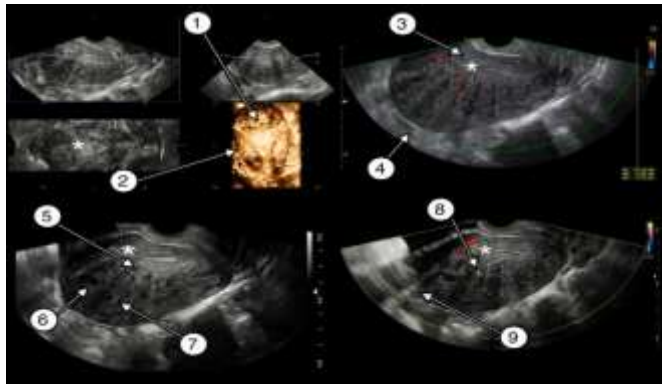
Classification of Endometriosis

ASRM,ENZIAN

Adenomyosis –

MUSA classification



Dr Vandana Gupta
(Gold Medalist)
MS ObGyn ,FICOG,CCGDM

Dr. Vandana Gupta

Coordinator - Delhi Gynae Forum & Chairman of GDM & stillbirth prevention DGF

MBBS MS (Gold Medallist) FICOG
CCGDM(PHFI)

Special Interests

- Infertility Adolescent
- Health Endocrinology
- Emergency Obstetrics
- Gynae Endoscopy
- Menopausal Clinic
- Colposcopy

Work Profile

Senior Consultant - OBS & Gynae

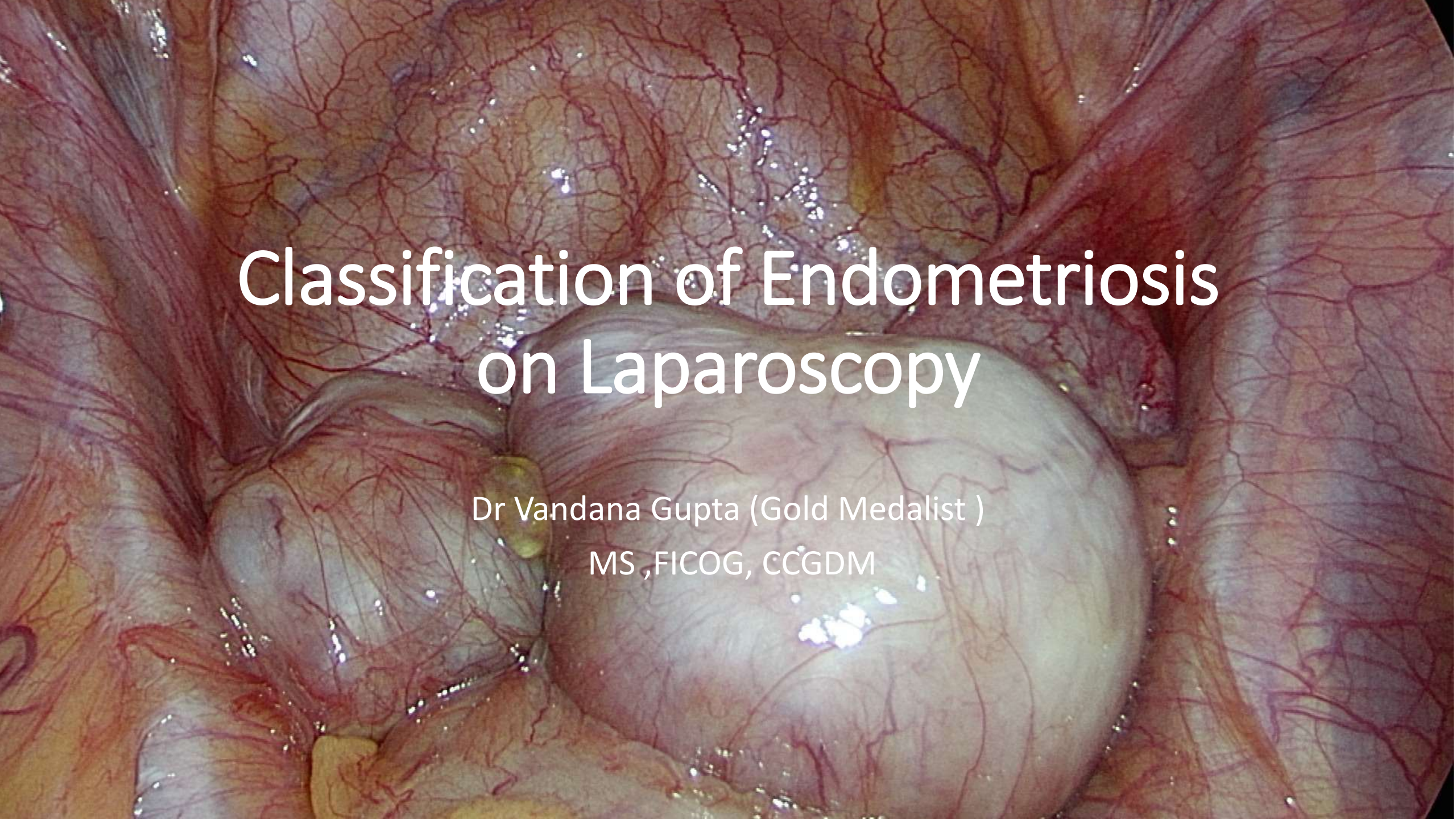
- Max Hospital, Patparganj
- Apex Citi Hospital

Memberships

- IMA EDB
- Delhi Gynae Forum East
- Indian Fertility Society
- Society of Midlife Management
- Endometriosis committee of AOGD
- Safe Motherhood Committee – AOGD
- Reproductive and Endocrinology committee AOGD
- FDMSE committee of FOGSI
- Executive Member of Delhi ISAR,ISPAT
- NARCHI , IMS
- Past –Pre sident : DGF – East (23-25)

Awards and Accolades

- Dr. G.P. Rawat Memorial Gold medal for OBS and Gyane
- Mrs. Vazir Singh Chowke Silver medal for OBS and Gyane
- Dr. Day appreciation award - DGF 2015 Abdul Kalam appreciation award - DGF 2016
- DMA distinguished services award - 2016
- IMA EDB excellence award - 2017
- Presidents appreciation award - WOW India 2017 and IMA EDB 2017
- Golden icon Award – ISAR 2023
- Vishisht Seva Award – DGF 2024
- APJ Abdul Kalam Excellence Award – DGF 2024
- APJ Abdul Kalam Pinnacle Award –DGF 2025

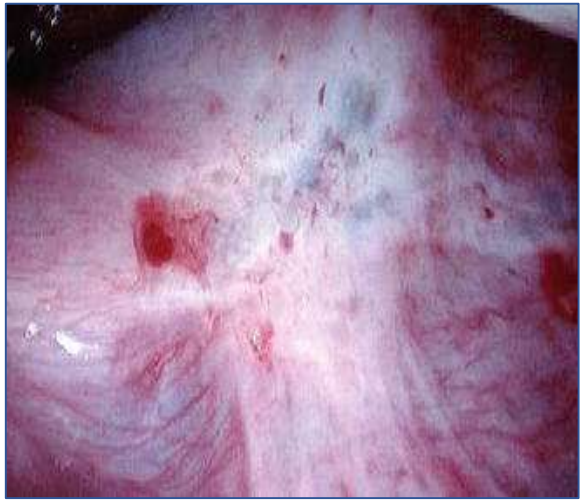


Classification of Endometriosis on Laparoscopy

Dr Vandana Gupta (Gold Medalist)

