



JUNIC

**SPECIALIST IMAGING
AND WOMENS CENTRE**

Advanced Gynaecological Ultrasound

By

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ADVANCED GYNAECOLOGICAL ULTRASOUND

- ☐ *Evolution of AGU*

- ☐ *Technological advances in ultrasound imaging*
- ☐ *Emergence of specialists with special interest and training in gynaecological Imaging*

- ☐ *Clearly defined role in*

- ☐ *Triage of adnexal masses*
- ☐ *Evaluation of early pregnancy complications*
- ☐ *Quantification of female pelvic organ prolapse*
- ☐ *Preoperative evaluation of women with suspected endometriosis*
- ☐ *Procedural gynaecological ultrasound*
 - ☐ *Saline infusion sonography*
 - ☐ *Saline/contrast sono Hystero salpingography*

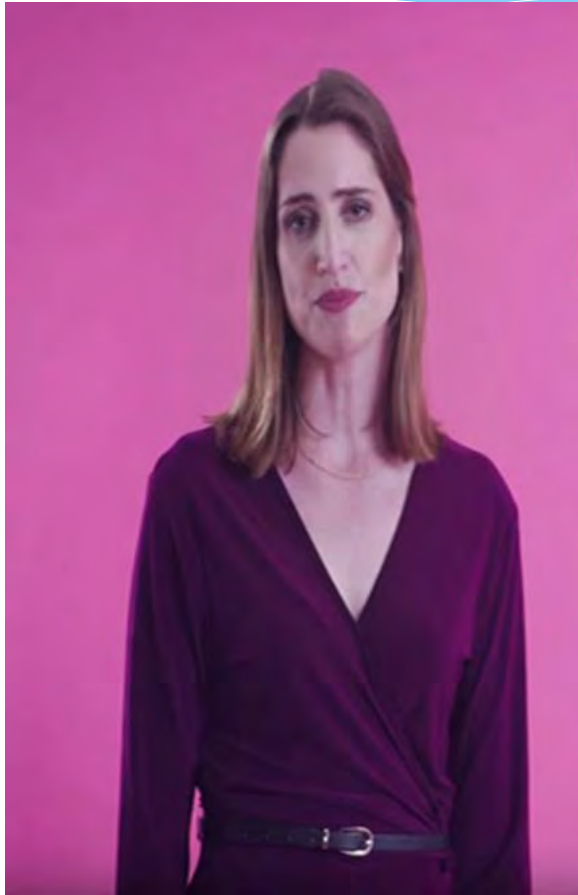
DEFINITIONS

Advanced Gynaecological ultrasound for endometriosis refers to a detailed and targeted assessment of the female pelvis using specific ultrasound techniques performed by an appropriately trained sonologist with information derived from such an assessment utilized to improve patient counselling and the planning of appropriate medical and/or surgical treatment.



Menakaya et al 2017 Awareness and Utilization Of Advanced Gynaecological Ultrasound In The Pre-Operative Work Up Of Women Planning Surgery For Endometriosis: A Survey of RANZCOG Fellows & Trainees - In review

Case Report



39 year old female public servant

Evaluation of Endometriosis.

History of dysmenorrhoea commencing upto 2 weeks prior to periods and lasting to cessation of bleeding.

Associated history of dyschezia. No history of dyspareunia (nil coitarche), No haematochezia.

Symptoms improved with COCP but ceased following DVT. Long term COCP use since 16yrs old.

Bloods - NAD. Has has a normal pelvic scan in January 2016.

General	Previous	DVT, 2011, after air travel ? COCP related.
History	diseases	BCC, Excised forehead.

GYN History	Age at menarche 11 yrs. Never had pap smear - nil coitarche
	Time off school because of dysmenorrhoea.

OB History	Gravida: 0. Para: 0.
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discrete fibroid identified. The endometrium is uniform thickness (mm).

Both ovaries are similar in size (right ovary 10cc in volume, left ovary 14cc in volume).
No adnexal mass or free fluid.

Comment:

Normal examination. No specific cause for pain identified on the limitations of transabdominal scanning.

Opinion

Diagnostic laparoscopy in pre-surgical planning for higher stage endometriosis: Is it still relevant?

