

L' ecografia transperineale in uroginecologia

Bologna, 22 Novembre 2019

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***Azienda Ospedaliera Area Vasta della Romagna Unità
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Università di Bologna

Membro VELA Laser Academy

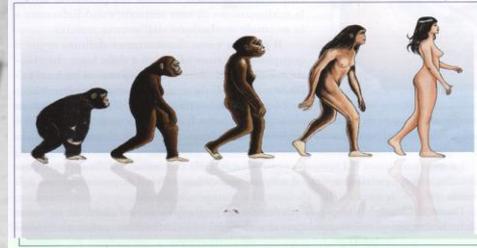
Membro della Commissione Scientifica Giovane AIUG

***Past Clinical and Research Fellow King's College
Hospital (NHS)***



Just a reminder...

Le origini del problema



PAVIMENTO PELVICO



Muscoli striati



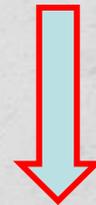
Muscoli lisci



Legamenti



Nervi

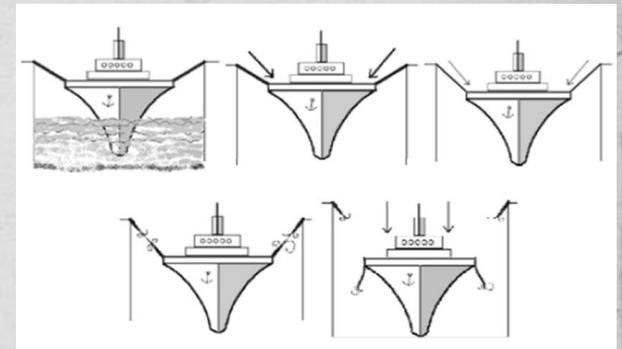


Fascia endopelvica



Disfunzione:

- **ANATOMICA:** prolasso degli organi pelvici
- **FUNZIONALE:** incontinenza (o ritenzione) urinaria
stipsi/sindrome da defecazione ostruita
incontinenza fecale
dolore pelvico cronico/dispareunia



*Un problema
che nasce da lontano..*

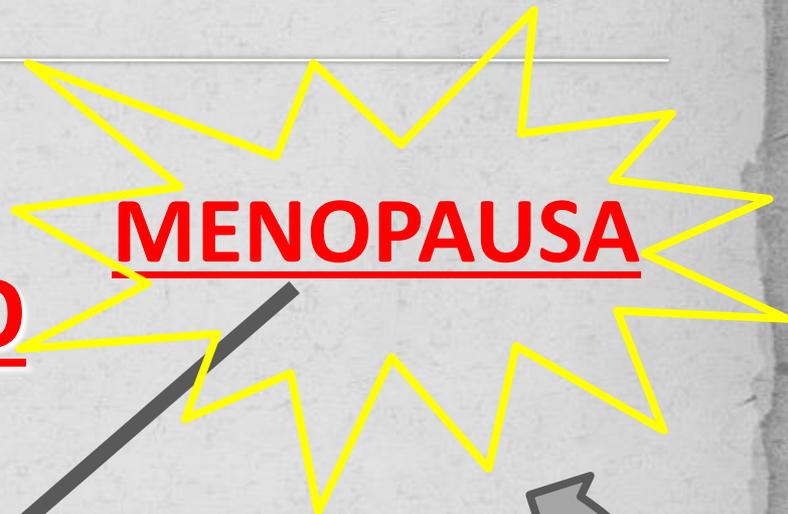
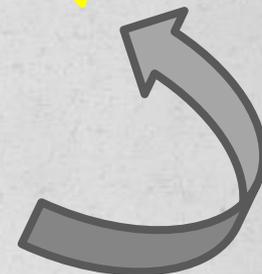
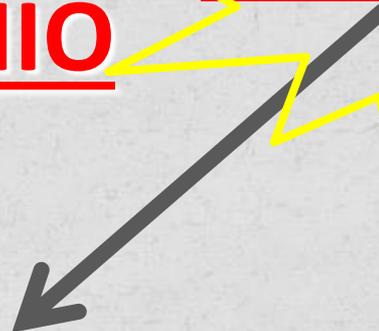


GRAVIDANZA
E PARTO

FATTORI
DI RISCHIO

MENOPAUSA

DISTURBI DEL PERINEO



Approccio diagnostico integrato alla patologia perineale pelvica

STORIA CLINICA

VALUTAZIONE OBIETTIVA

UROGINECOLOGICA

→ ESAME URODINAMICO

→ VALUTAZIONE PROCTOLOGICA

→ MANOMETRIA ANORETTALE

→ DEFECO RMN



Scheda ginecologica

Scheda Ginecologica A 1 35 1442

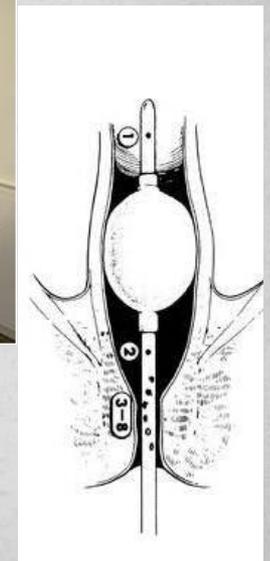
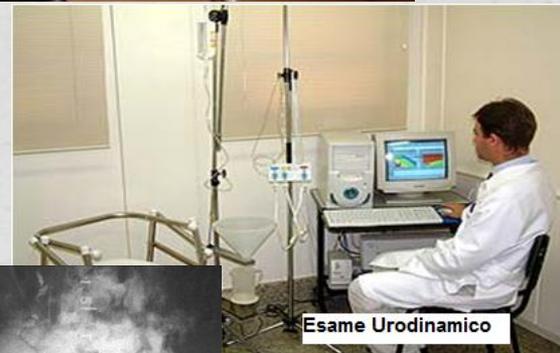
Dati di base Anam. ginecologica PAP-test Senologia Gravidanze

Ultimo Pap-test 19/12/2003 No PAP-test
Prossimo (mese/anno) 12 2006
Ultima mammogr. / / No mammogr.

Anno
Anno

Note

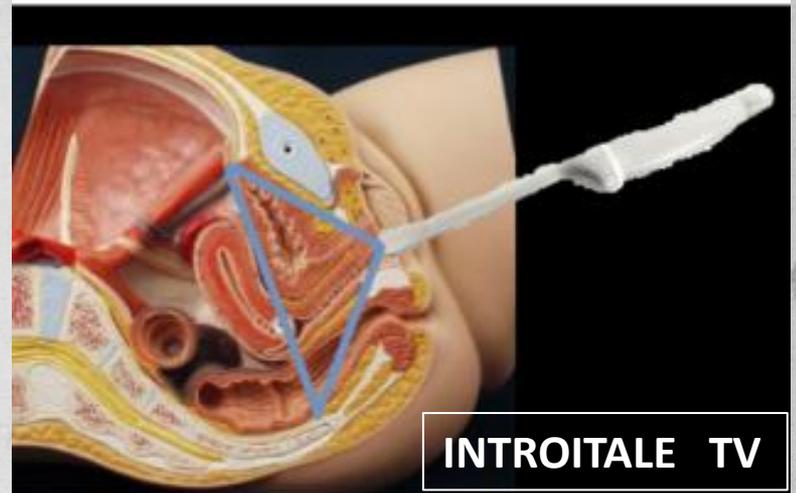
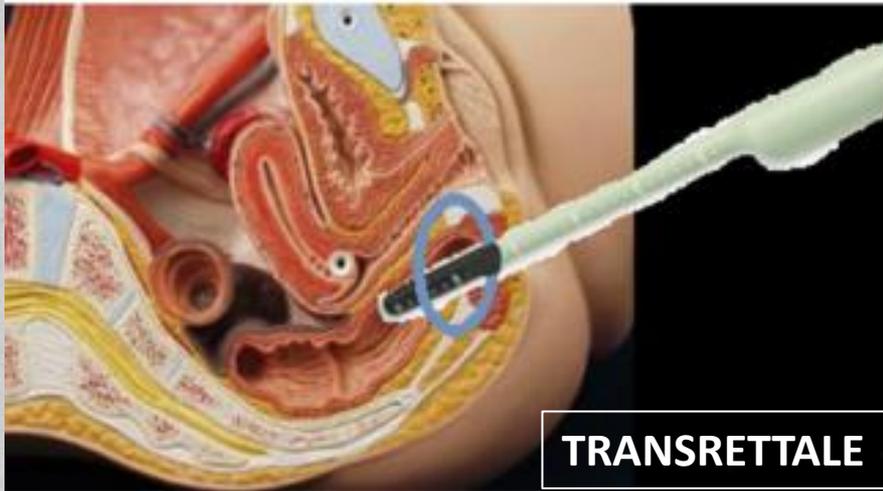
Chiudi



Approccio diagnostico integrato alla patologia perineale pelvica



Diverse tecniche ecografiche



Ruolo dell' ecografia transperineale 2/3/4D

DOI: 10.5114/pm.2016.63060

Menopause Rev 2016; 15(3): 123-132

Ultrasound imaging in urogynecology – state of the art 2016

Accepted Manuscript

Michał Boguski

2nd Department of Gynecology

Ultrasound in the Assessment of Pelvic Organ Prolapse

Hans Peter Dietz, MD PhD

PII: S1521-6934(18)30122-6

DOI: [10.1016/j.bpobgyn.2018.06.006](https://doi.org/10.1016/j.bpobgyn.2018.06.006)

Reference: YBEOG 1831

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Received Date: 13 April 2018

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Accepted Date: 12 June 2018

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Volume 60, Number 1, 58–81

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Review

of Sydney, Sydney,

/ NUMBER 1 / MARCH 2017

Ruolo dell' ecografia transperineale 2/3/4D

TABLE

Indications for pelvic floor ultrasound

2010

- Recurrent urinary tract infections
- Urgency, frequency, nocturia, and/or urge urinary incontinence
- Stress urinary incontinence
- Insensible urine loss
- Bladder-related pain
- Persistent dysuria
- Symptoms of voiding dysfunction
- Symptoms of prolapse, ie, sensation of lump or dragging sensation
- Symptoms of obstructed defecation, eg, straining at stool, chronic constipation.

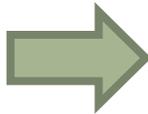


TABLE 1. Indications for Pelvic Floor Ultrasound Imaging

2017

- Recurrent urinary tract infections
- Urgency, frequency, nocturia, and/or urge urinary incontinence
- Stress urinary incontinence
- Insensible urine loss
- Bladder-related pain
- Persistent dysuria
- Symptoms of voiding dysfunction
- Symptoms of prolapse, ie, sensation of lump or dragging sensation
- Symptoms of obstructed defecation, eg, straining at stool, chronic constipation, vaginal or perineal digitation, and sensation of incomplete bowel emptying
- Anal incontinence
- Pelvic or vaginal pain after anti-incontinence or prolapse surgery
- Vaginal discharge or bleeding after anti-incontinence or prolapse surgery
- Vaginal laxity, psychosexual dysfunction

Can pelvic floor trauma be predicted antenatally?

Short title: Antepartum predictors of pelvic floor trauma

Jessica CAUDWELL-HALL¹, Ixora KAMISAN ATAN^{1,2}, Chris BROWN³, Rodrigo GUZMAN ROJAS^{4,5}, Susanna LANGER¹, Ka Lai SHEK^{1,6} and Hans Peter DIETZ¹.