MS ,FICOG, CCGDM

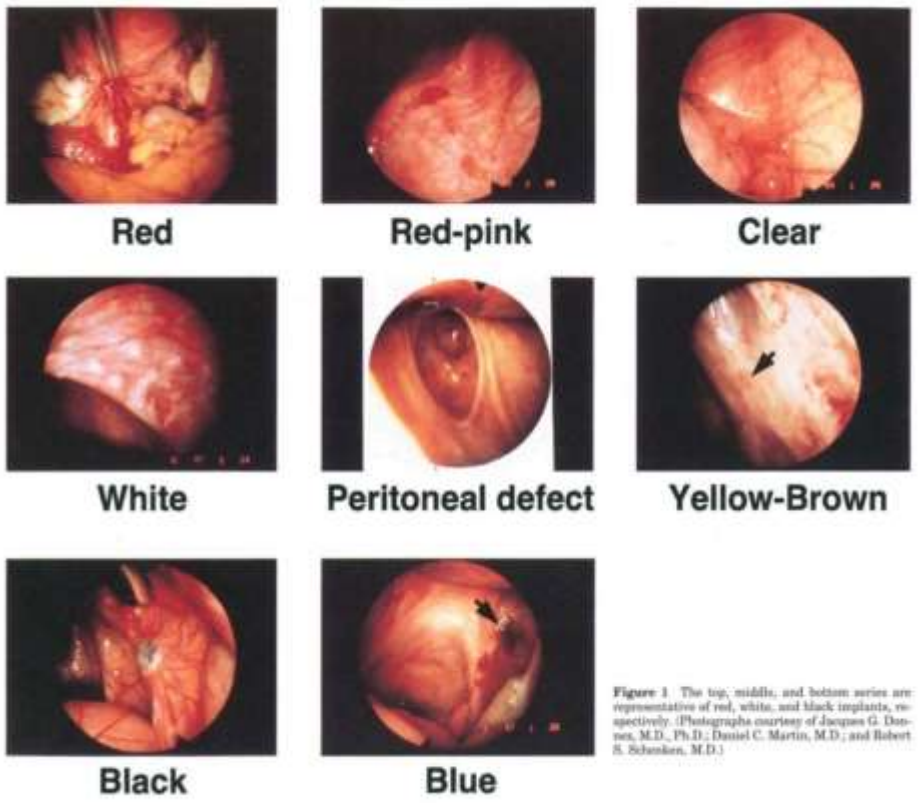
Endometriosis Definition



The microscopic definition of endometriosis implies the presence of endometrial glands and stroma outside the endometrial cavity and uterine musculature.

Types of lesion

Clear	Powder-burn
White	Brown
Red	Blue-black
Polypoid	Brown
Flame-like	Yellow lesions



Defects in the peritoneum or peritoneal windows may contain these lesions

Anatomic Sites of Endometriosis

- Posterior pelvis compartment most common
- Common locations, in descending order:
  - Ovaries,
  - Cul-de-sac,
  - Broad ligament,
  - Uterosacral ligaments.
- More in left hemipelvis 64% vs right hemipelvis.
- More on the left vs the right ovary
  (sigmoid colon alters intraperitoneal fluid movement)

Extragenital location of endometriosis

- Bowel is most common
- in order of decreasing frequency
  - Sigmoid colon (>65% of cases),
  - Rectum
  - Terminal ileum
  - Appendix
  - Cecum.
- Lesions are superficial and limited to the serosa
- Transmural involvement may cause
  -cyclic diarrhea - rectal bleeding
  - abdominal distension and &
  - rarely - bowel obstruction.

- Urinary tract is involved in only 1%
- Bladder (84%).
- Symptoms are cyclical urinary symptoms, such as
  -Urgency,
  -Frequency, and
  -Suprapubic pain with or without hematuria

Ovarian Endometriosis

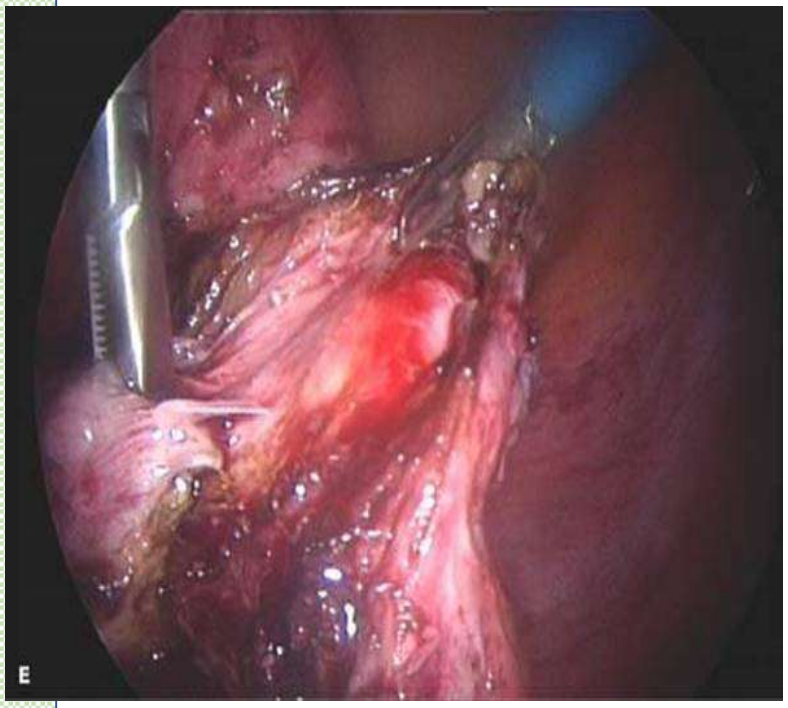
- Ovarian endometriosis or endometriomas
  - increase with age
  - associated with a more advanced stage of the disease
- Endometriomas & peritoneal implants occur together 77% and 85.4% experienced pelvic pain
- Isolated endometrioma 38.3% experienced pain
- Uniloculated or multiloculated
- More common in the left ovary,

Deep Endometriosis

- Invasion of endometriotic cells deeper than 5 mm
- Associated with increased pain

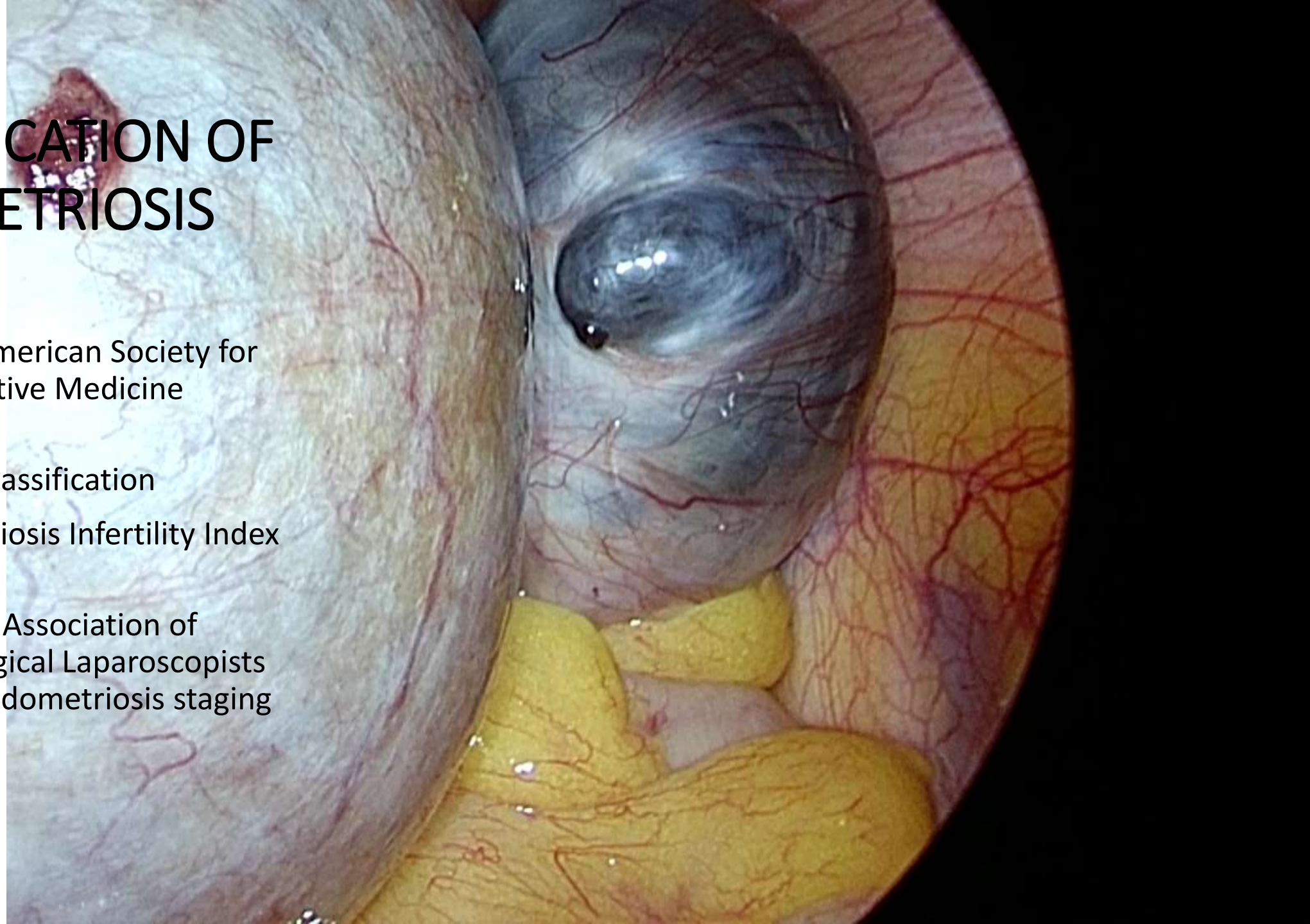
  In a study looking at 93 women with deep infiltrating peritoneal endometriosis,