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Case Report



- 1) Site specific tenderness (VAS) Uterus, LOvary, ROvary, LUSL, RUSL, POD.
- 2) Ovarian Mobility: LOvary immobile adherent to the uterus ROvary immobile adherent to the uterus

The anterior wall of the rectum demonstrates a large deep infiltrating endometriosis (DIE) measuring 18 x 12mm demonstrating the "indian head dress" sign consistent with submucosal involvement. There is a demonstrable non bowel left USL DIE measuring 6 x 6mm.

The bowel and uterosacral nodule together with the retroverted uterine fundus and left ovary form a complex of adhesions in the POD.

Higher stage endometriosis - POD obliteration, bowel and LUSL endometriosis, Bilateral endometriomas.

Findings discussed with patient.

Issues:

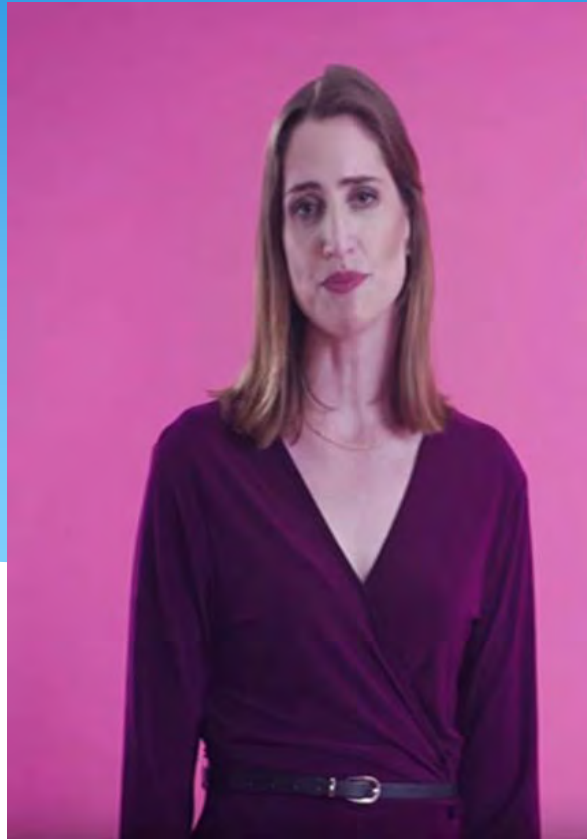
Symptomatic severe endometriosis.

Review in 3 weeks to discuss management options.

Value Of Care In Endometriosis Management

".....In Endometriosis, it is important to avoid or reduce the use of low-value care, i.e. interventions with defined harms and uncertain benefits, or whose effectiveness is comparable with less expensive alternatives..."

Vercellini P, Giudice LC, Evers JL, Abrao M. Reducing low-value care in endometriosis between limited evidence and unresolved issues: a proposal. Hum Reprod. 2015 Sep; 30 (9): 1996 - 2004.



REDUCING LOW VALUE CARE IN ENDOMETRIOSIS

☐ *Non surgical diagnosis:*

- *Historical variables*
- *Physical examination*
- *Advanced Gynecological Scan*