Acta Obstet Gynecol Scand. 2018 Jun;97(6):751-757. doi: 10.1111/aogs.13315. Epub 2018 Mar 5

Ruolo dell' ecografia transperineale 2/3/4D

2D

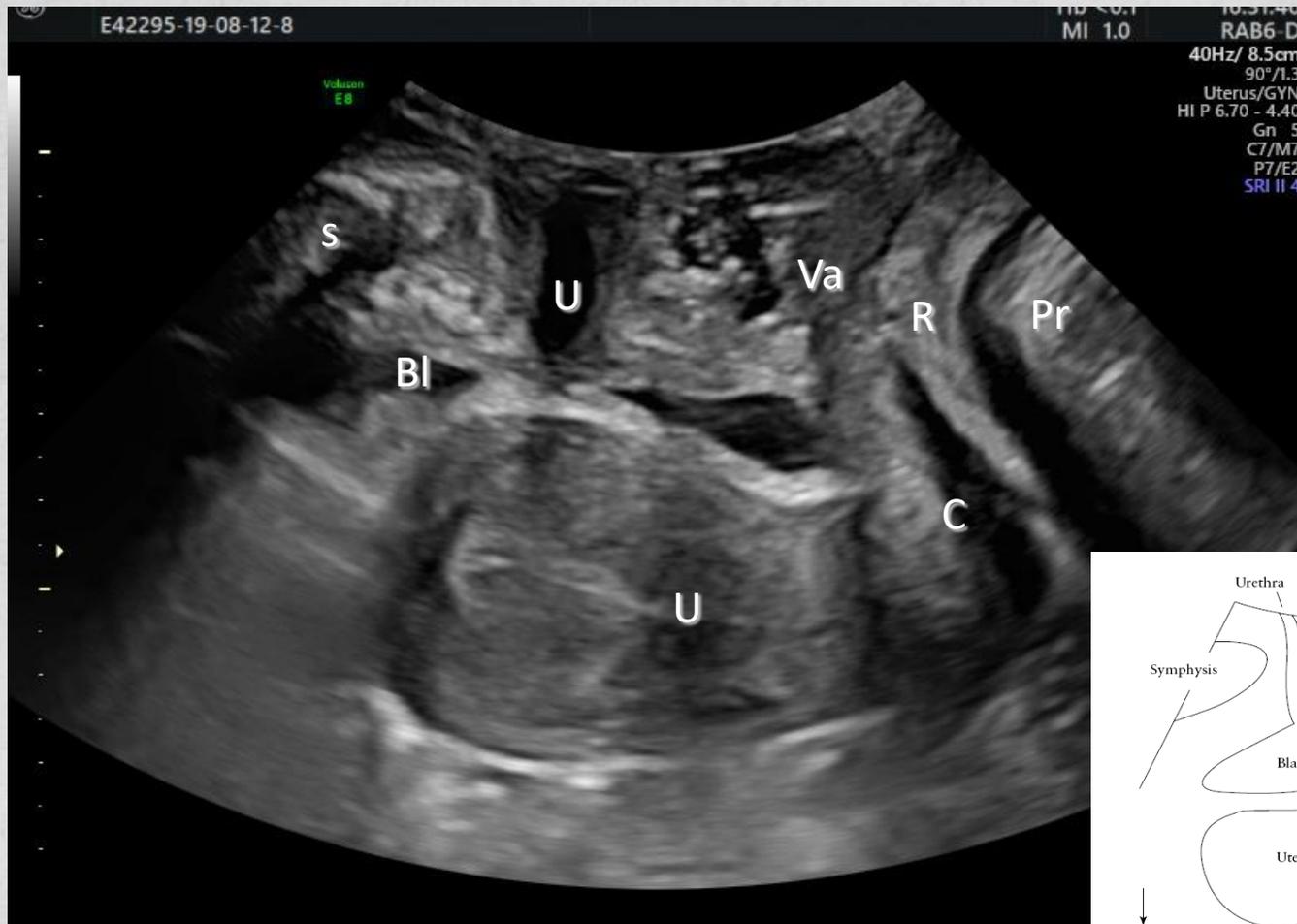
- Valutazione posizione, forma e mobilità del collo vescicale e dell' uretra media e prossimale
- Valutazione del profilo vescicale, uretrale e dei tessuti circostanti
- Quantificazione del prolasso genitale
- Valutazione delle disfunzioni del compartimento posteriore
- Attività del complesso muscolare dell' elevatore dell' ano e feedback visivo
- Valutazione delle protesi e degli injectables

3D/4D

- Valutazione dinamica e morfologica del muscolo elevatore dell' ano (avulsioni)
- Valutazione delle protesi e degli injectables
- Valutazione morfologica e caratterizzazione delle lesioni dello sfintere anale
- Attività del complesso muscolare dell' elevatore dell' ano e feedback visivo

**NON PIU' SOLO SCOPO DIAGNOSTICO
NELLA PATOLOGIA, MA ANCHE
PREVENTIVO DELLA PATOLOGIA**

Aspetto ecografico del pavimento pelvico normale



Ecografia del Piano mediosagittale

***L' ecografia 2D nelle disfunzioni urinarie:
l' incontinenza urinaria da sforzo***

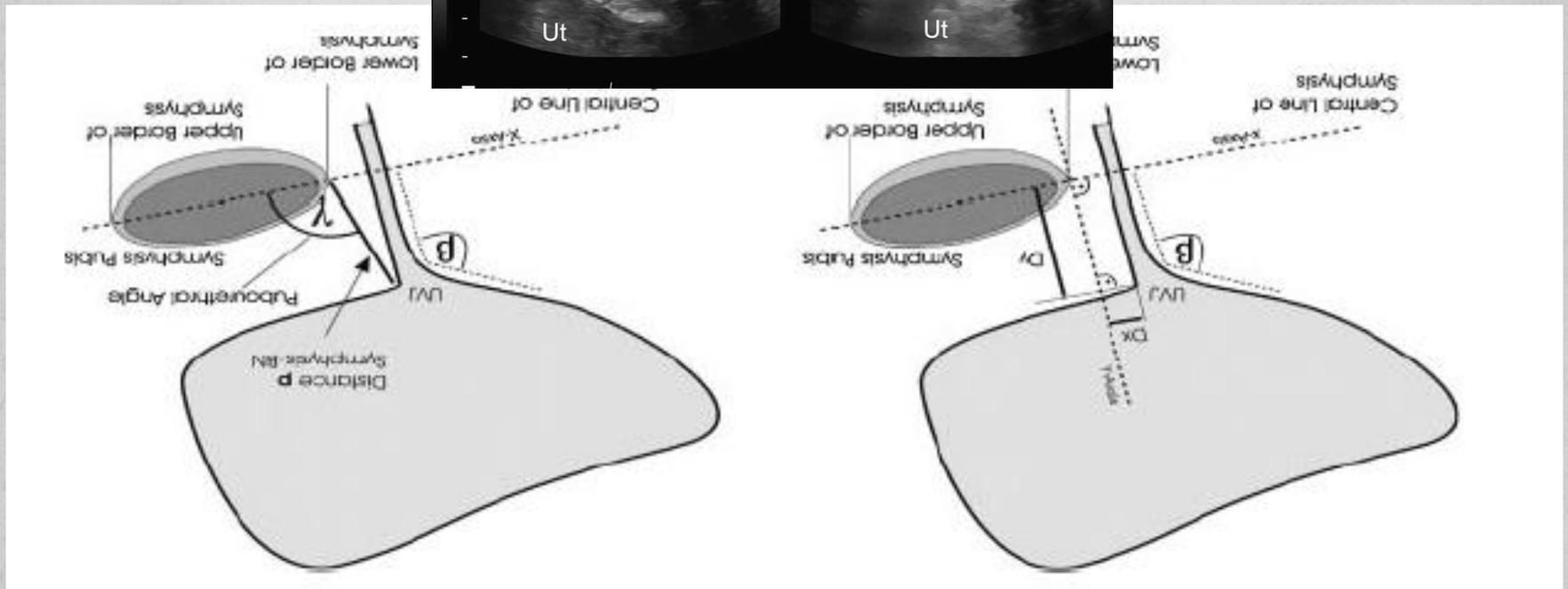
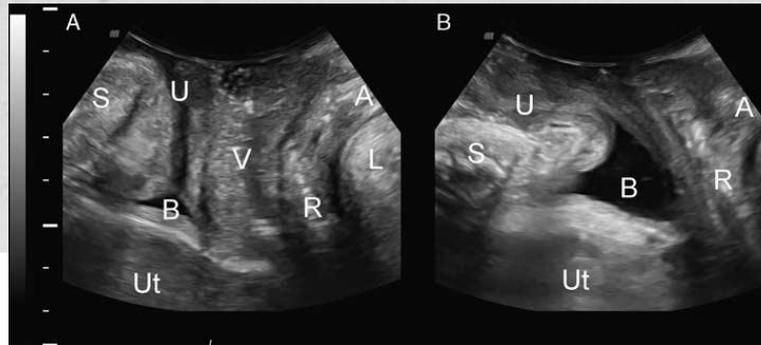


**Ipermobilità
uretrale**

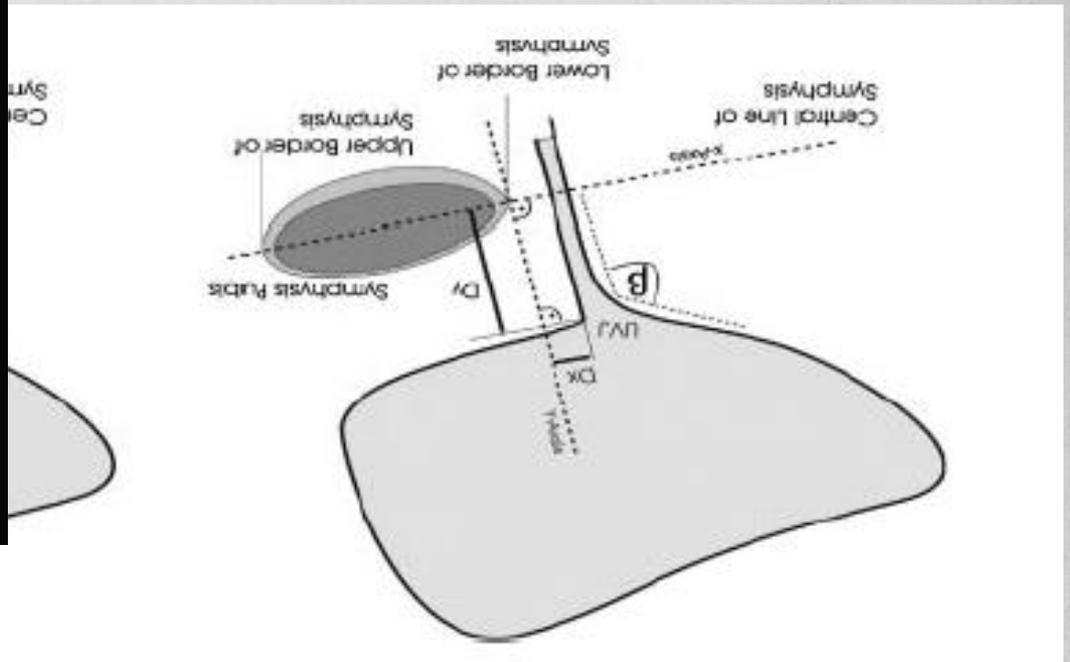
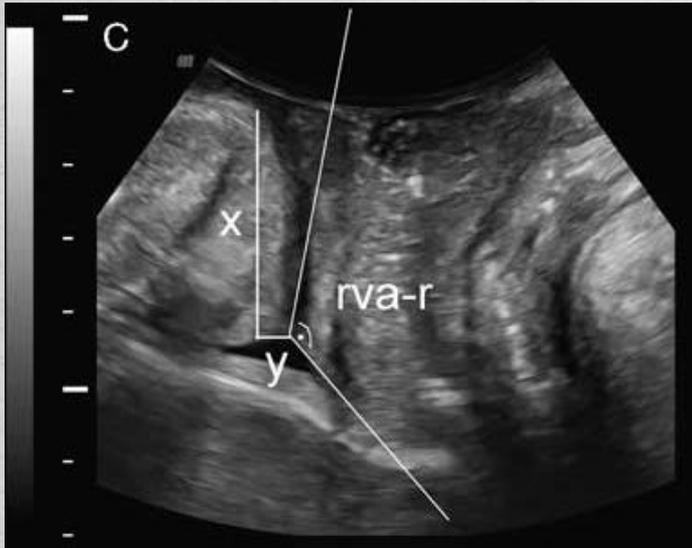
**Ipotono
sfinteriale**

Mista

L' ecografia 2D nelle disfunzioni urinarie: Ipermobilità uretrale

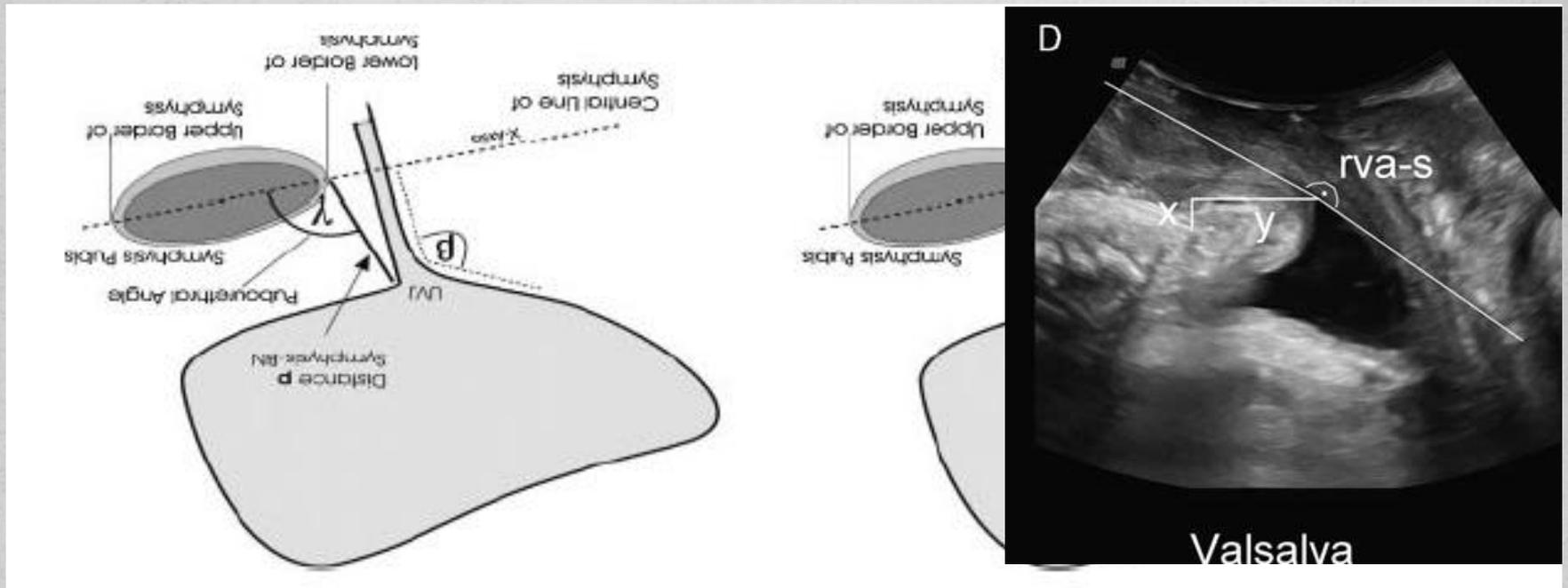


L' ecografia 2D nelle disfunzioni urinarie: Ipermobilità uretrale



delta BND proposed cut off: > 20-25 mm

L' ecografia 2D nelle disfunzioni urinarie: Ipermobilità uretrale



Rva proposed cut off: 160°

L' ecografia 2D nelle disfunzioni urinarie: significatività

Table 2 Threshold values of the urethral angles at rest and straining in the SUI and control groups (30 in each group) with their respective sensitivity and specificity.