  - 61% had concomitant superficial implants
  - 51% had endometriomas.
  - 7% had stand alone deep nodules



CLASSIFICATION OF ENDOMETRIOSIS

1. revised American Society for Reproductive Medicine (rASRM)
2. ENZIAN Classification
3. Endometriosis Infertility Index (EFI)
4. American Association of Gynecological Laparoscopists (AAGL) endometriosis staging



ASRM-CLASSIFICATION

ASRM Clasification

SURGICAL classification

Original AFS (1979) (ASRM – American society of reproductive medicine)

The original AFS (ASRM) classification, developed in 1979

It focused on visual assessment of endometriosis

during surgery and categorized it into stages based on

- visual assessment of lesion size,
- location,&
- adhesions on the peritoneum, ovaries, and fallopian tubes.

Categories
- Minimal
- Mild
- Moderate
- Severe

Revised ASRM (1996):

Introduced a point scoring system to quantify the severity of endometriosis.

Classification of Endometriosis – r-ASRM

The weighted value system was scored and

summed according to the size of the

-endometriotic lesions and

the severity of adhesion in

the ovaries, peritoneum,

and fallopian tubes

- Unilateral or bilateral

- Size of the endometrioma along with the presence of filmy vs. dense adhesions

The staging system was divided into four stages:

I **Mild** -1 to 5 points,

II **Moderate** 6 to 15 points,

III **Severe** 16 to 30 points,

IV **Extensive** 31 to 54 points

The rASRM classification aimed to better correlate the surgical findings with fertility outcomes, although its prognostic accuracy for fertility has been questioned

Revised ASRM (1996)

- **Key Changes in rASRM:**
- **Detailed scoring for endometriomas:** Ovarian endometriomas >3 cm are scored higher than smaller ones.
- **Adhesion scoring:** Dense adhesions are scored higher than filmy adhesions, and adhesions involving specific structures (ovaries, tubes, cul-de-sac) are also scored differently.
- **Cul-de-sac obliteration:** Complete obliteration of the cul-de-sac receives a high score, indicating severe disease

Revised ASRM Classification

4 stages (severity, size, depth, location, and amount of lesions)

- stage I (minimal disease) : 1–5
- stage II (mild disease) : 6–15
- stage III (moderate disease): 16–40 points
- Stage IV (severe disease) : 40 points

Deep and large ovarian endometriotic lesions: 20 points

Dense adhesions on ovaries & within fallopian tubes: 16 points

Complete POD obliteration: 40 points →severe endometriosis

American Society for Reproductive Medicine
Revised Classification of Endometriosis

Stage I (Minimal) – 1-5
Stage II (Mild) – 6-15
Stage III (Moderate) – 16-40
Stage IV (Severe) - > 40

Peritoneum	**Endometriosis**	**< 1 cm**	**1-3cm**	**> 3cm**
	Superficial	1	2	4
	Deep	2	4	6
Ovary	R Superficial	1	2	4
	Deep	4	16	20
	L Superficial	1	2	4
	Deep	4	16	20
	POSTERIOR CUL-DE-SAC OBLITERATION	**Partial**		**Complete**
		4		40
Ovary	**Adhesions**	**< 1/3 Enclosure**	**1/3 – 2/3 Enclosure**	**> 2/3 Enclosure**
	R Filmy	1	2	4
	Dense	4	8	16
	L Filmy	1	2	4
	Dense	4	8	16
Tube	R Filmy	1	2	4
	Dense	4*	8*	16
	L Filmy	1	2	4
	Dense	4*	8*	16

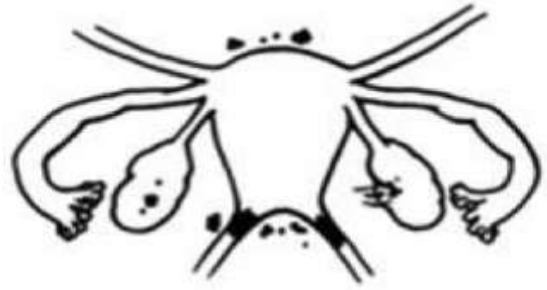
* If the fimbriated end of the fallopian tube is completely enclosed, change the point assignment to 16

EXAMPLES & GUIDELINES

STAGE I (MINIMAL)

PERITONEUM			
Superficial Endo	–	1-3cm	· 2
R. OVARY			
Superficial Endo	–	< 1cm	· 1
Filmy Adhesions	–	< 1/3	· 1
TOTAL POINTS			4

STAGE II (MILD)

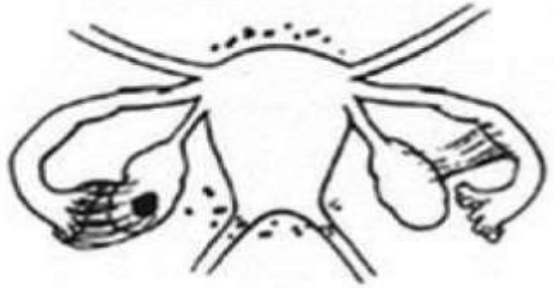


PERITONEUM			
Deep Endo	–	> 3cm	· 6
R. OVARY			
Superficial Endo	–	< 1cm	· 1
Filmy Adhesions	–	< 1/3	· 1
L. OVARY			
Superficial Endo	–	< 1cm	· 1
TOTAL POINTS			9

STAGE III (MODERATE)

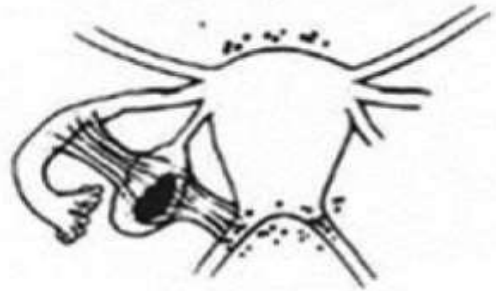
PERITONEUM			
Deep Endo	–	> 3cm	· 6
CULDESAC			
Partial Obliteration			· 4
L. OVARY			
Deep Endo	–	1-3cm	· 16
TOTAL POINTS			26

STAGE III (MODERATE)