☐ *Reduce need for diagnostic laparoscopy*

☐ *Encourage laparoscopy for treatment*

☐ *Indication for surgery*

☐ *Balance between demonstrated benefits (↑fertility vs. Pain relief)*

☐ *Cost-effectiveness*

☐ *Patient preference after detailed information*

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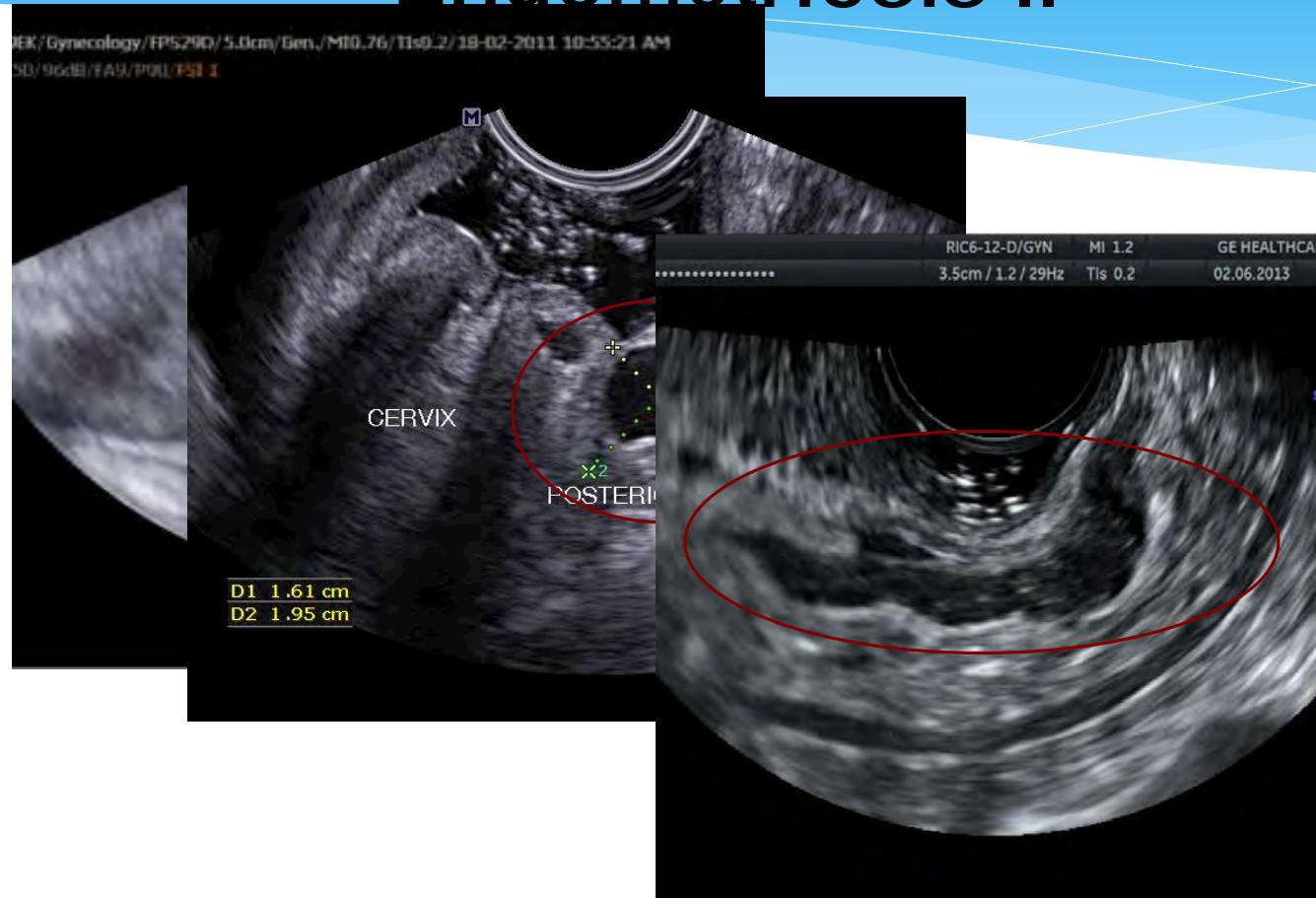
Ultrasound In Endometriosis

- *Ubiquitous & Resource friendly*
- *Easily Accessible At Primary Level Of Care*
- *Potential To Reduce Diagnostic Delays*
- *Diagnostic performance for different phenotypes of endometriosis*

