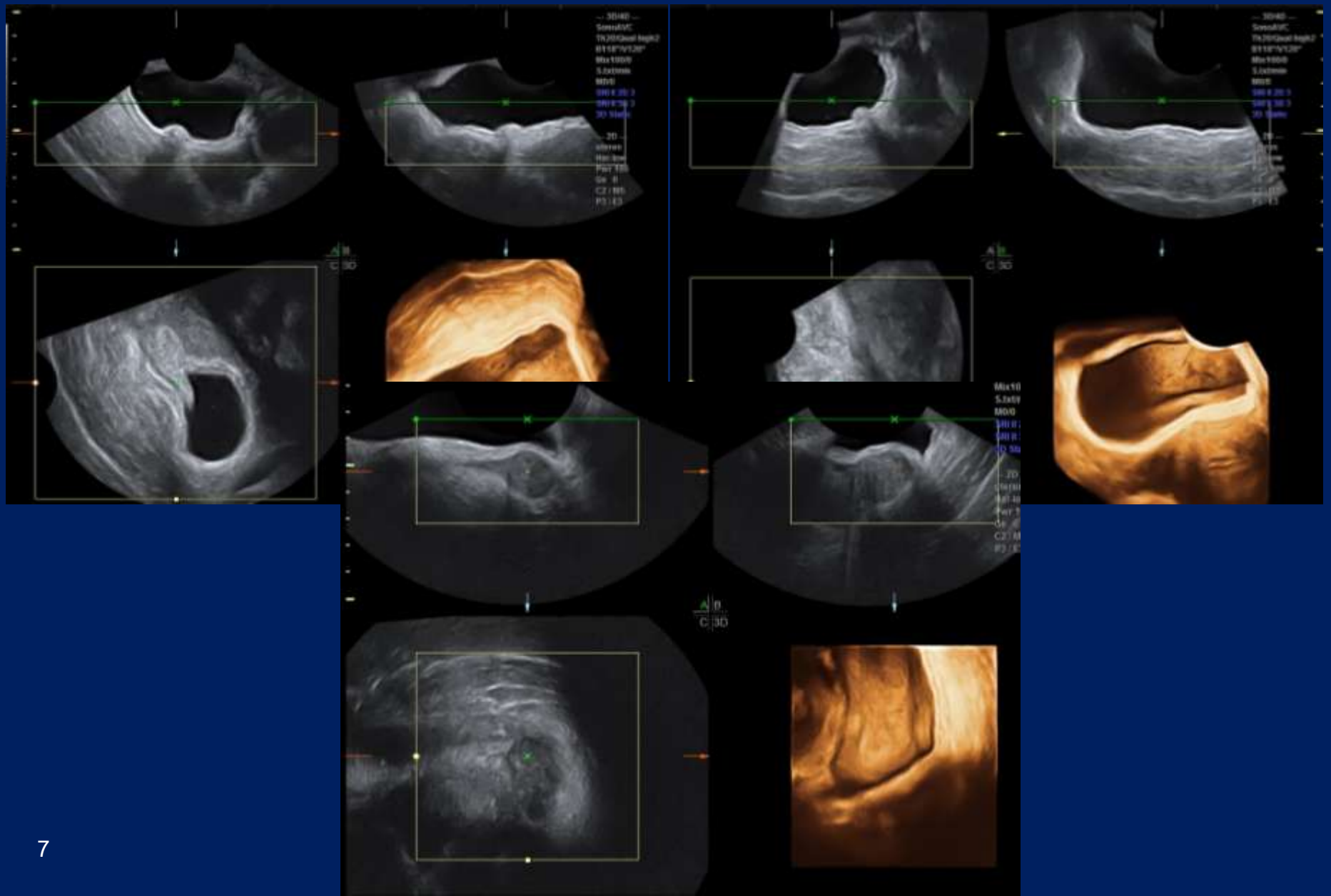


Bladder detrusor endometriosis penetrating from anterior uterine wall - hourglass appearance