Urethral angle, °	Control group	SUI group	Sensitivity, %	Specificity, %
<i>α angle at rest</i>				
≤ 46.5	30 (true negative)	1 (false negative)	96.7	100
> 46.5	0 (false positive)	29 (true positive)		
<i>α angle at straining (Valsalva manoeuvre)</i>				
≤ 58.5	29 (true negative)	1 (false negative)	96.7	96.7
> 58.5	1 (false positive)	29 (true positive)		
<i>β angle at rest</i>				
≤ 119	23 (true negative)	11 (false negative)	63.3	60
> 119	7 (false positive)	19 (true positive)		
<i>β angle at straining (Valsalva manoeuvre)</i>				
≤ 141.5	24 (true negative)	8 (false negative)	73.3	80
> 141.5	6 (false positive)	22 (true positive)		

L' ecografia 2D nelle disfunzioni urinarie: nuove frontiere di riproducibilità delle misure

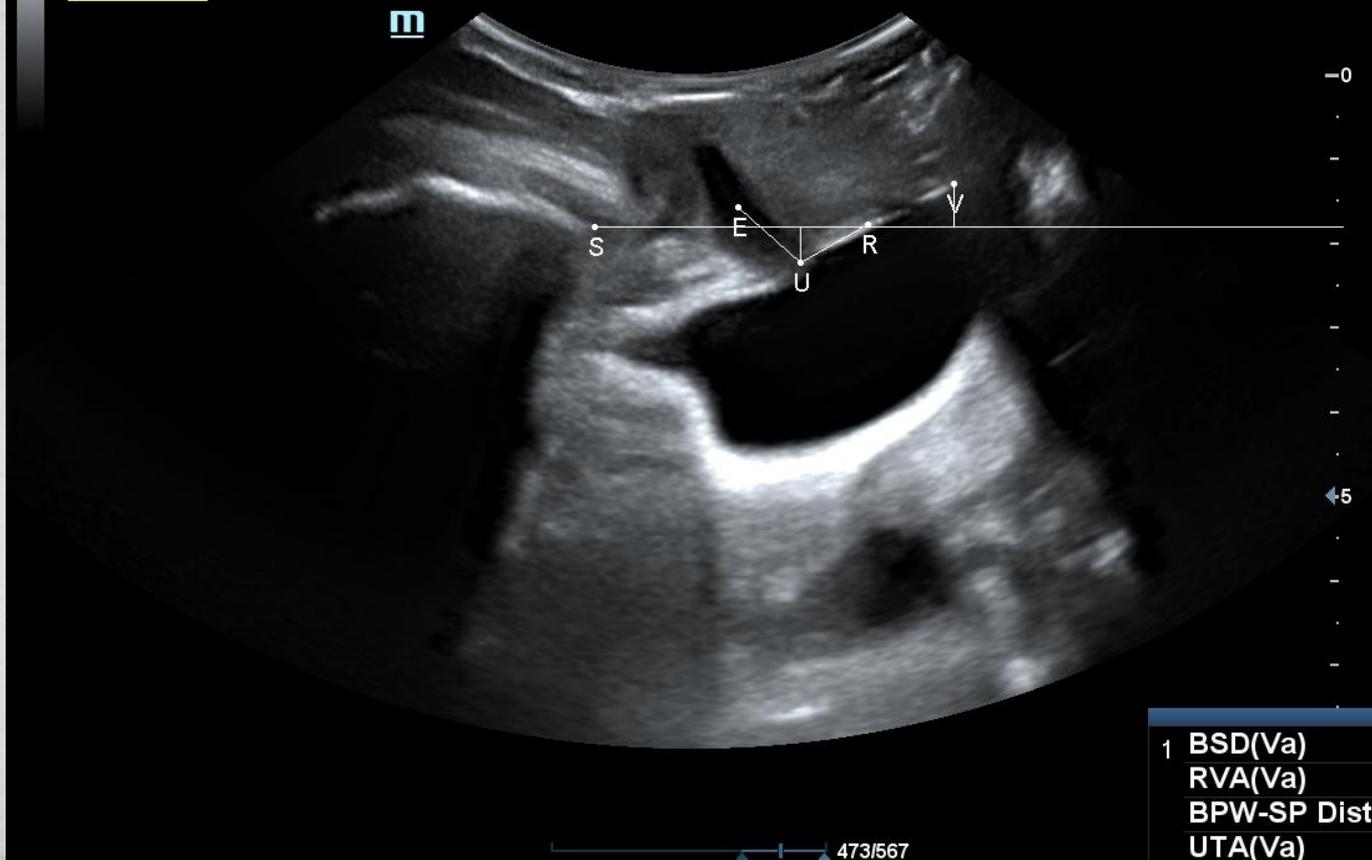
26-08-2019 17:13:07

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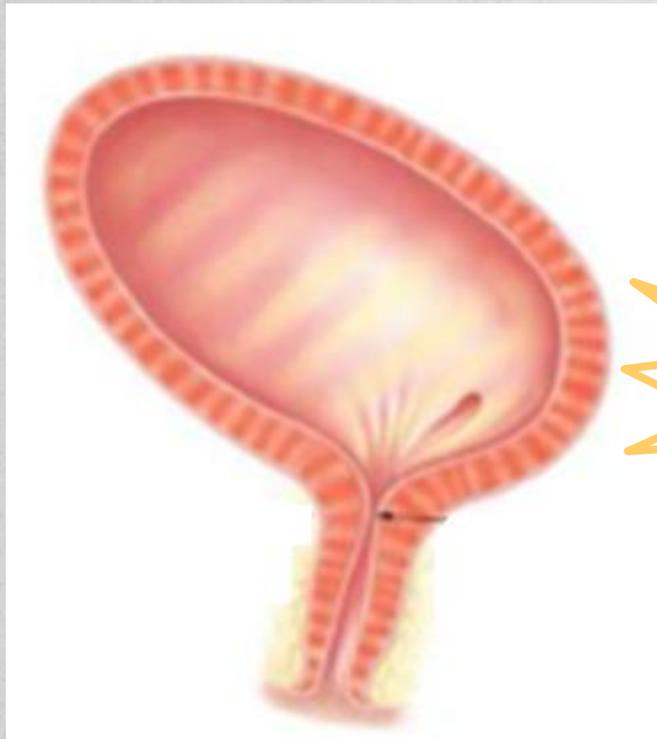
AP 96.6% MI 1.4 TIS 0.6

Valsalva

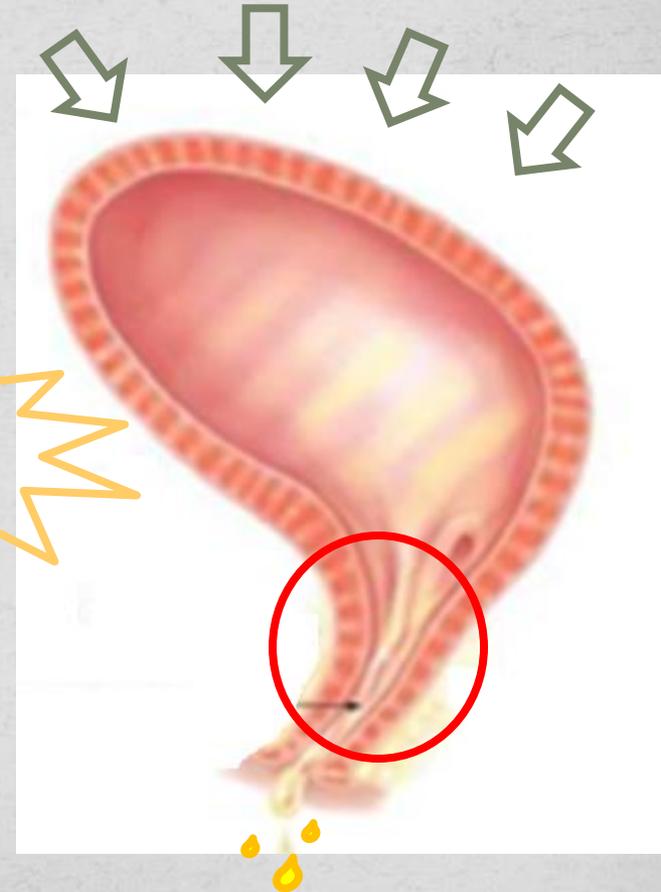
m



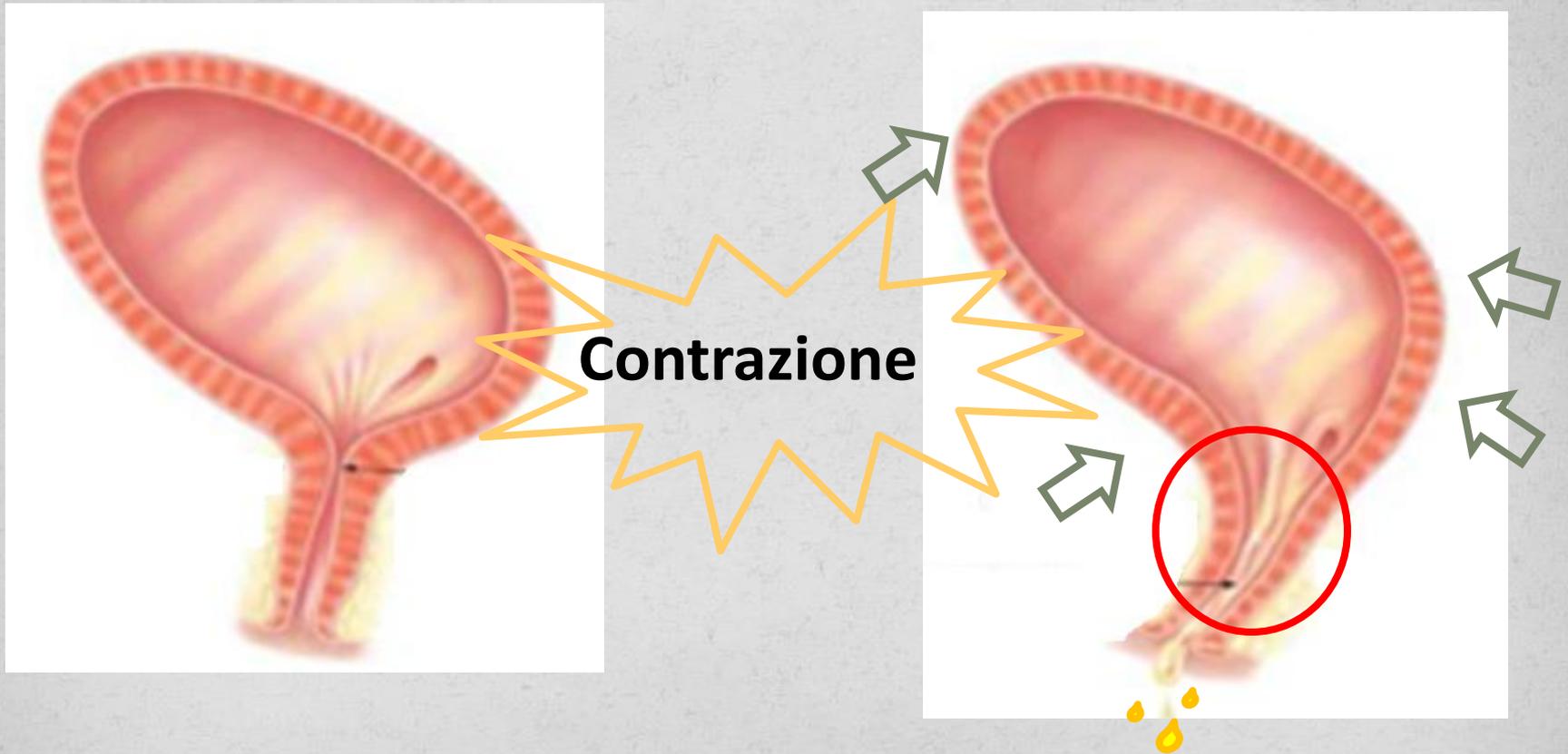
Cenni di fisiopatologia dell' incontinenza urinaria da sforzo: ipotono sfinteriale