PERITONEUM			
Superficial Endo	–	> 3cm	-4
R. TUBE			
Filmy Adhesions	–	< 1/3	· 1
R. OVARY			
Filmy Adhesions	–	< 1/3	· 1
L. TUBE			
Dense Adhesions	–	< 1/3	· 16*
L. OVARY			
Deep Endo	–	< 1 cm	-4
Dense Adhesions	–	< 1/3	-4
TOTAL POINTS			30

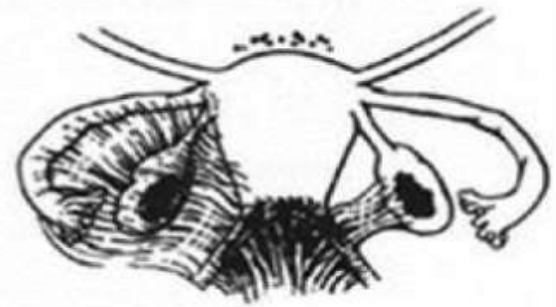
STAGE IV (SEVERE)



PERITONEUM			
Superficial Endo	–	> 3cm	-4
L. OVARY			
Deep Endo	–	1-3cm	· 32**
Dense Adhesions	–	< 1/3	· 8**
L. TUBE			
Dense Adhesions	–	< 1/3	-8**
TOTAL POINTS			52

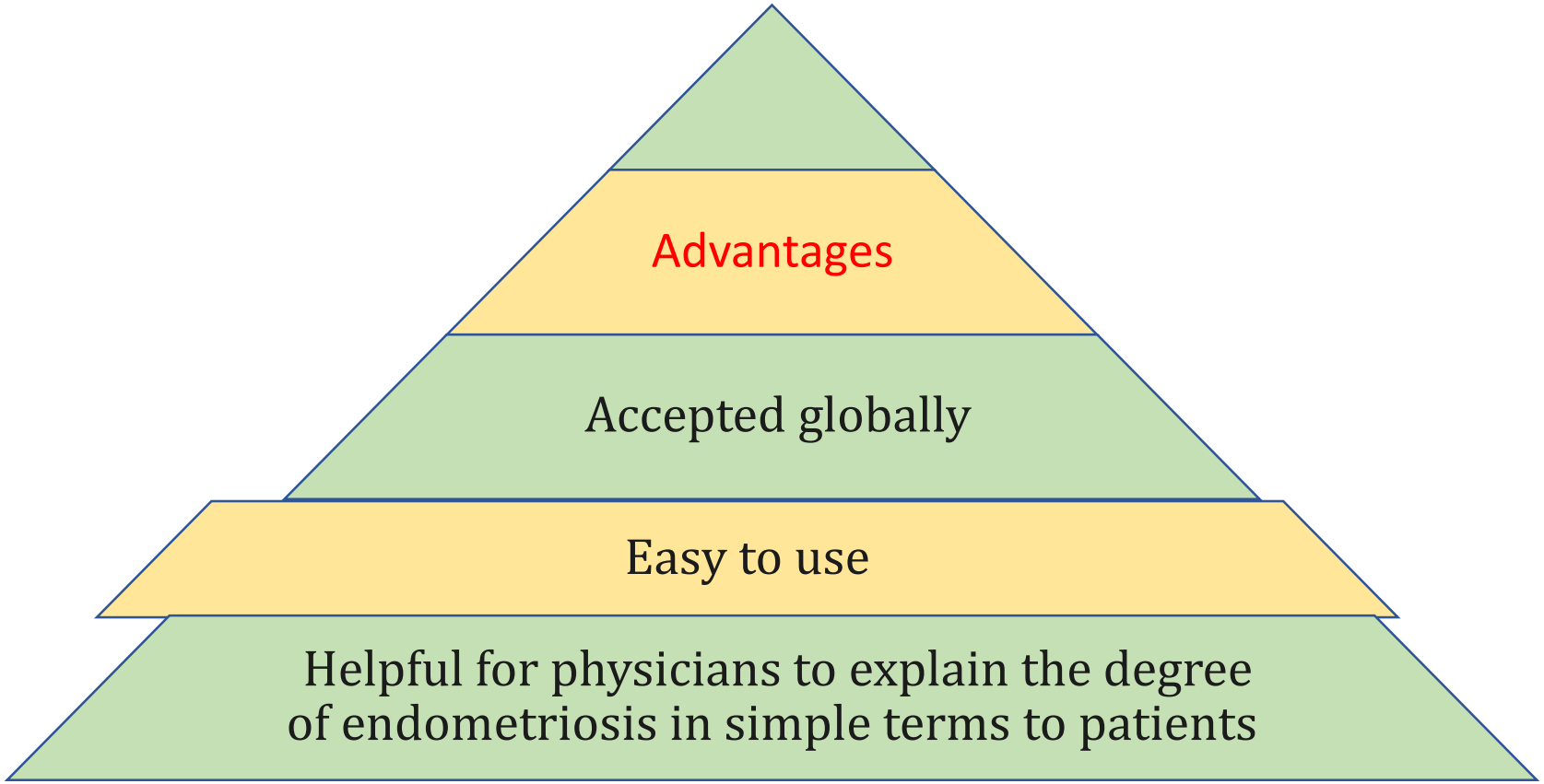
*Point assignment changed to 16
**Point assignment doubled

STAGE IV (SEVERE)



PERITONEUM			
Deep Endo	–	> 3cm	· 6
CULDESAC			
Complete Obliteration			· 40
R. OVARY			
Deep Endo	–	1-3cm	· 16
Dense Adhesions	–	< 1/3	· 4
L. TUBE			
Dense Adhesions	–	> 2/3	· 16
L. OVARY			
Deep Endo	–	1-3cm	· 16
Dense Adhesions	–	> 2/3	· 16
TOTAL POINTS			114

r-ASRM classification



DISADVANTAGES

- Lack of relationship between the stage of disease & pain severity
- Poor reproducibility and relies on visual parameters rather than histological analysis.
- Reduced prognostic accuracy for fertility
- Does not provide any morphological information on localization and mapping especially in DIE

ENZIAN classification

ENZIAN CLASSIFICATION

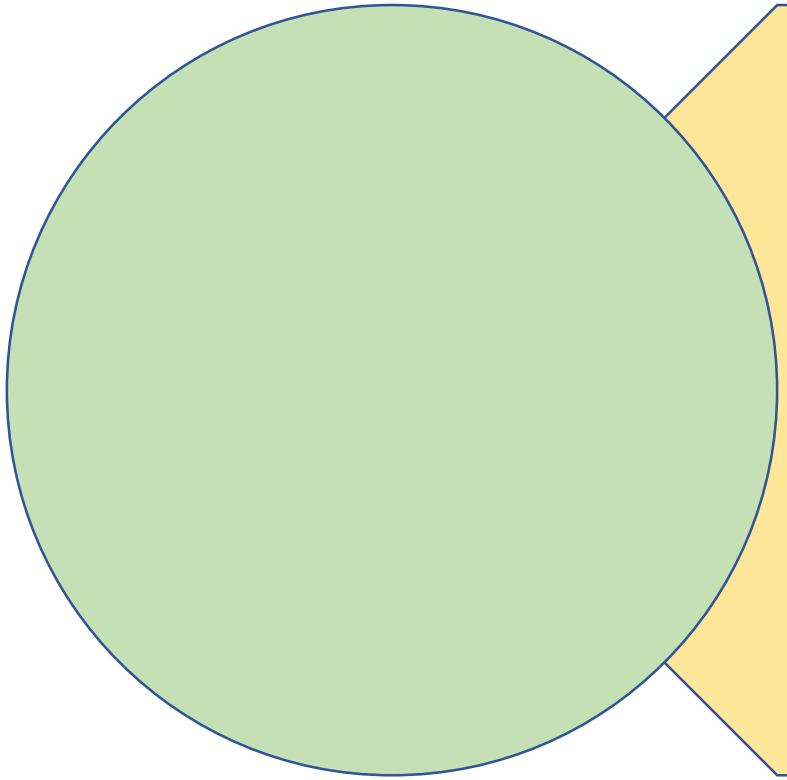
COMMENTARY

The #Enzian classification: A comprehensive non-invasive and surgical description system for endometriosis