Menakaya et al JUM 2015



Ultrasound In Endometriosis II

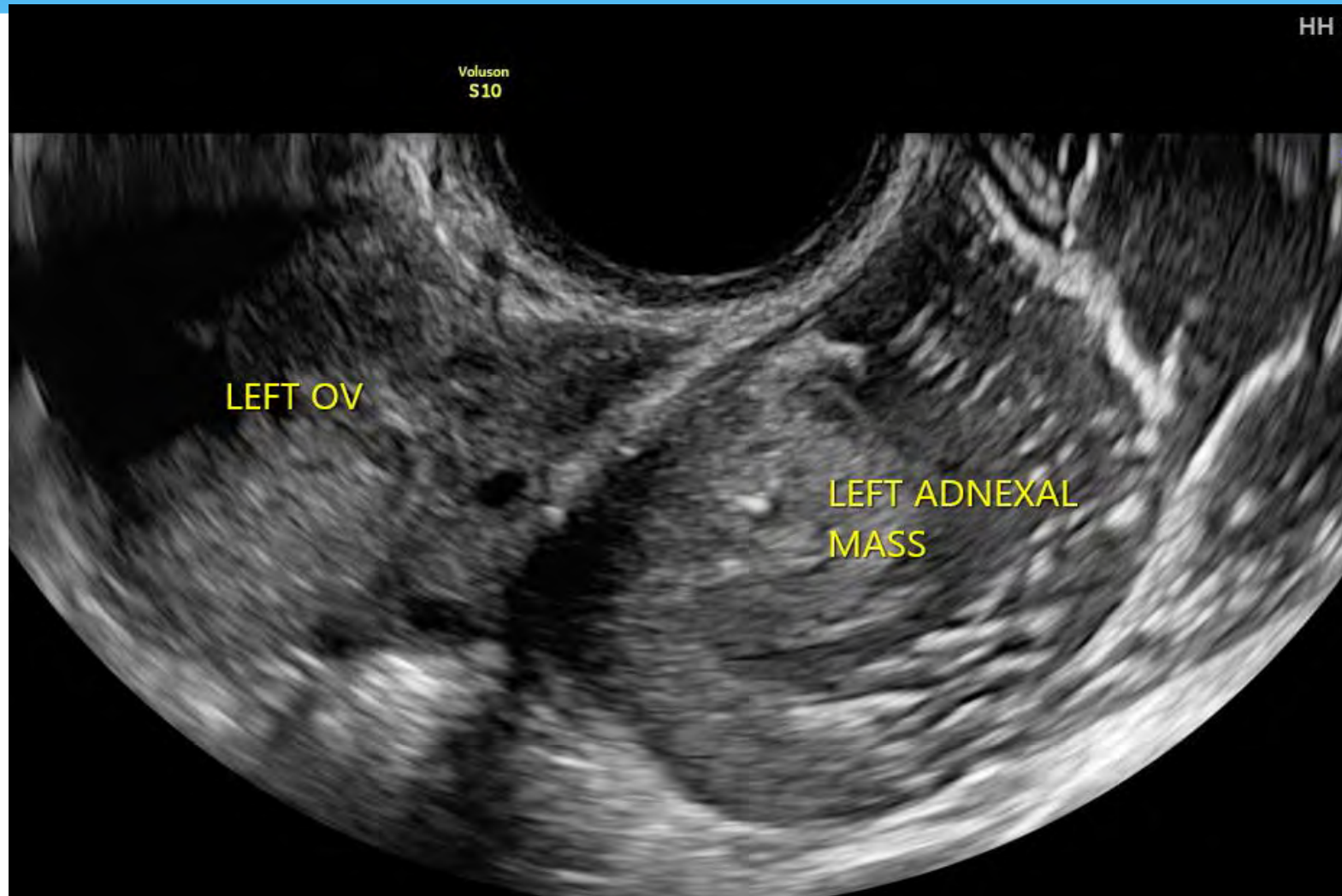


Voluson
S10

HH P

LEFT OV

LEFT ADNEXAL
MASS



Diagnostic Performance of TVS

Non bowel lesions

LOCATION OF LESION	SENSITIVITY % (CI)	SPECIFICITY % (CI)	PRE TEST PROBABILITY %	POST TEST PROBABILITY %
UTEROSACRAL	53 (35 - 70)	93 (83 - 97)	42	85
VAGINAL	58 (40 - 74)	96 (87 - 99)	18	77
BLADDER	62 (40 - 80)	100 (97 - 100)	6	93
RECTO VAGINAL SEPTUM	49 (36 - 62)	98 (95 - 99)	26	90

11 Studies; 801 Citations; 1532 Patients

Conclusion: Overall diagnostic performance of TVS is fair with high specificity for all locations

Guerriero S et al UOG 2016 doi:10.1002/uog.15667

Diagnostic Performance of TVS: *Bowel lesions & POD obliteration*

LOCATION OF LESION	SENSITIVITY % (CI)	SPECIFICITY % (CI)	LR+	LR-
<i>Recto sigmoid</i> 8 - 12%	91 (85 - 94)	98 (96 - 99)	38.4 (20.2 - 73.1)	0.09 (0.06 - 0.16)
★ <i>POD obliteration</i>	83 - 96	92 - 97	10.7 - 29.2	0.12 - 0.17

19 Studies; 801 Citations; 2669 Patients
★ ***4 studies; <1000 patients***

Bowel endometriosis and POD obliteration are phenotypes of higher stage endometriosis that requires a multidisciplinary team approach (bowel surgeon) for optimal surgical management

- World Endometriosis Society (WES), European Society of Human Reproduction (ESHRE)

Guerriero S et al; UOG 2016 doi:10.1002/uog.15667 ★ *Menakaya et al; JUM 201*

SOUND JUDGMENT SERIES

Sonography Should Be the First Imaging Examination Done to Evaluate Patients With Suspected Endometriosis

Beryl R. Benacerraf, MD, Yvette Groszmann, MD


Editorial


Capacity building in endometriosis ultrasound: are we there yet?