Valsalva



***Cenni di fisiopatologia dell' incontinenza urinaria da
urgenza: iperattività detrusoriale***

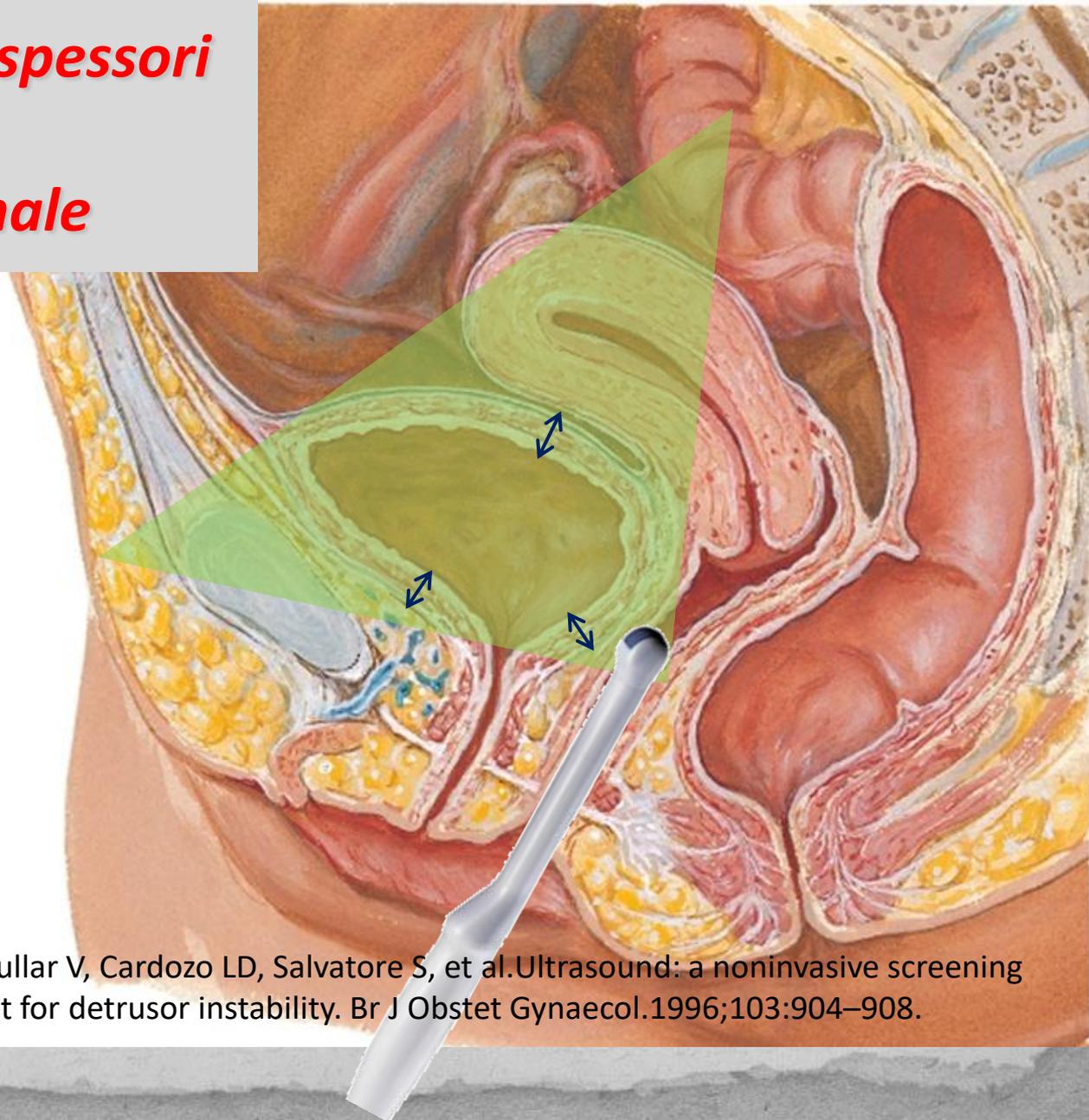


***L' ecografia 2D nelle disfunzioni urinarie:
l' incontinenza urinaria da urgenza***



Valutazione degli spessori detrusoriali: tecnica transvaginale

**RIEMPIMENTO:
< 50ml
Average
Cut off: 5 - 6,5mm**



Khullar V, Cardozo LD, Salvatore S, et al. Ultrasound: a noninvasive screening test for detrusor instability. Br J Obstet Gynaecol. 1996;103:904-908.

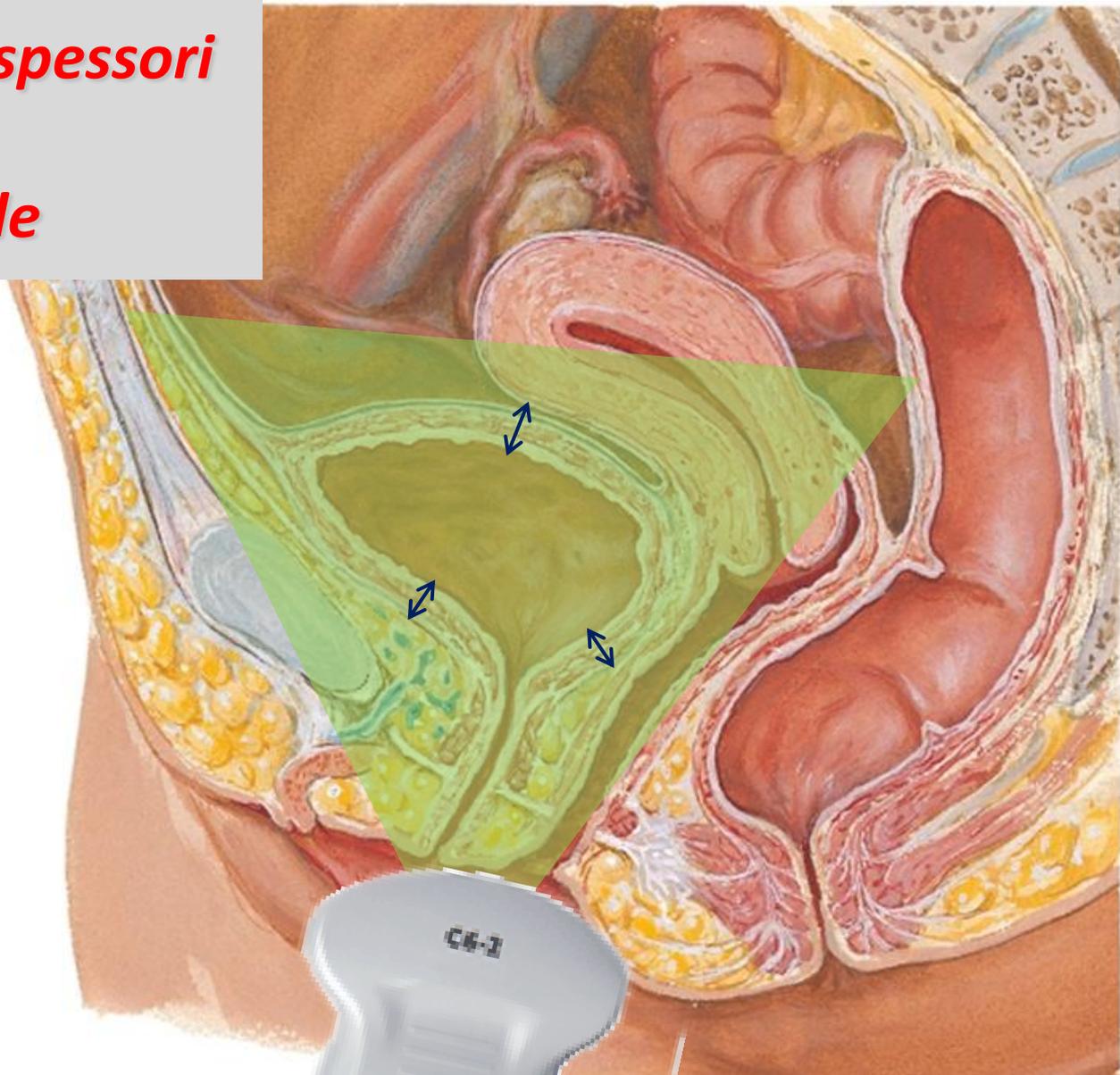
Valutazione degli spessori detrusoriali: tecnica translabiale

RIEMPIMENTO:

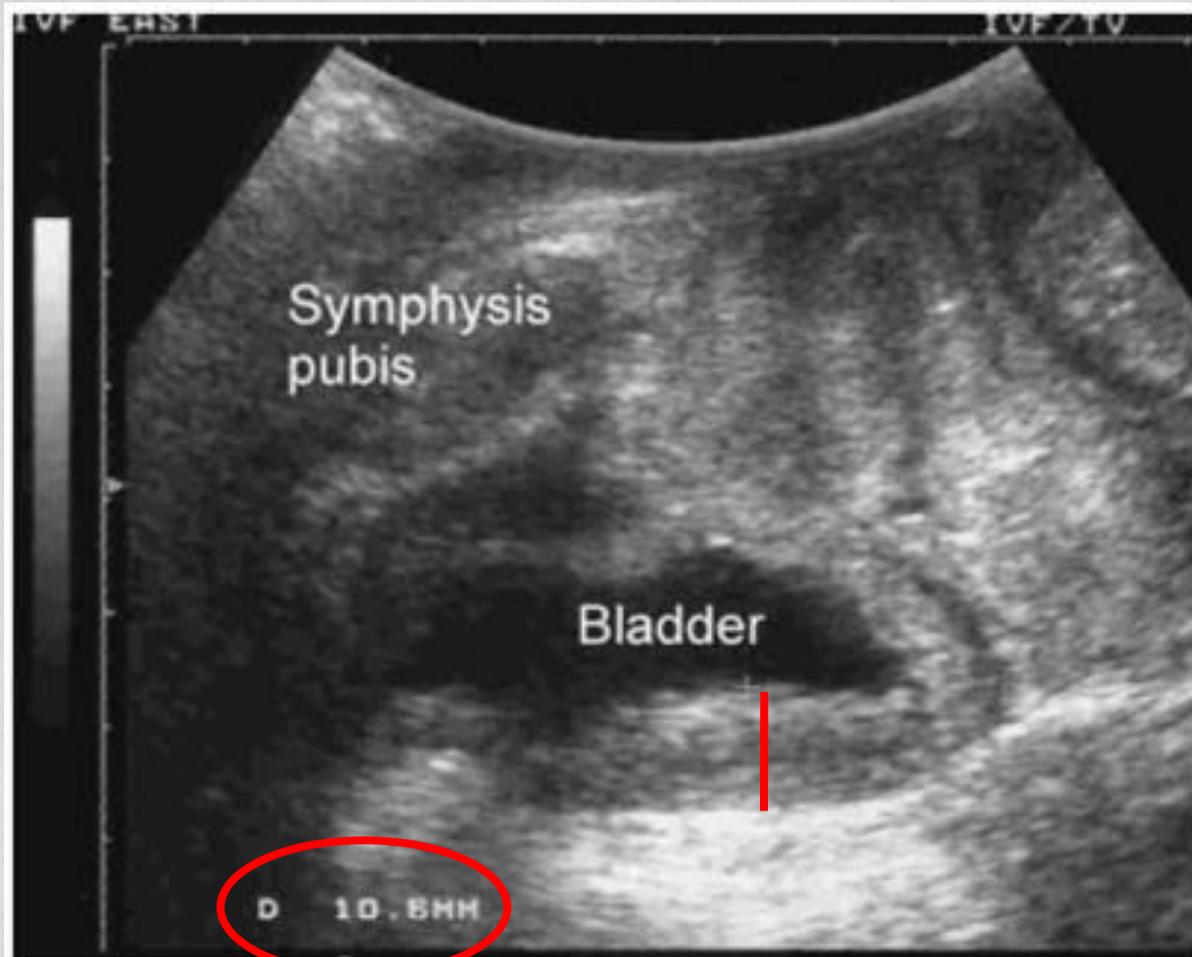
< 50ml

Average

Cut Off:



Valutazione ecografica degli spessori detrusoriali: eco TV vs eco TL



Courtesy of H.P. Dietz

Valutazione ecografica degli spessori detrusoriali: eco TV vs eco TL

HEALTH TECHNOLOGY ASSESSMENT

VOLUME 20 ISSUE 7 JANUARY 2016
ISSN 1366-5278



Bladder ultrasonography for diagnosing detrusor overactivity: test accuracy study and economic evaluation

Suneetha Rachaneni, Shanteela McCooty, Lee J Middleton, Victoria L Parker, Jane P Daniels, Arri Coomarasamy, Tina S Verghese, Moji Balogun, Ilias Goranitis, Pelham Barton, Tracy E Roberts, Jonathan J Deeks and Pallavi Latthe on behalf of the Bladder Ultrasound Study (BUS) Collaborative Group

Valutazione ecografica degli spessori detrusoriali: eco TV vs eco TL

Implications for practice

Transvaginal ultrasonographic measurement of BWT is not an accurate method of diagnosing DO. UDS, the gold standard test for lower urinary tract conditions, was found to be the most cost-effective test in the management of OAB, particularly in the MUI subgroup once conservative treatments were exhausted. Offering UDS earlier on in the management of mixed incontinence may help achieve a greater degree of patient satisfaction and save valuable money and time for the NHS.