Jörg Keckstein[1,2,3] | Ertan Saridogan[4] | Uwe A. Ulrich[1,5] | Martin Sillem[1,6,7] | Peter Oppelt[1,8] | Karl W. Schweppe[1] | Harald Krentel[1,9] | Elisabeth Janschek[1,10] | Caterina Exacoustos[11] | Mario Malzoni[12] | Michael Mueller[1,13] | Horace Roman[14] | George Condous[15] | Axel Forman[16] | Frank W. Jansen[17] | Attila Bokor[18] | Voicu Simedrea[19] | Gernot Hudelist[1,20]

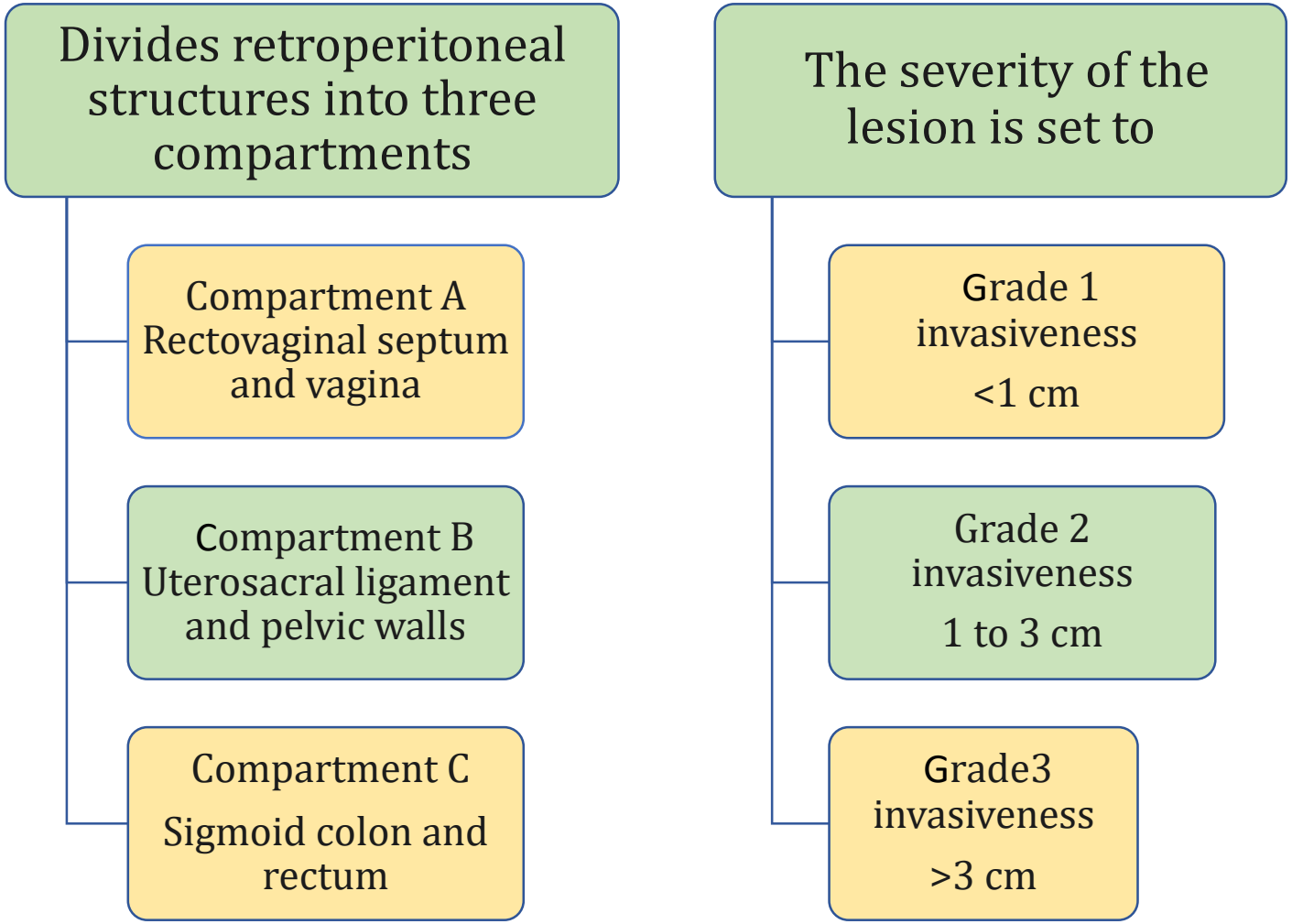
- 2003→2005→ 2011→2021, published by the SEF (Stiftung Endometriose-Forschung; Scientific Endometriosis Foundation), Austria as supplemental scoring system of rASRM with focus on DIE.
- Used mostly in German-speaking countries and is yet to be established as an international deep endometriosis classification system.
- Recognized as a valid and useful tool for the classification of DE in TVS, MRI and surgical methods.

ENZIAN classification

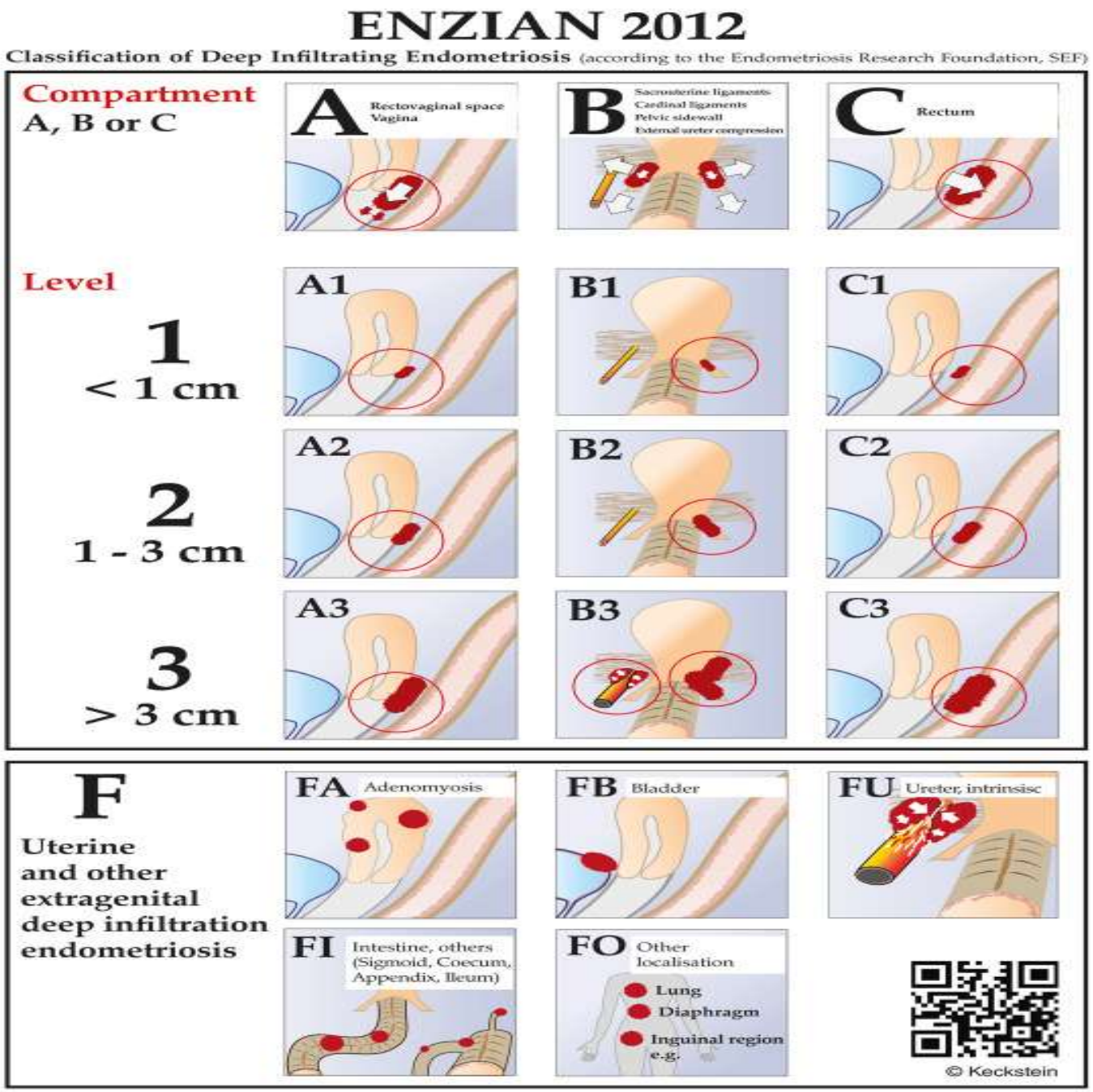


Two revisions of the ENZIAN classification system were carried out in 2010 and 2011 to correct the overlap between rASRM and ENZIAN systems and to make it easier to use