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Systematic Evaluation of Women With Suspected Endometriosis Using a 5-Domain Sonographically Based Approach

Uche Menakaya, MBBS, MCE, DRANZCOG, FRANZCOG, Shannon Reid, MBBS, FRANZCOG, Fernando Infante, MBBS, FRANZCOG, George Condous, MBBS (Adel), MRCOG, FRANZCOG

 Article includes CME test.

 Videos online at www.jultrasoundmed.org

The Sound Judgment Series consists of articles highlighting the clinical value of using ultrasound in specific clinical diagnoses where ultrasound has shown comparative or superior value. In many cases, these articles support the practice of using ultrasound first. The series is meant to serve as an educational tool for medical and sonography students and clinical practitioners and may help

In recent years, knowledge has evolved regarding the role of transvaginal sonography in the assessment of the pouch of Douglas status and the preoperative prediction of extraovarian endometriosis in specific locations. Despite these advances in transvaginal sonography, the challenge of developing a comprehensive, cost-effective, and reproducible preoperative classification system for endometriosis remains. Critical to this classification system should be a sonographically based evaluation protocol that is systematic, evidence based, and reproducible with clearly defined end points. To date, no structured evaluation protocol exists for the assessment of the pelvis in women with suspected endometriosis. In this article, we propose a domain-based evaluation protocol for the assessment of women with suspected endometriosis using transvaginal sonography.

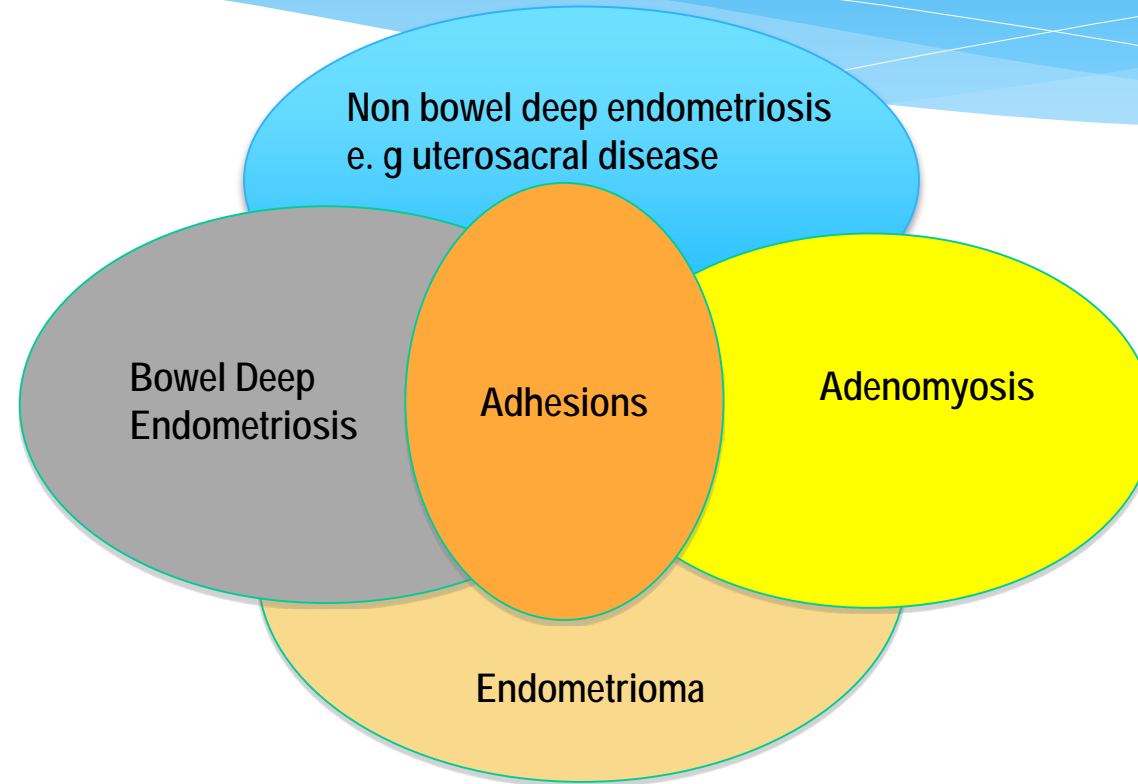
Key Words—domain; endometriosis; gynecologic ultrasound; transvaginal sonography