Recommendations for research

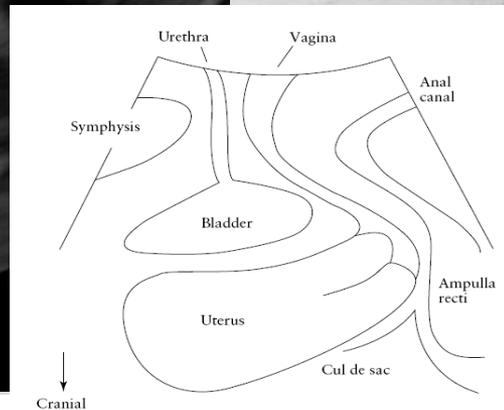
Diagnostic accuracy of individual components of office evaluation of OAB may be different to the composite test accuracy of all the components of office evaluation. Studying composite test accuracy of various components in this context may be a highly complicated exercise. Further studies need to be planned to look into composite test accuracy of office evaluation with or without UDS in OAB.

In women with OAB/urgency-predominant MUI, RCTs comparing treatment based on UDS diagnoses compared with clinical diagnoses (history and examination alone), and related health economic evaluations for these interventions, are required to consolidate the role of UDS in the management of OAB/MUI women, as already carried out for SUI.⁸⁷

L' ecografia 2D nella valutazione del prolasso genitale

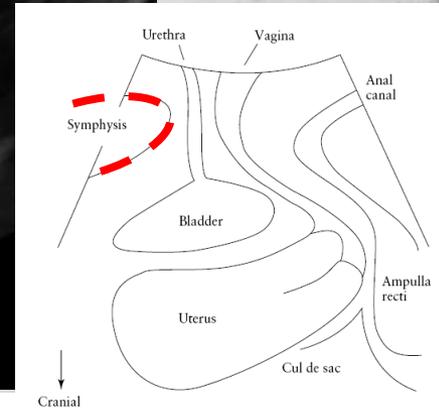
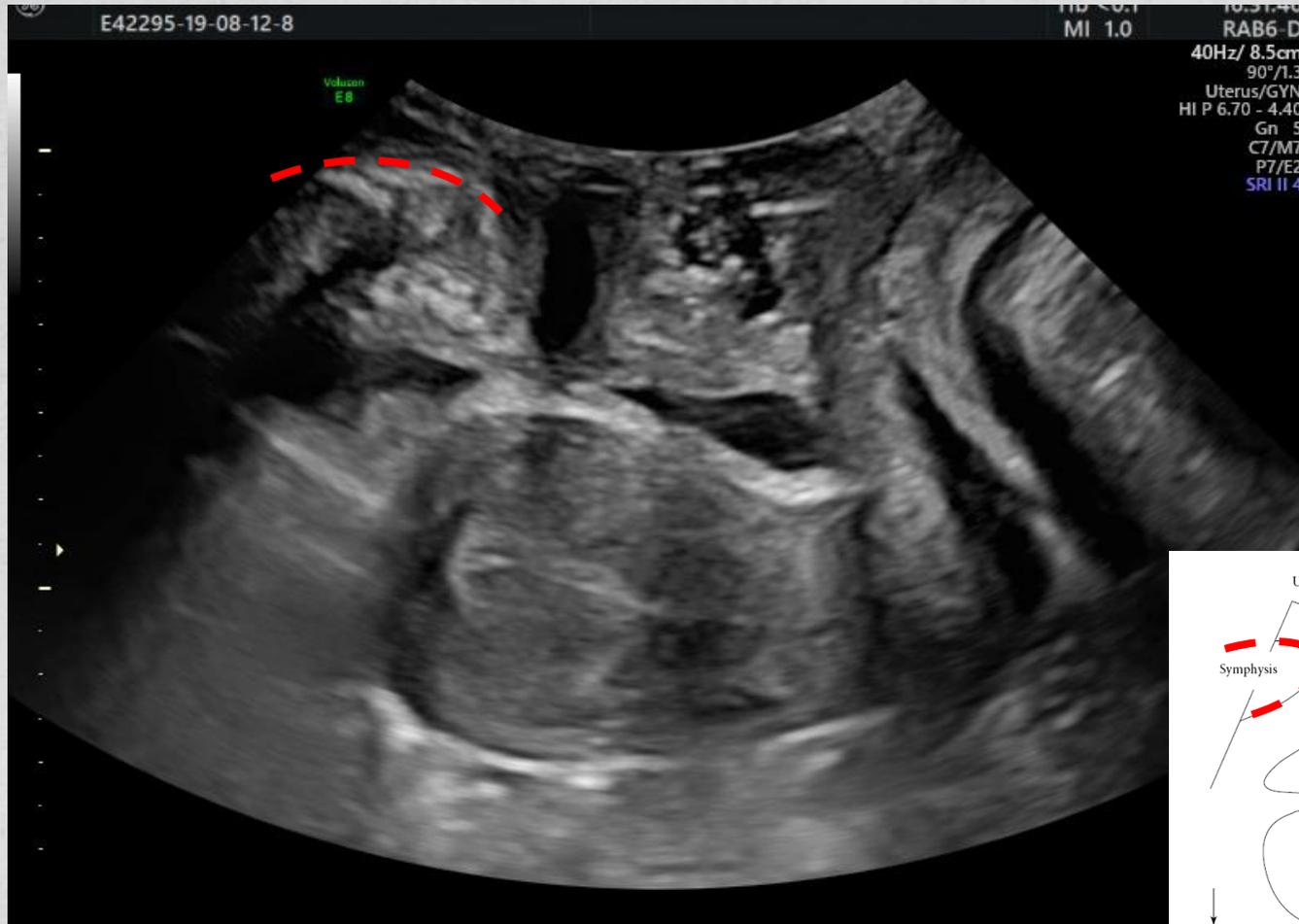


Quantificazione del prolasso genitale: aspetti ecografici



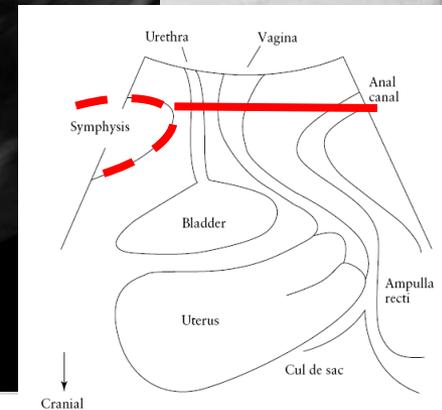
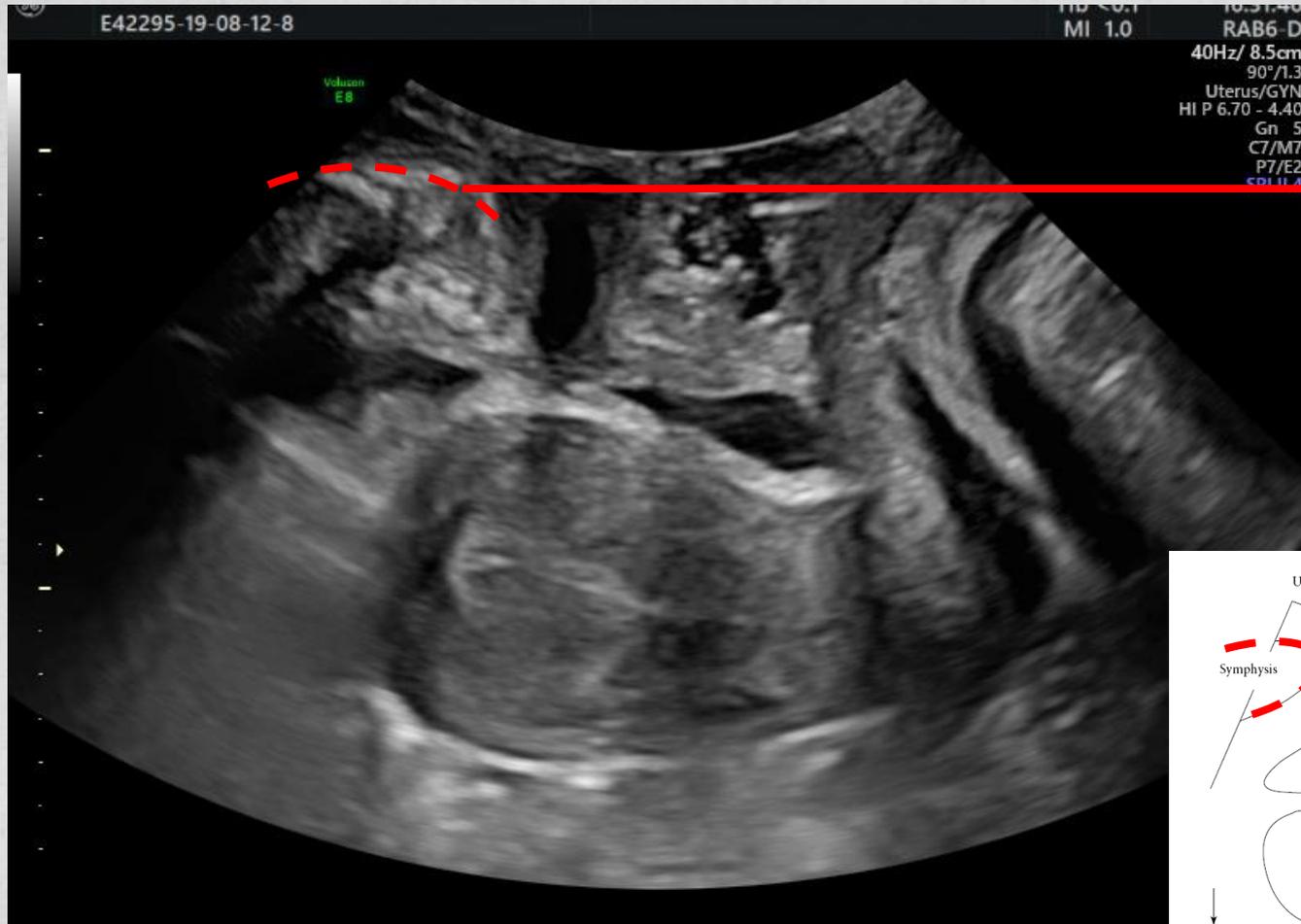
Ecografia del Piano mediosagittale

Quantificazione del prolasso genitale: aspetti ecografici



Ecografia del Piano mediosagittale

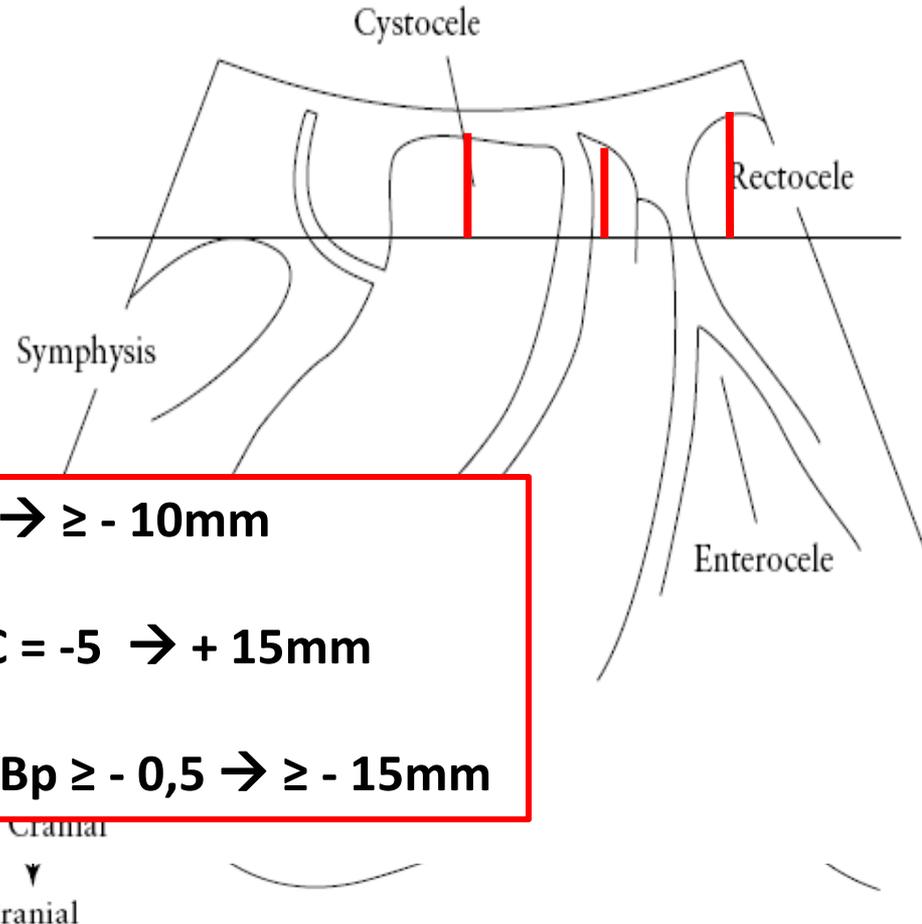
Quantificazione del prolasso genitale: aspetti ecografici