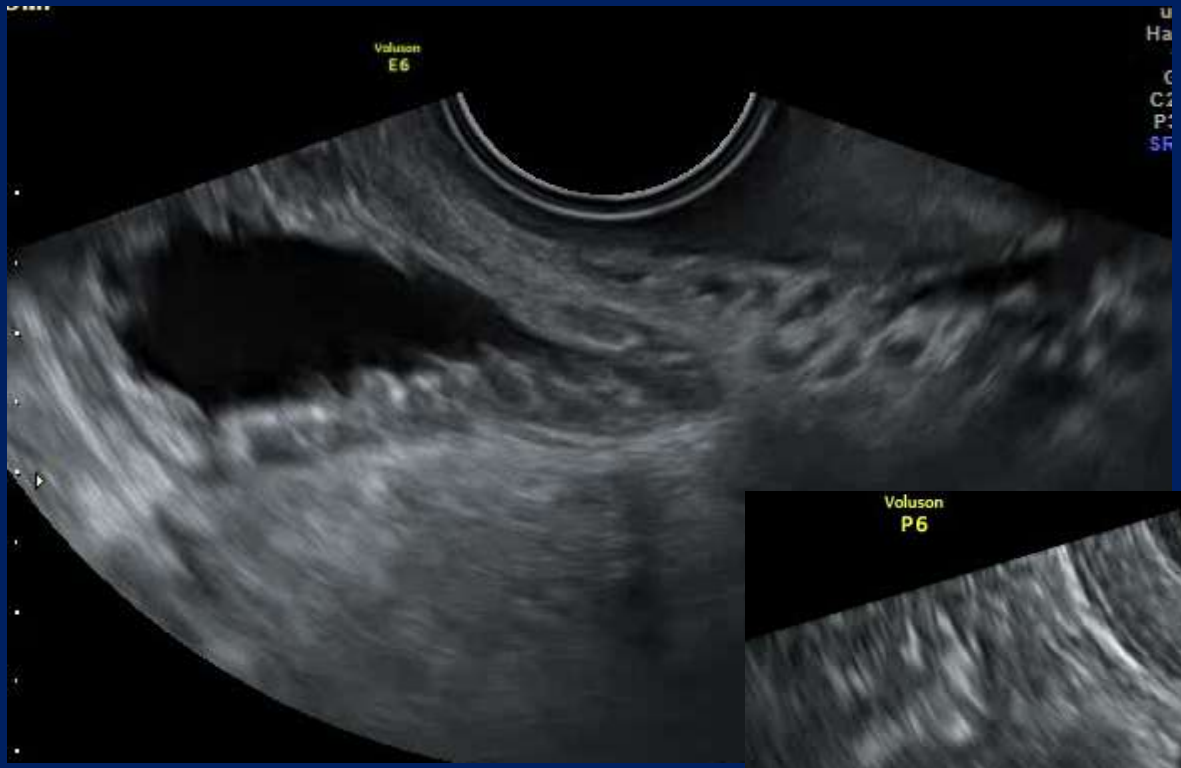
Anterior compartment involvement



Virtual cystoscopy



Ureters



Imaging and endometriosis

- Transvaginal ultrasonography
- Magnetic Resonance Imaging
- Rectal endoscopic ultrasound
- Helicoidal CT scan
- Rectosigmoidoscopy
- Barium enema (double contrast)

- Principles:
  - Make the most accurate pre operative diagnosis:
    - Keep number of additional investigations to minimum
    - Place emphasis on least costly, least invasive if comparably efficient (Chapron 2004)

US vs. MRI

Human Reproduction Vol.22, No.12 pp. 3092–3097, 2007
doi:10.1093/humrep/dem187
Advance Access publication on October 18, 2007

Comparison between clinical examination, transvaginal sonography and magnetic resonance imaging for the diagnosis of deep endometriosis

Mauricio S. Abrao[1,4], Manoel Orlando da C. Gonçalves[2], Joao Antonio Dias Jr[1], Sergio Podgaec[1], Luciana P. Chamie[3] and Roberto Blasbalg[3]

US better than MRI

?

MRI better than US

ARTICLE IN PRESS

Diagnostic accuracy of physical examination, transvaginal sonography, rectal endoscopic sonography, and magnetic resonance imaging to diagnose deep infiltrating endometriosis

Marc Bazot, M.D.,[a] Clarisse Lafont, M.D.,[a] Roman Rouzier, M.D.,[b] Gilles Roseau, M.D.,[c] Isabelle Thomassin-Naggara, M.D., Ph.D.,[a] and Emile Daraï, M.D., Ph.D.[b]

Services de [a] Radiologie and [b] Gynécologie-Obstétrique, Hôpital Tenon; and [c] Centre Chirurgical Trocadéro, Département d'Endoscopie Digestive, Paris, France