Five Domain Sonographic Approach

Domain	TVS Technique	Endometriosis Phenotype
4	Office Gel Sonovaginography	Non bowel anterior and Posterior compartment
5	Assessment of anterior wall of large bowel	Bowel DIE
	"sliding sign"	

"The Endometriosis Scan"

Advanced Gynaecology Sonography For Endometriosis



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Ultrasound Obstet Gynecol 2016

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Systematic approach to sonographic evaluation of the pelvis in women with suspected endometriosis, including terms, definitions and measurements: a consensus opinion from the International Deep Endometriosis Analysis (IDEA) group

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Editorial

Integrating the concept of advanced gynaecological imaging for
endometriosis

Performance Of An Ultrasound Based Endometriosis Staging System (UBESS) For Predicting The Level Of Complexity Of Laparoscopic Surgery For Endometriosis

*Menakaya UA et al, UOG 2016 Jan 14. doi:
10.1002/uog.15858.*

*Winner of the Dr. Carlo Romanini Award on Endometriosis
AAGL 44th Global Congress
November 2015, Las Vegas, USA*

TABLE 1: THE ULTRASOUND BASED ENDOMETRIOSIS STAGING SYSTEM (UBESS) WITH SONOGRAPHIC FEATURES ASSESSED WITH TVS (+/- Enhanced TVS techniques) AND THE CORRELATION WITH RCOG LEVELS OF SURGICAL COMPLEXITY

UBESS STAGES	FEATURES ASSESSED ON TRANSVAGINAL ULTRASOUND (+/-Enhanced TVS Techniques)	LEVEL OF SURGICAL COMPLEXITY
Stage I	Normal mobile ovaries, absent non bowel or bowel DIE, Normal POD +/- SST	Level 1 (Negative laparoscopy or Mild stage disease)
Stage II	Endometrioma +/- immobile ovaries, +/- non bowel DIE, absent bowel DIE + Normal POD	Level 2 Moderate stage disease
Stage III	Bowel DIE +/- immobile Endometrioma +/- abnormal POD	Level 3 Higher stage disease

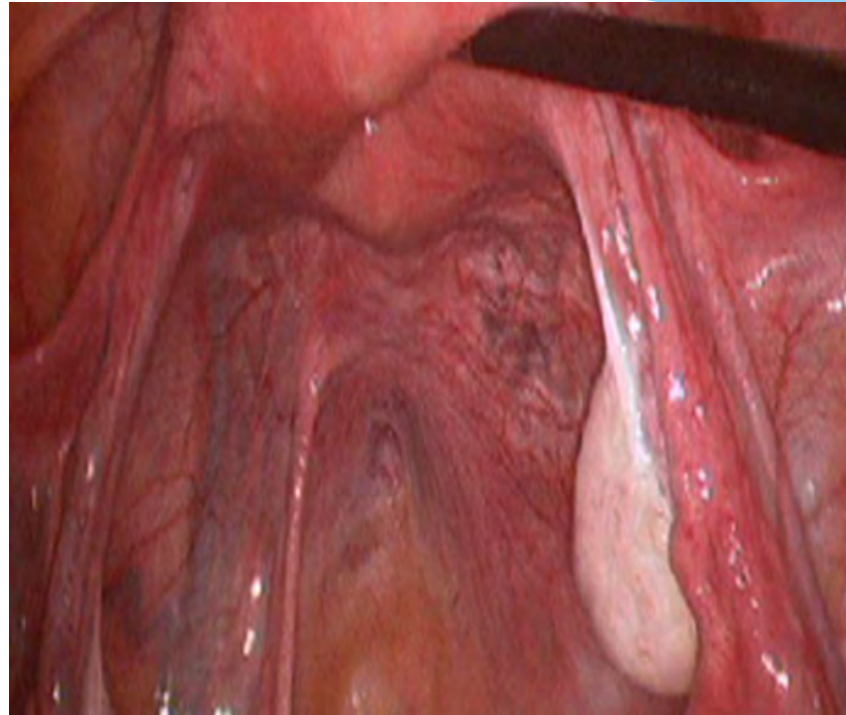
Reproduced with permission from Menakaya et al²⁵