Ecografia del Piano mediosagittale

Quantificazione del prolasso genitale: aspetti ecografici

Il Piano mediosagittale



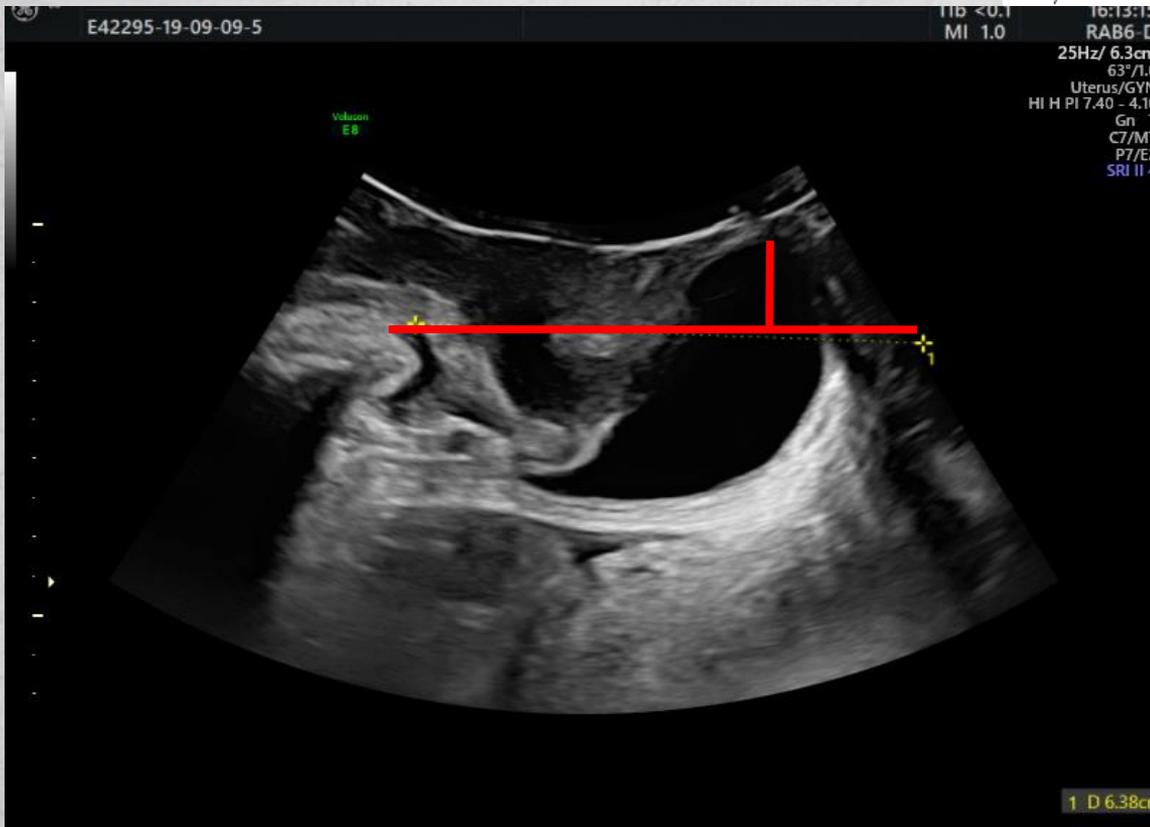
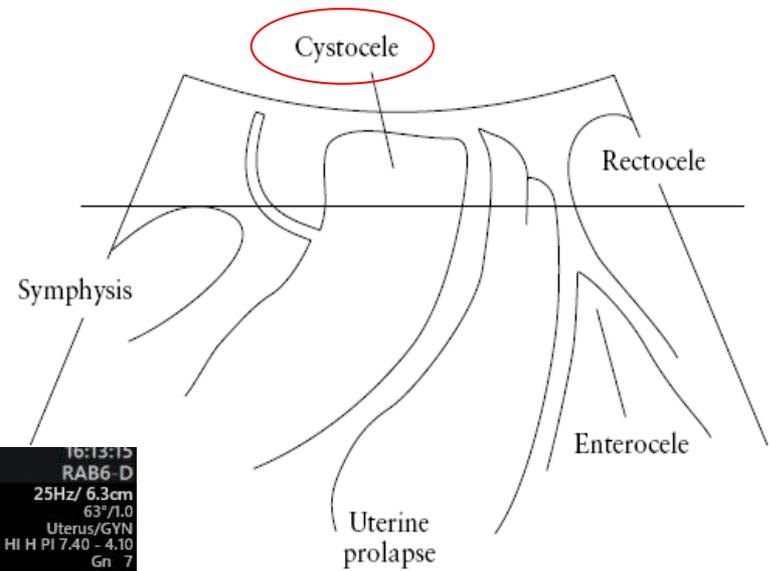
CISTOCELE: $Ba \geq -0,5 \rightarrow \geq -10\text{mm}$

ISTERO/VOLTOCELE: $C = -5 \rightarrow +15\text{mm}$

ENTERO/RETTOCELE: $Bp \geq -0,5 \rightarrow \geq -15\text{mm}$

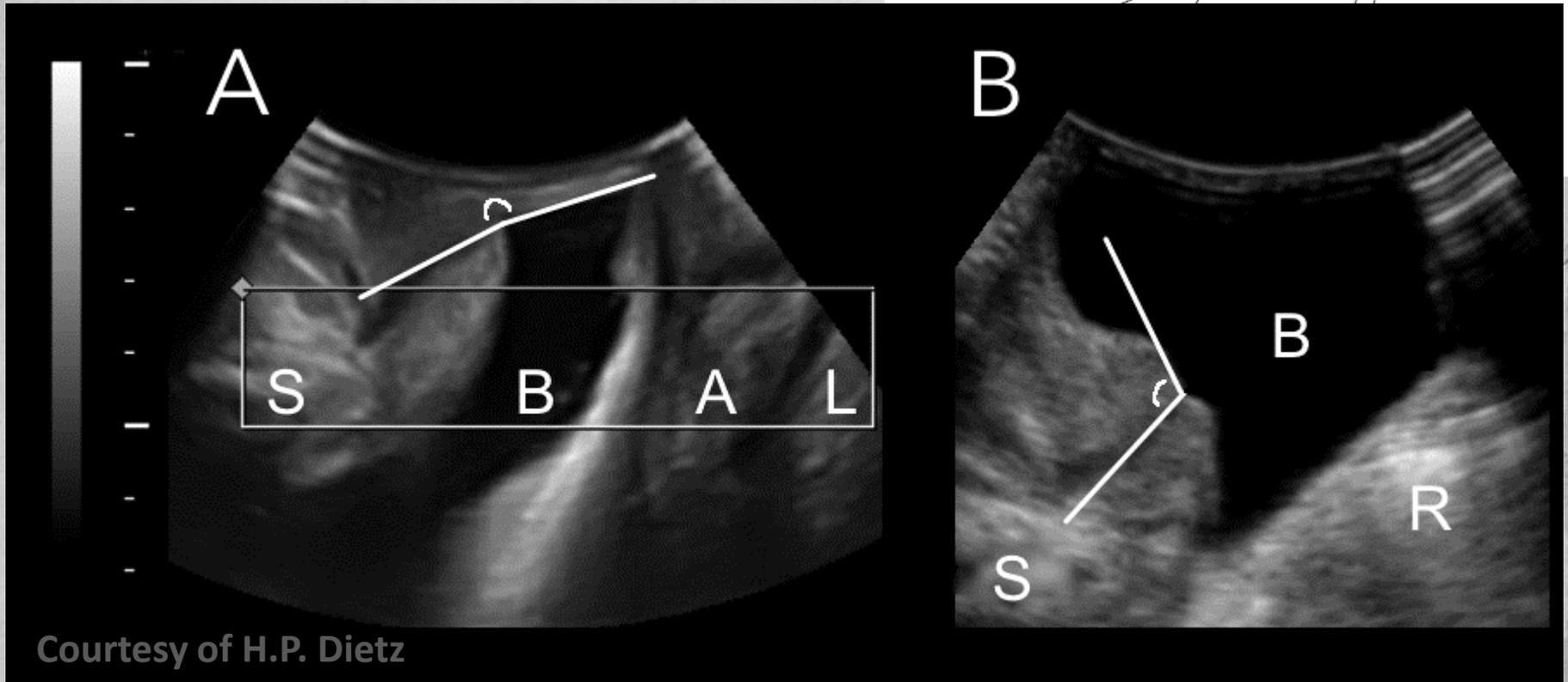
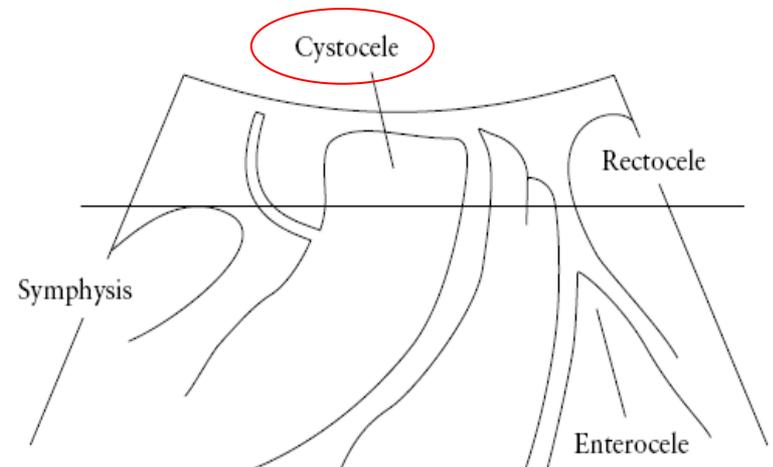
Quantificazione del prolasso degli organi pelvici

Cistocele



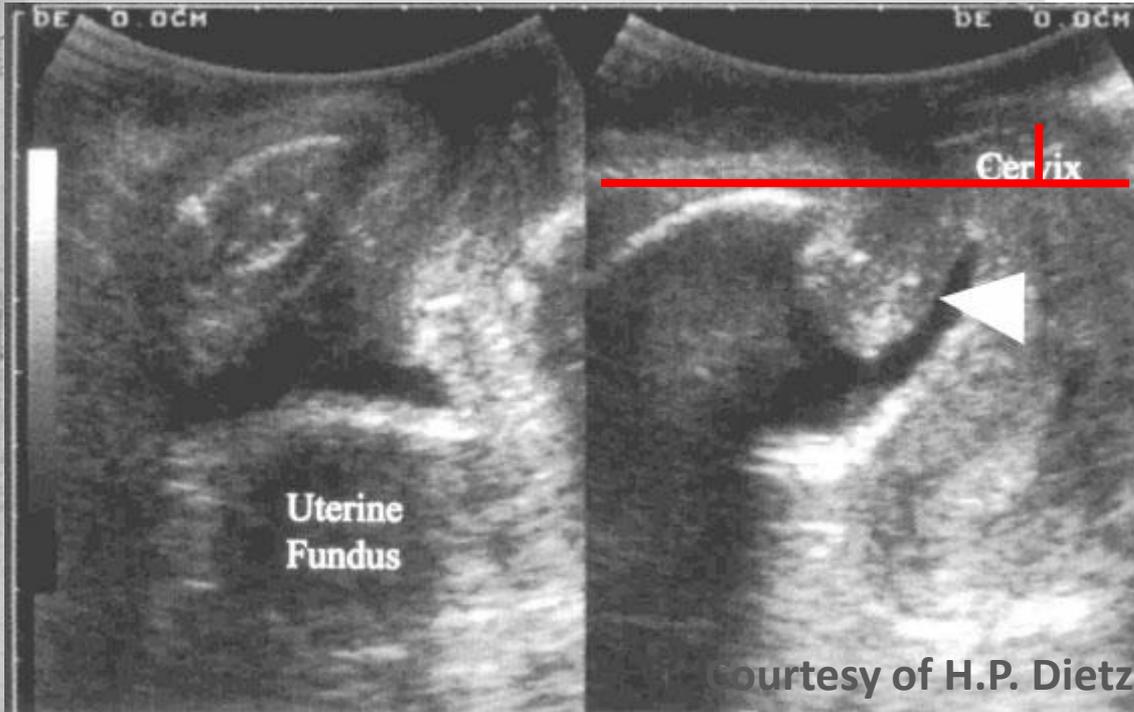
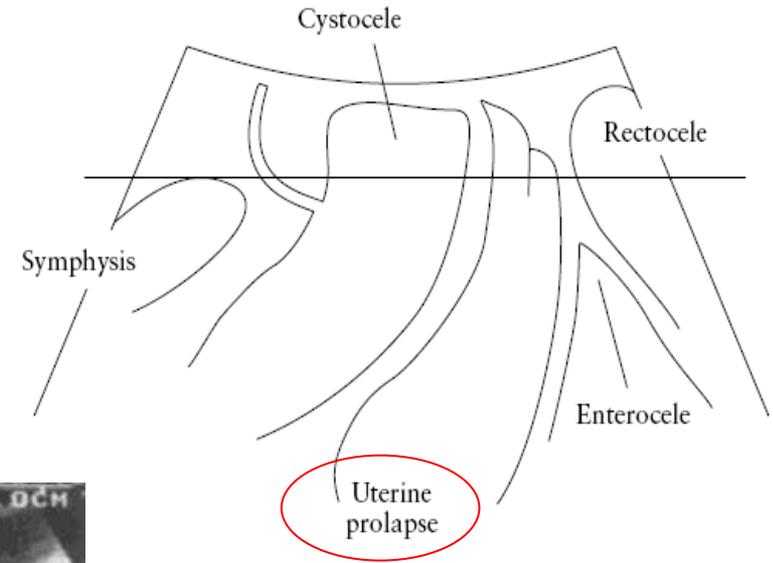
Quantificazione del prolasso degli organi pelvici