Revised ENZIAN classification



- The prefix “E” indicates the presence of a tumor of endometriosis
  - The number that follows the prefix indicates the size of the lesion
  - The lowercase English letter indicates the affected compartment
  - Two lowercase English letters mean bilateral disease
- The invasion of endometriosis to other organs in the pelvic cavity and to distant organs is expressed
  - “FA” is defined as adenomyosis
  - FB” as involvement of the bladder
  - “FU” as intrinsic ureter involvement
  - “FO” as involvement of other locations
  - “FI” as intestinal involvement.



Retroperitoneal structures are divided into the three compartments

- **Compartment A** - rectovaginal septum and vagina
- **Compartment B** - sacrouterine ligament to pelvic wall
- **Compartment C** - rectum and sigmoid colon

Severity was rated in the same way for all compartments:

- **Grade 1** - invasion <1 cm
- **Grade 2** - invasion 1–3 cm
- **Grade 3** - invasion >3 cm

The #Enzian classification:

A comprehensive non-invasive and surgical description system for endometriosis

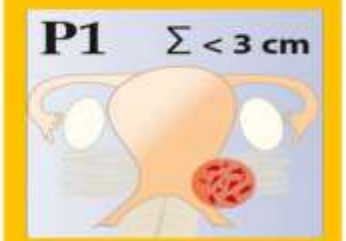
#Enzian

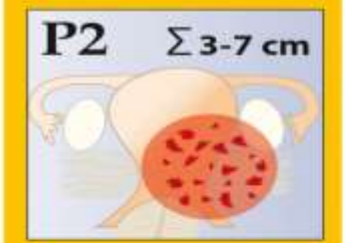
(Classification of Endometriosis)

PERITONEUM

P Peritoneum

- Sum of all diameters



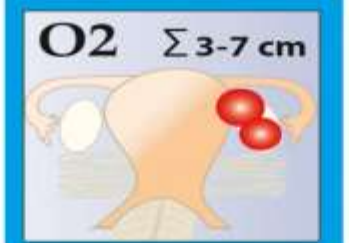


OVARY

O Ovary

- Sum of all diameters

left right



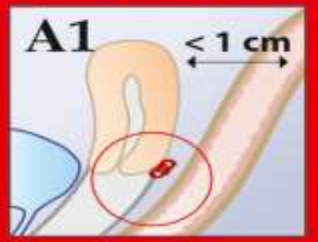
TUBE

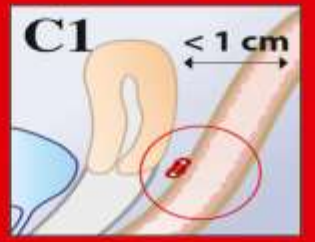
T Tubo-ovarian condition

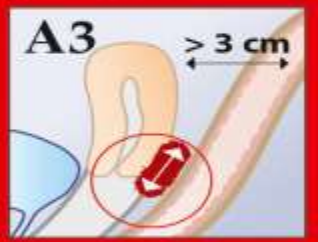
- Adhesions
- Motility
- Patency test

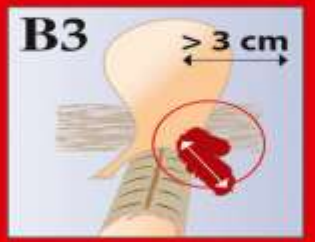
left right

DEEP ENDOMETRIOSIS









P _____

O ____ / ____ (left / right)

m ovary is missing
x unknown / not visible

T ____ / ____ (left / right)

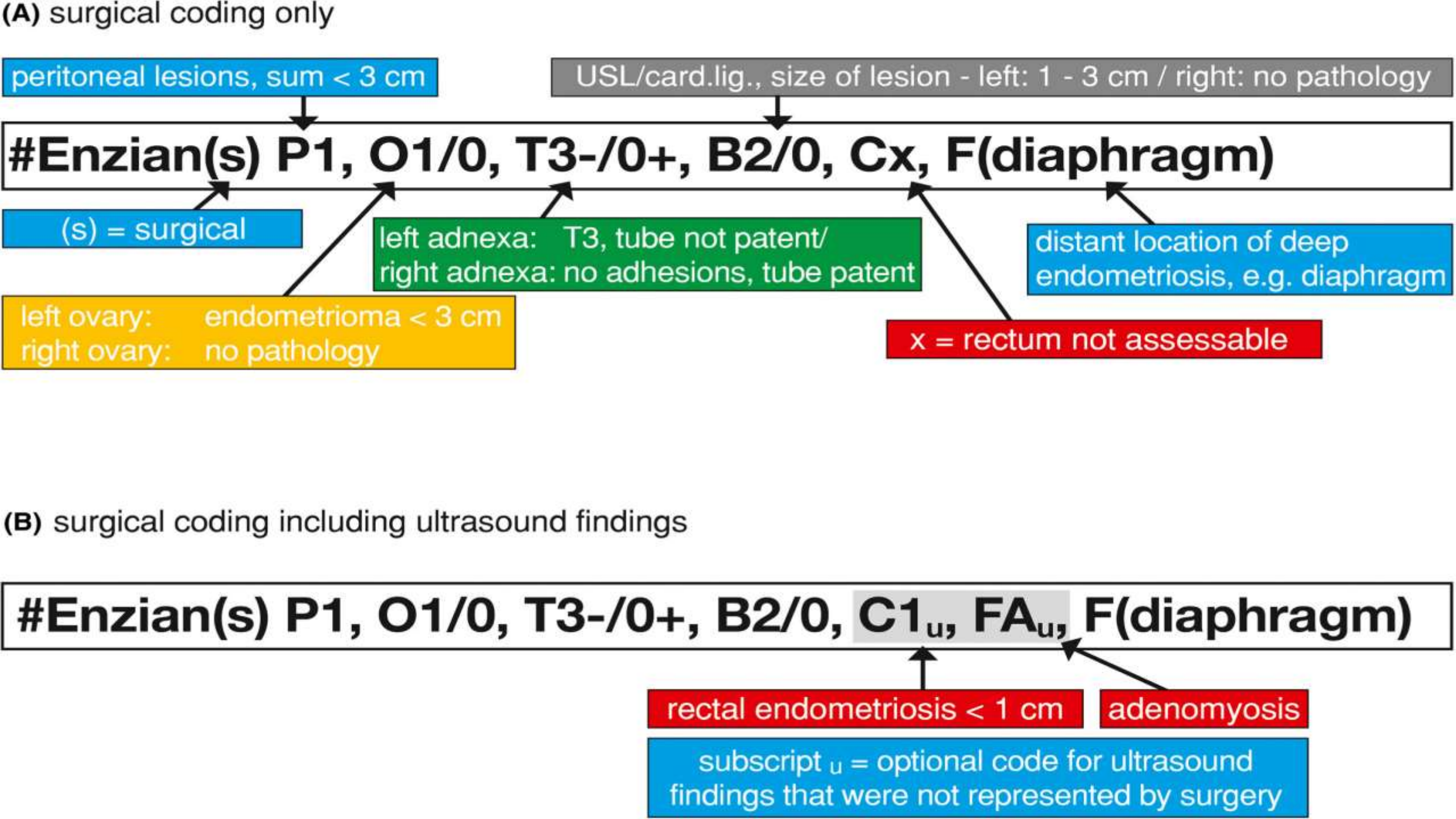
m tube is missing
x unknown / not visible
+ or - Patency test