LEGEND:

DIE: deep infiltrating endometriosis, POD: Pouch of Douglas, SST: site specific tenderness.
Levels 1 – 3 based on RCOG laparoscopic levels of surgical complexity³⁴

Overall accuracy	84.9%
Weighted Cohen's Kappa (K)	0.82

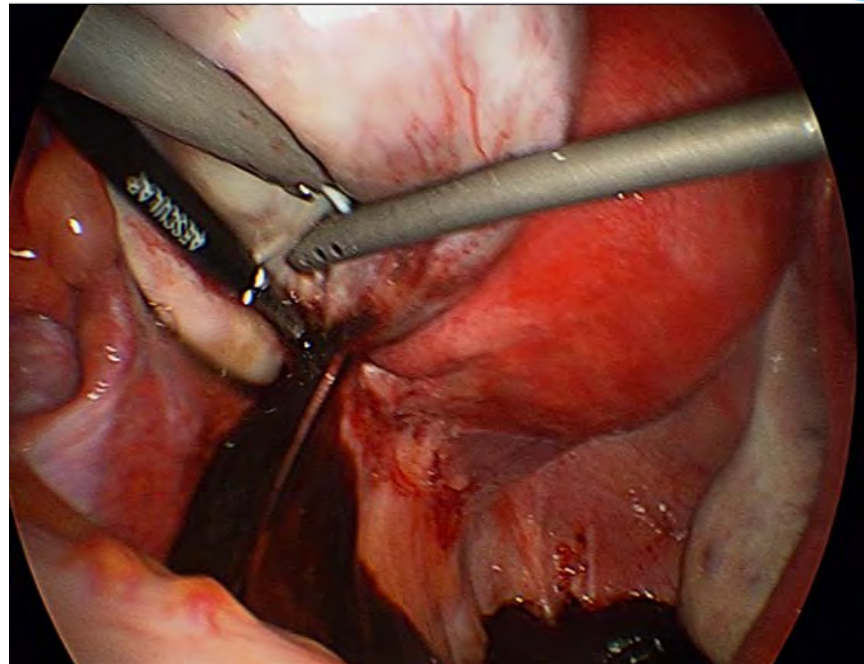
UBESS I



Accuracy: 87.5%
Sensitivity: 83.3%
PPV: 90.9%

*Menakaya UA et al, UOG 2016 Jan 14. doi:
10.1002/uog.15858.*

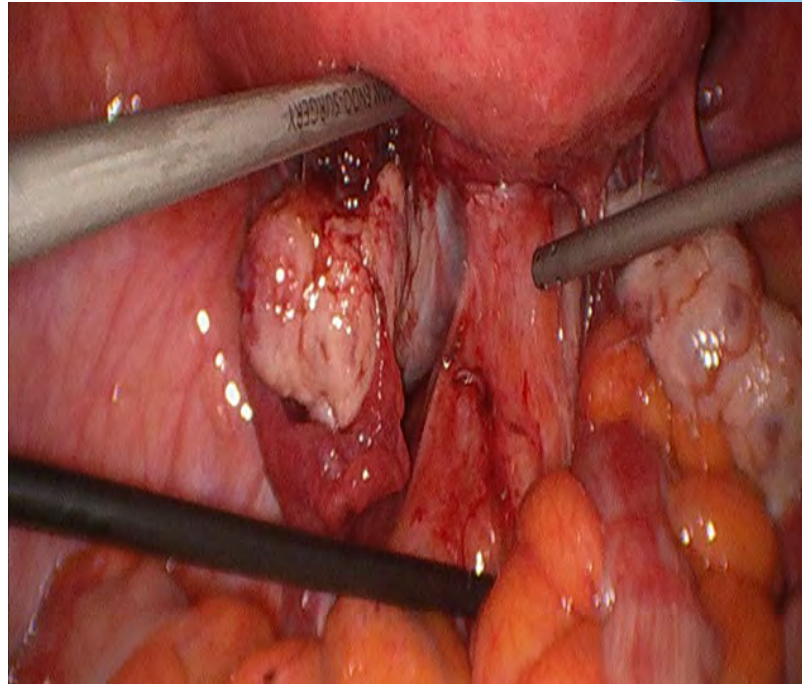
UBESS II



Accuracy: 87.7%
Sensitivity: 73.7%
PPV: 65.1%

*Menakaya UA et al, UOG 2016 Jan 14. doi:
10.1002/uog.15858.*

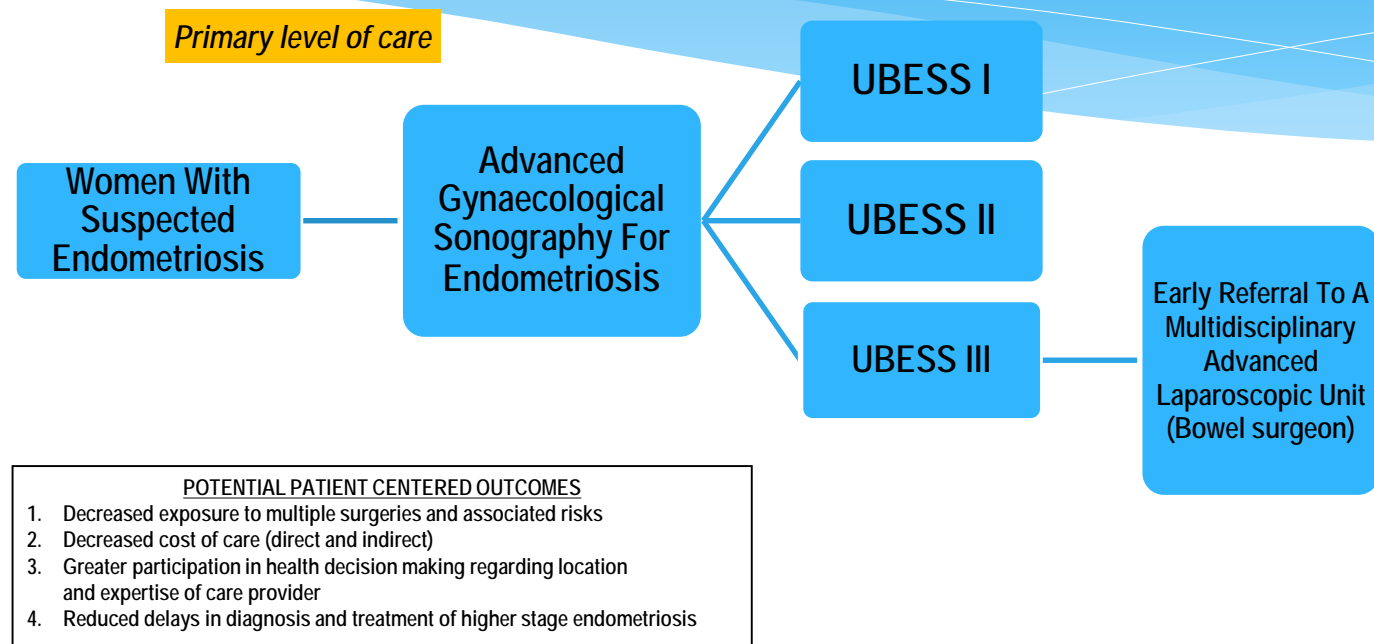
UBESS III



Accuracy: 95.3%
Sensitivity: 94.8%
PPV: 90.3%

*Menakaya UA et al, UOG 2016 Jan 14. doi:
10.1002/uog.15858.*

Proposed Clinical Approach to Managing Women with Higher Stage Endometriosis using UBESS



THE UBESS APPROACH

Menakaya UA et al, ANZJOG 2016

Endometriosis at the primary level of Care

For General practitioners

- *Engender early and appropriate referral*
- *Appreciate severity of disease*
- *Improve patient education*

For Patient

- *Awareness of Disease Severity*
- *Early decision making about fertility issues.*
- *Empowerment*



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SPECIALIST IMAGING
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*Thank You
For Listening*

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