Cistocele vs Cistouretrocele



Quantificazione del prolasso degli organi pelvici

Isterocele



RETROVERSO



COMPARTO ANTERIORE

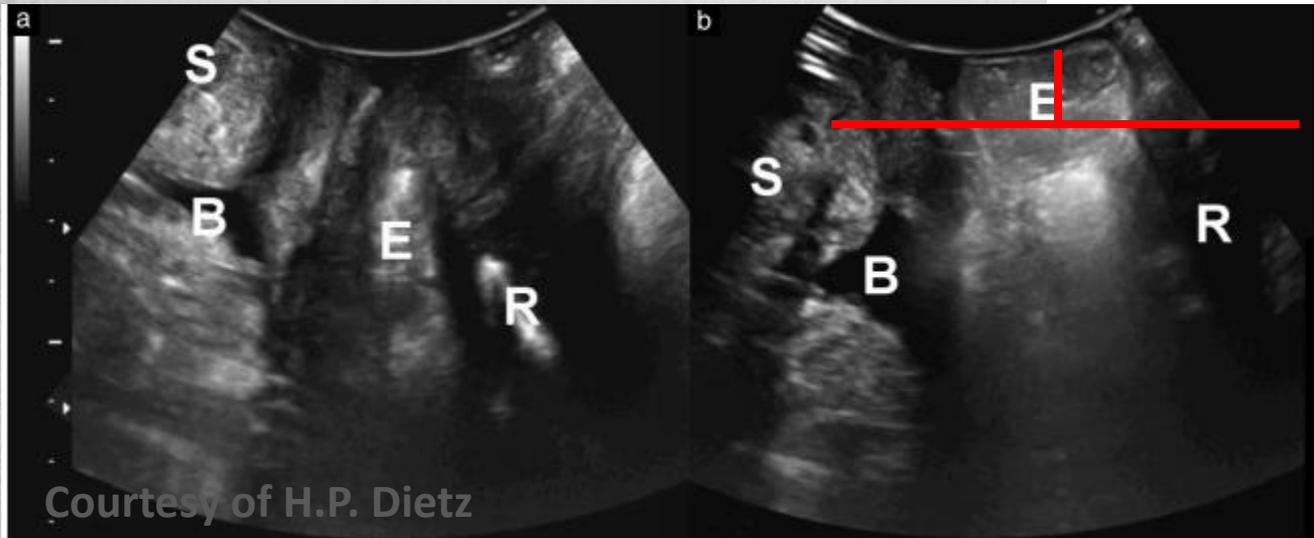
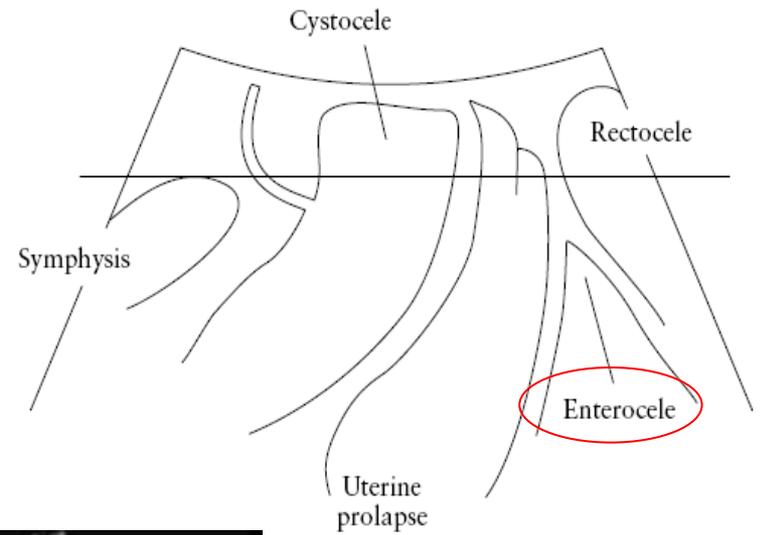
ANTIVERSO



COMPARTO POSTERIORE

Quantificazione del prolasso degli organi pelvici

Elitrocele



Courtesy of H.P. Dietz

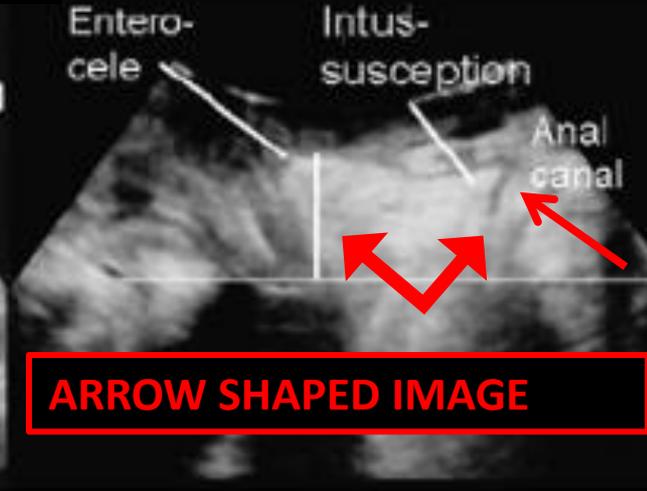
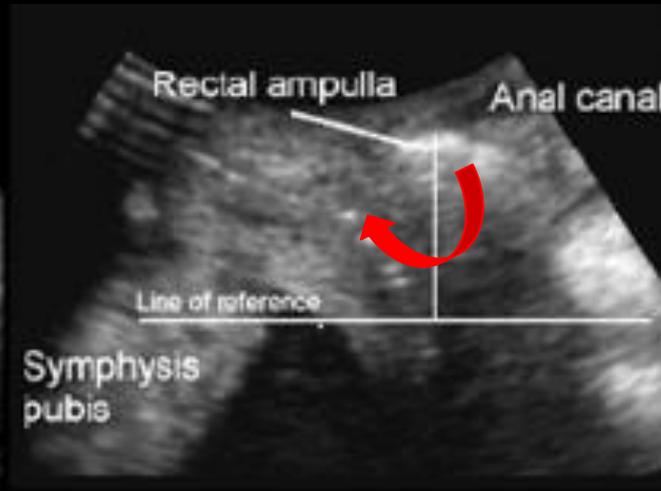
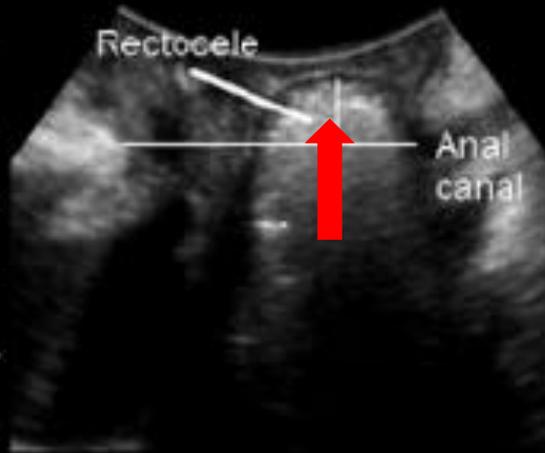
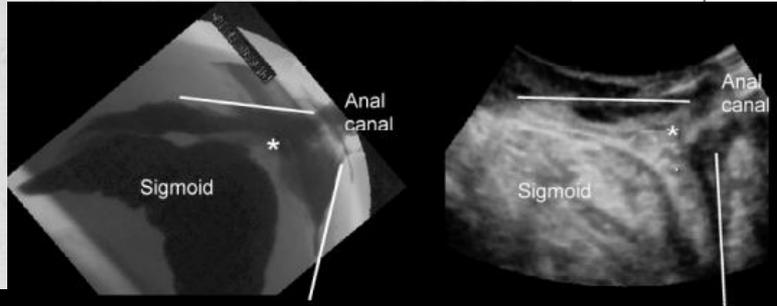
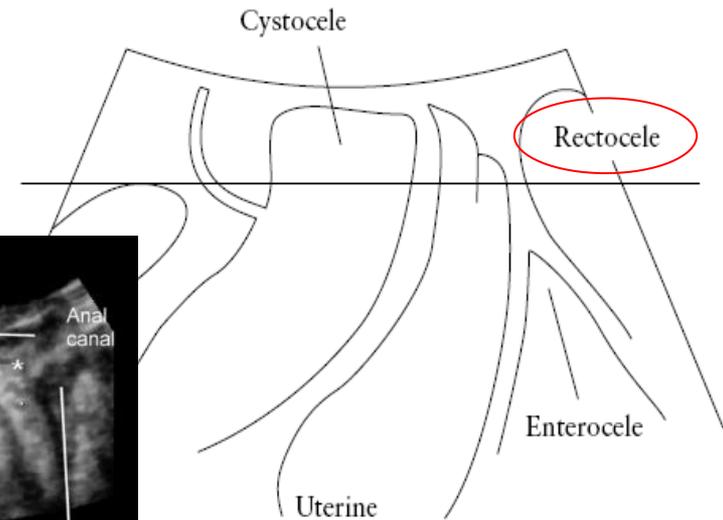
GROUND GLASS

**PERISTALSI
(Small Bowel)**

VERSAMENTO

Quantificazione del prolasso degli organi pelvici

Rettocele



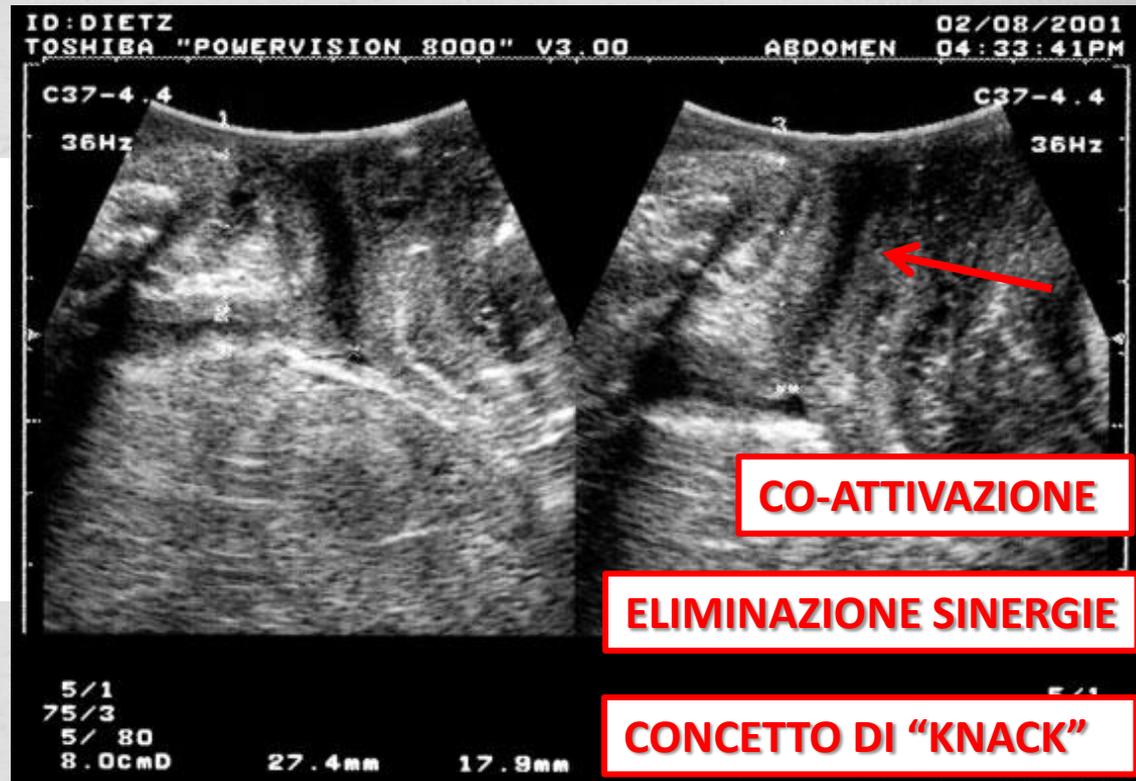
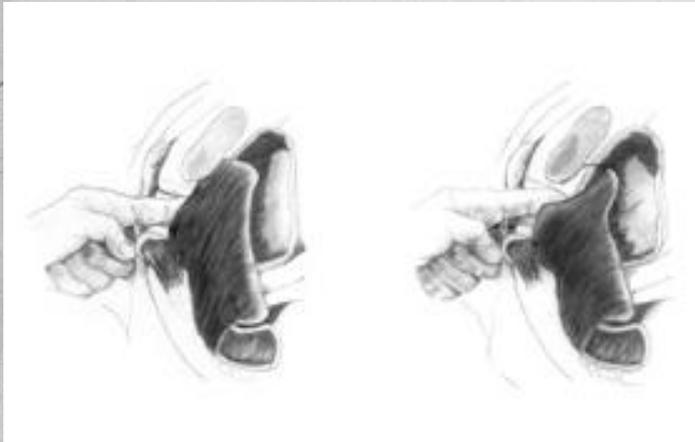
ARROW SHAPED IMAGE

Obstet Gynecol. 2017 Oct 6. doi: 10.1097/AOG.0000000000002245. [Epub ahead of print]

Accuracy of Four Imaging Techniques for Diagnosis of Posterior Pelvic Floor Disorders.

van Gruting IMA¹, Stankiewicz A, Kluivers K, De Bin R, Blake H, Sultan AH, Thakar R.