A _____

B ____ / ____ (left / right)

C _____

F _____ (Location)


(A) surgical coding only
peritoneal lesions, sum < 3 cm
USL/card.lig., size of lesion - left: 1 - 3 cm / right: no pathology
#Enzian(s) P1, O1/0, T3-/0+, B2/0, Cx, F(diaphragm)
(s) = surgical
left adnexa: T3, tube not patent/
right adnexa: no adhesions, tube patent
distant location of deep endometriosis, e.g. diaphragm
left ovary: endometrioma < 3 cm
right ovary: no pathology
x = rectum not assessable
(B) surgical coding including ultrasound findings
#Enzian(s) P1, O1/0, T3-/0+, B2/0, C1u, FAu, F(diaphragm)
rectal endometriosis < 1 cm
adenomyosis
subscript u = optional code for ultrasound findings that were not represented by surgery

Advantages of the ENZIAN classification

- Provides detailed descriptions of the retroperitoneal structures
- Compartment divided into three sections and the severity of each compartment as well as that of the distant lesions, such as diaphragmatic and ureteral invasions, can be described.
- It can be determined by imaging modalities and used for surgical planning.
- Accuracy of the ENZIAN scores detected by preoperative MRI was 95% with a low false-negative rate of 4%
- Disease localization and extent, (revised ENZIAN score) are associated and correlated with the presence and severity of different symptoms
- ENZIAN classification seems to have a relationship with pain, although general consensus is weak

Disadvantages of the ENZIAN classification

- Has a poor level of international acceptance
- Difficult for patients to understand because of the complexity of the stage and insufficient knowledge of the pelvic anatomy
- Even if the ENZIAN classification is predicted by imaging modalities, there is insufficient research regarding the usefulness of the classification determined by imaging
- Further study is needed to clarify whether the preoperative ENZIAN score can be used for evaluating the surgical feasibility or complete resectability.

Conclusion

To date, there is no gold standard for the classification of endometriosis

The currently existing classification systems have limited research on the relationship between pain and severity of endometriosis.

Accordingly, a novel classification system should be developed to better reflect the relationship between pain and endometriosis severity.

It would be more ideal if the disease stage and clinical prognosis are accurately predictable using a new classification system without surgical approach.

Adenomyosis – MUSA Classification

MUSA classification of Adenomyosis

The MUSA (Morphological Uterus Sonographic Assessment) classification, developed by an international consensus group, provides a standardized way to describe findings of adenomyosis using transvaginal ultrasound

ultrasound signs that indicate the presence of ectopic endometrial tissue within the myometrium

Direct signs

- Myometrial cysts
- Hyperechogenic islands
- Echogenic subendometrial lines and buds

Indirect signs

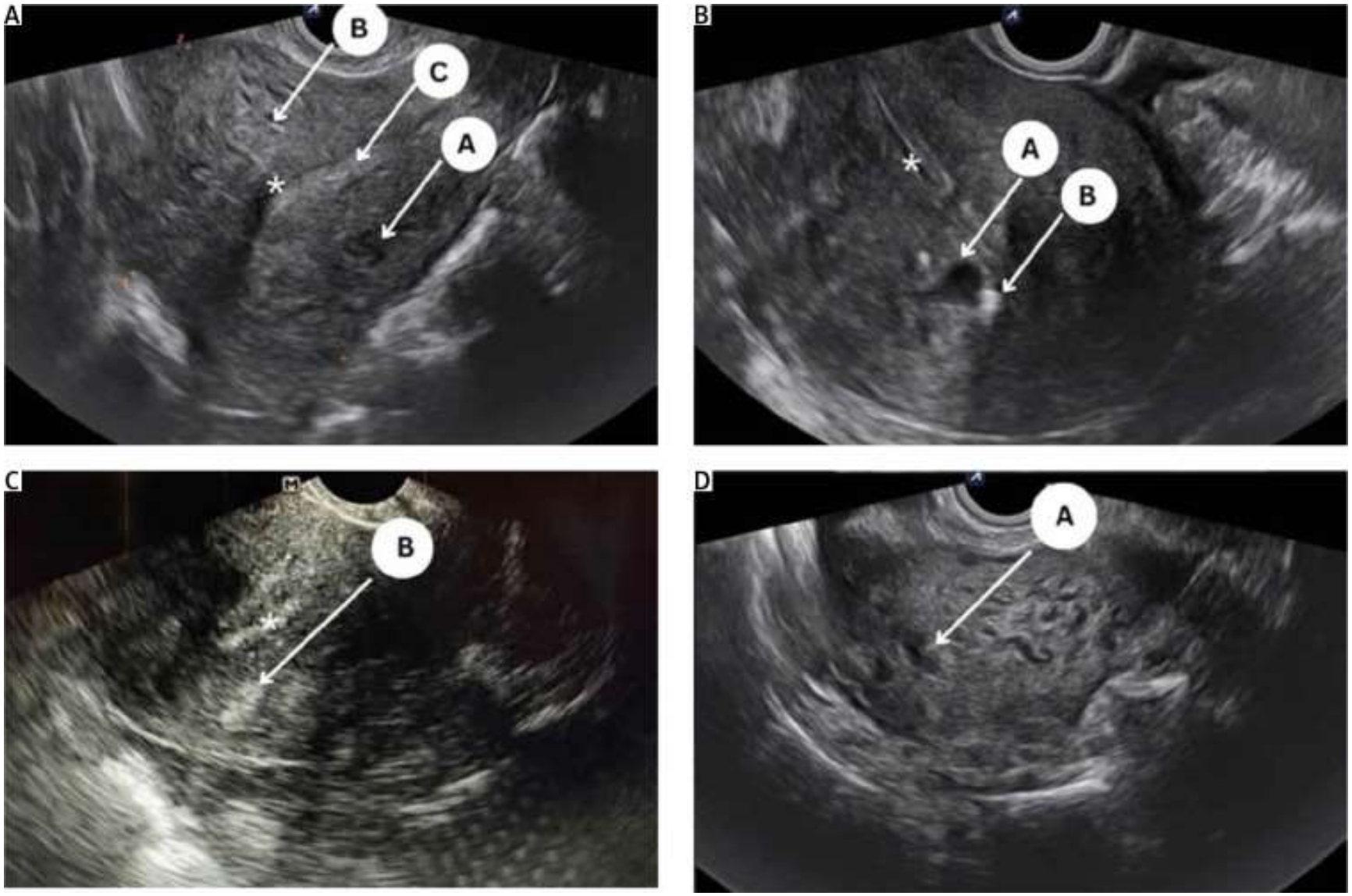
- Asymmetrical myometrial thickening
- Globular uterus (rounded shape)
- Fan-shaped shadowing (posterior acoustic shadowing).
- "Translesional vascularity
- Irregular or interrupted junctional zone

ultrasound signs that reflect changes in the myometrium secondary to the presence of ectopic endometrial tissue