Diagnosis of deep endometriosis

Diagnosis of deep endometriosis

Authors	Methods	Prevalence	Location	Sensitivity	Specificity
Bazot et al. *Radiology 2004* *N= 195*	MRI	84%	ALL	90%	91%
Kataoka et al. *Radiology 2005* *N= 57*	MRI	53%	cul de sac	68%	76%
Fedele et al. *Obstet Gynecol 1998* *N= 140*	TR	24%	recto-vaginal	97%	96%
Bazot et al. *Hum Reprod 2003* *N= 30*	Rectal endoscopic sonography	93%	ALL	96%	83%
Bazot et al. *Hum Reprod 2003* *N= 30*	TVS	93%	ALL	89%	50%
Dessole et al. *Fertil Steril 2003* *N= 46*	TVS	69%	recto-vaginal	44%	50%
Dessole et al. *Fertil Steril 2003* *N= 46*	TVS sonovaginography	69%	recto-vaginal	91%	86%
Bazot et al. *UOG 2004* *N= 142*	TVS	56%	ALL	78%	95%
Guerriero et al. *Fertil Steril 2007* *N= 50*	TVS tenderness-guided	62%	ALL	90%	95%

Barium enema

- barium enema examination of a 32-year-old woman with chronic pelvic pain demonstrates an abnormal mass defect in the rectosigmoid area

TVS first line imaging

Human Reproduction, Vol.24, No.3 pp. 602–607, 2009
Advanced Access publication on December 17, 2008 doi:10.1093/humrep/den405

human reproduction

ORIGINAL ARTICLE *Gynaecology*

Preoperative work-up for patients with deeply infiltrating endometriosis: transvaginal ultrasonography must definitely be the first-line imaging examination

Mathilde Piketty[1], Nicolas Chopin[1], Bertrand Dousset[2], Anne-Elodie Millischer-Bellaische[3], Gilles Roseau[1], Mahaut Leconte[2], Bruno Borghese[1,4,5], and Charles Chapron[1,4,5,6]

How can we improve?

- Develop a reporting system
- Operator training
- Bring the sonographer into the OR
  - Literally
  - Videos and audit
- Feedback
- Shorten the learning curve
- Dedicated multidisciplinary team

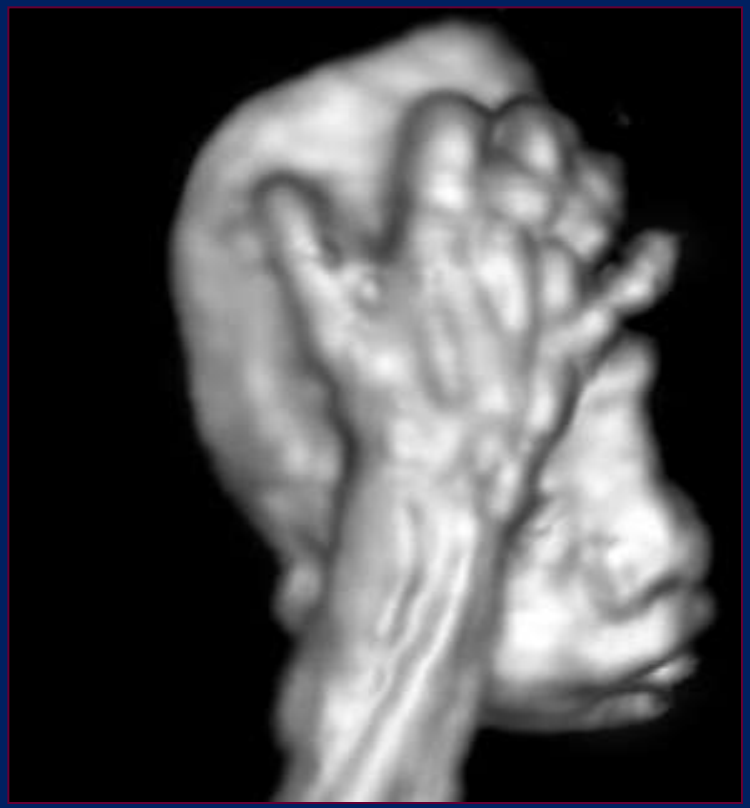
Learning curve

Disease location	Cases (n=94)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Accuracy (%)
Right endometrioma	42 (55.3%)	100	100	100	100	100
Left endometrioma	42 (55.3%)	100	100	100	100	100
Uterosacral ligaments	49 (52.1%)	95.9	93.3	94	95.5	94.7
Posterior compartment	50 (53.2%)	96.2	95.1	96.2	95.1	95.7
Bladder	11 (11.7%)	90.9	100	100	98.8	98.9

Conclusion

- First-line imaging technique to select patients for surgery and to predict the presence (and localization) of severe endometriosis
- Allows planning of multidisciplinary surgery
- Superficial endometriosis can be diagnosed
- A “normal” ultrasound does not rule out mild peritoneal endometriosis
- Heavily operator dependent
- In doubtful or difficult cases other preoperative investigations may be used

Thank you



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