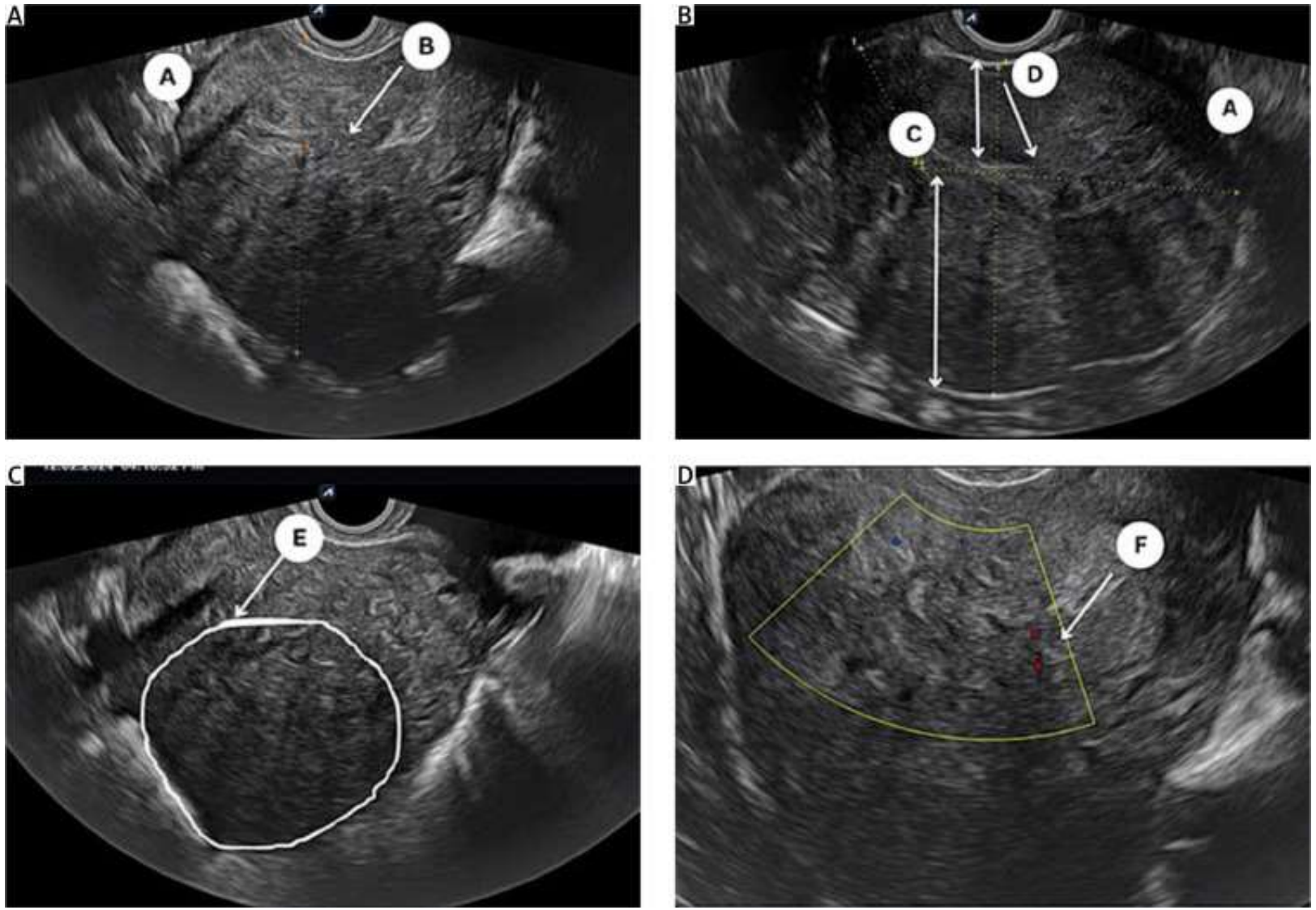
Presence of at least one direct sign considered a key criterion for diagnosis

The MUSA classification also incorporates the distinction between focal and diffuse adenomyosis based on the distribution of the lesions within the myometrium, and it considers the location of the lesions within the myometrial layer

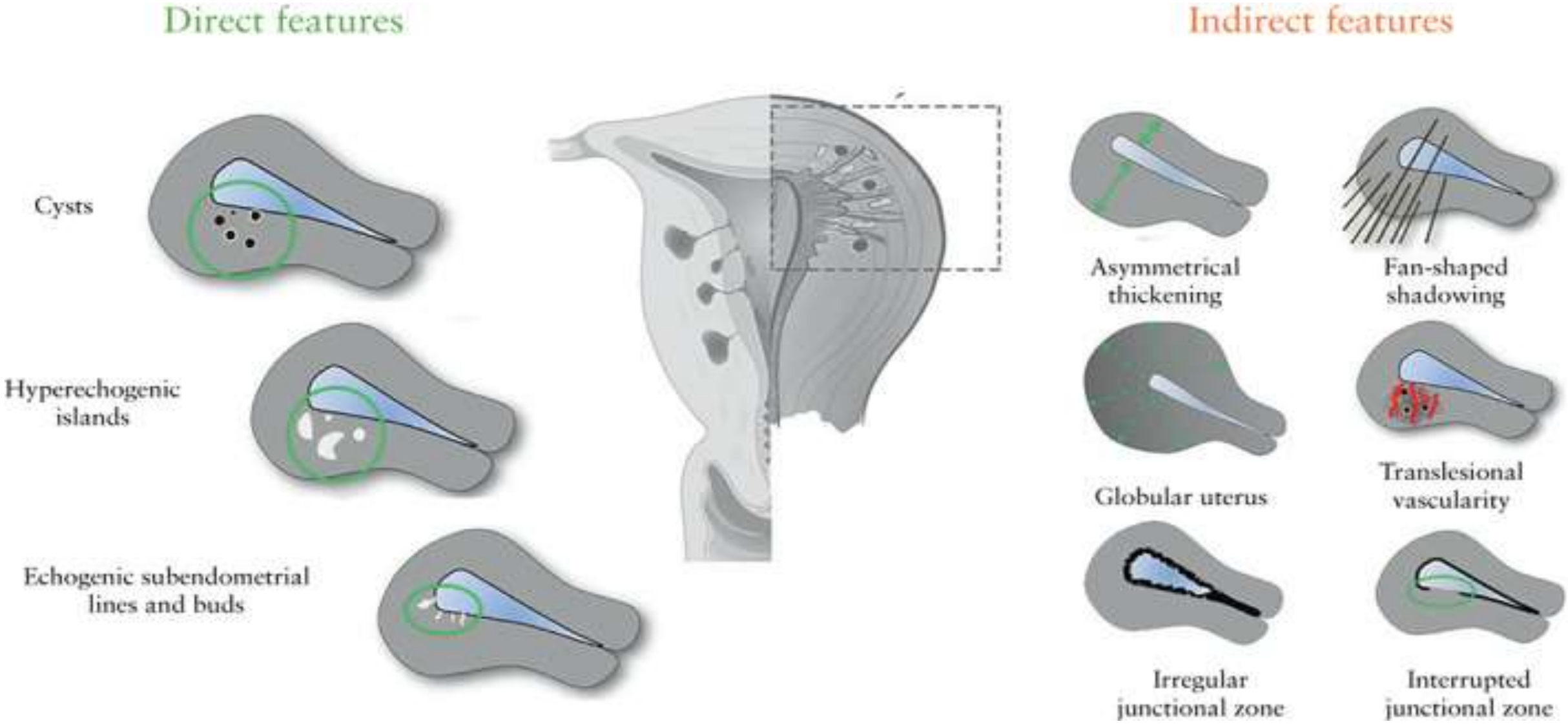
Sagittal grey-scale transvaginal ultrasound image depicting direct MUSA features of adenomyosis: (A) myometrial cysts, (B) hyperechogenic islands, (C) echogenic subendometrial lines. * shows endometrium



Sagittal grey-scale transvaginal ultrasound image depicting indirect MUSA features of adenomyosis: (A) globular uterus, (B) Interrupted junctional zone, (C) asymmetrical myometrial thickness, (D) irregular junctional zone, (E) fan shaped shadowing, (F) translesional vascularity



Schematic representation of direct and indirect Morphological Uterus Sonographic Assessment (MUSA) features of uterine adenomyosis (not endometriosis), according to modified Delphi procedure. Adapted from Van den Bosch *et al*



Thank You