Valutazione e presa di coscienza dell'attività del muscolo elevatore dell'ano

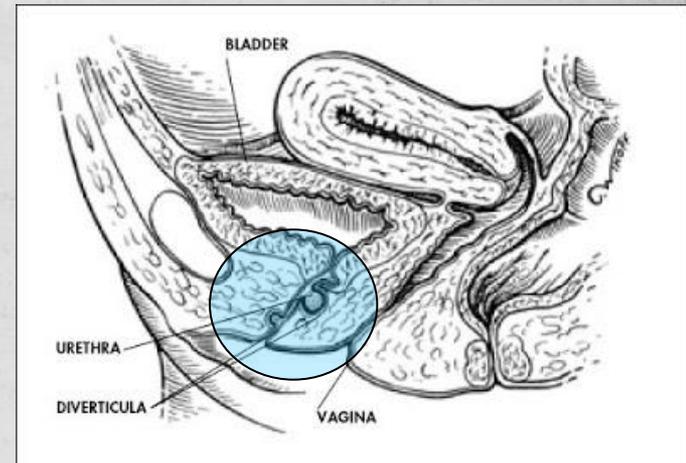
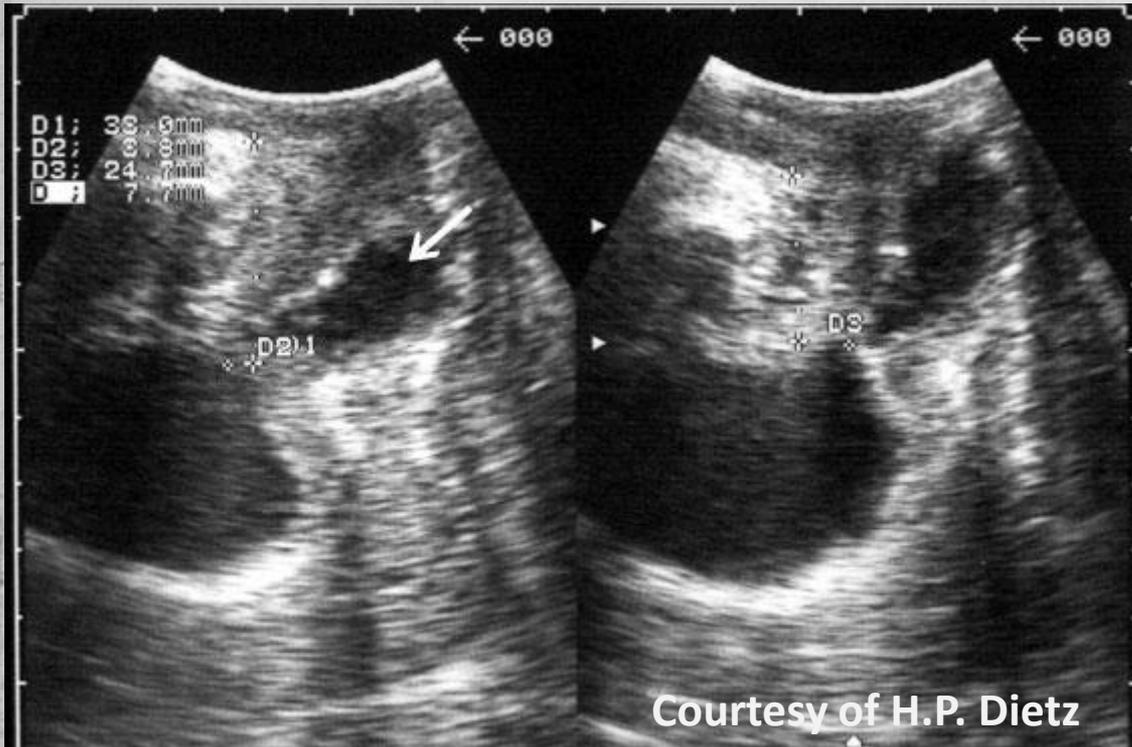


Courtesy of H.P. Dietz

Quantification of levator contraction:

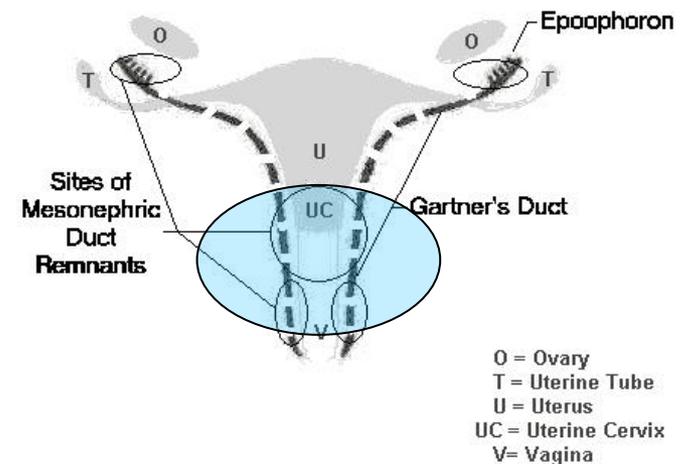
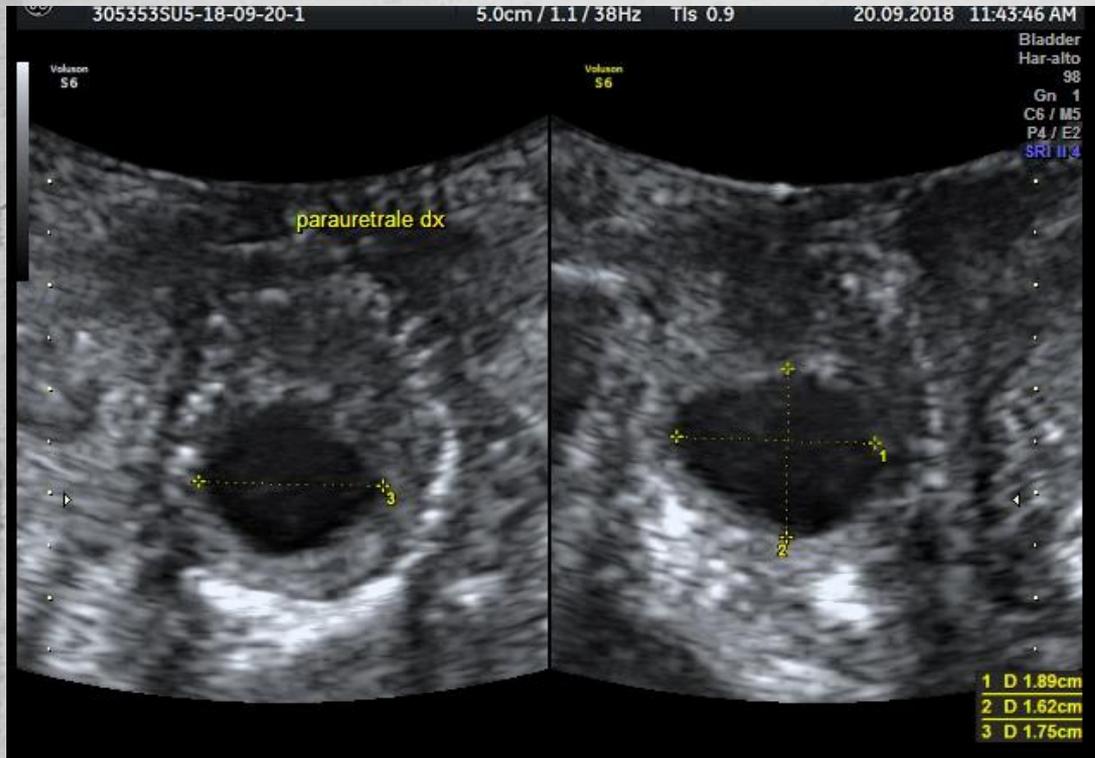
cranioventral displacement of the bladder neck is measured relative to the inferoposterior symphyseal margin. The measurements indicate 4.5 (31.9 – 27.4) mm of cranial displacement and 16.2 (17.9– 1.7) mm of ventral displacement of the bladder neck.

Valutazione del profilo vescicale, uretrale e dei tessuti circostanti



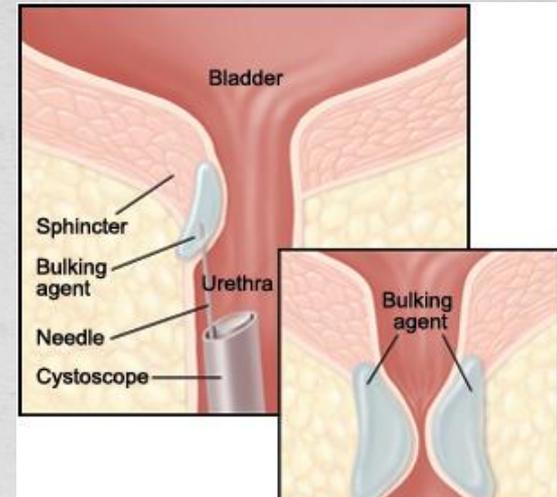
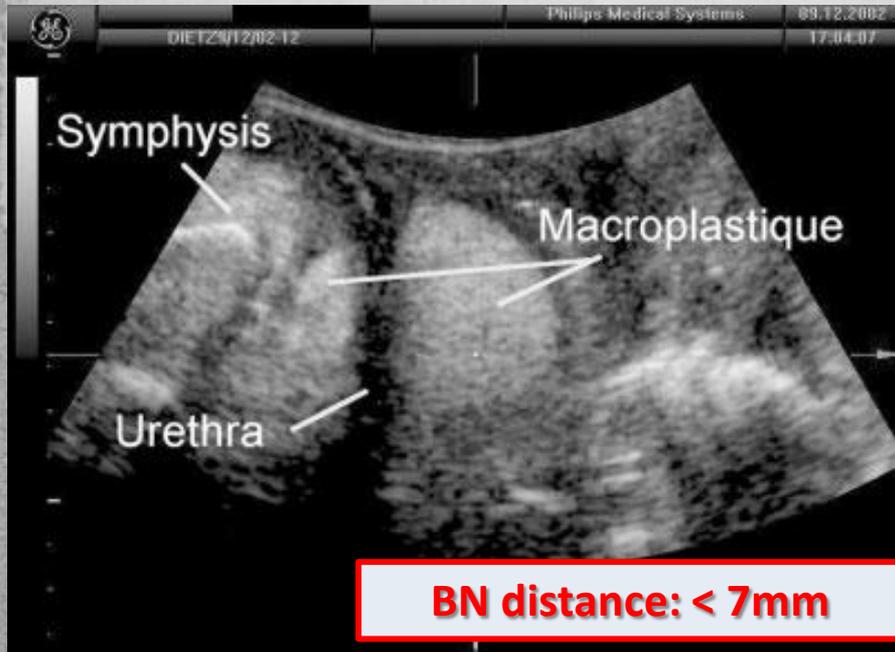
Urethral diverticulum (arrow) herniating downwards and clinically simulating a cystourethrocele shown at rest (a) and on Valsalva maneuver (b).
The neck of the diverticulum is seen close to the bladder neck

Valutazione del profilo vescicale, uretrale e dei tessuti circostanti



Gartner duct cyst close to bladder neck.

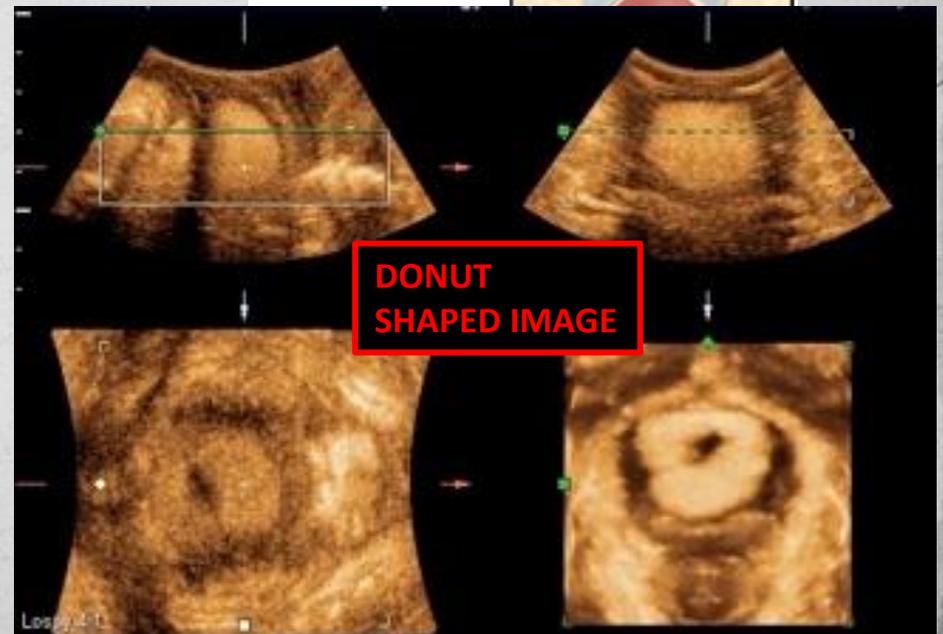
Valutazione delle protesi e degli injectables



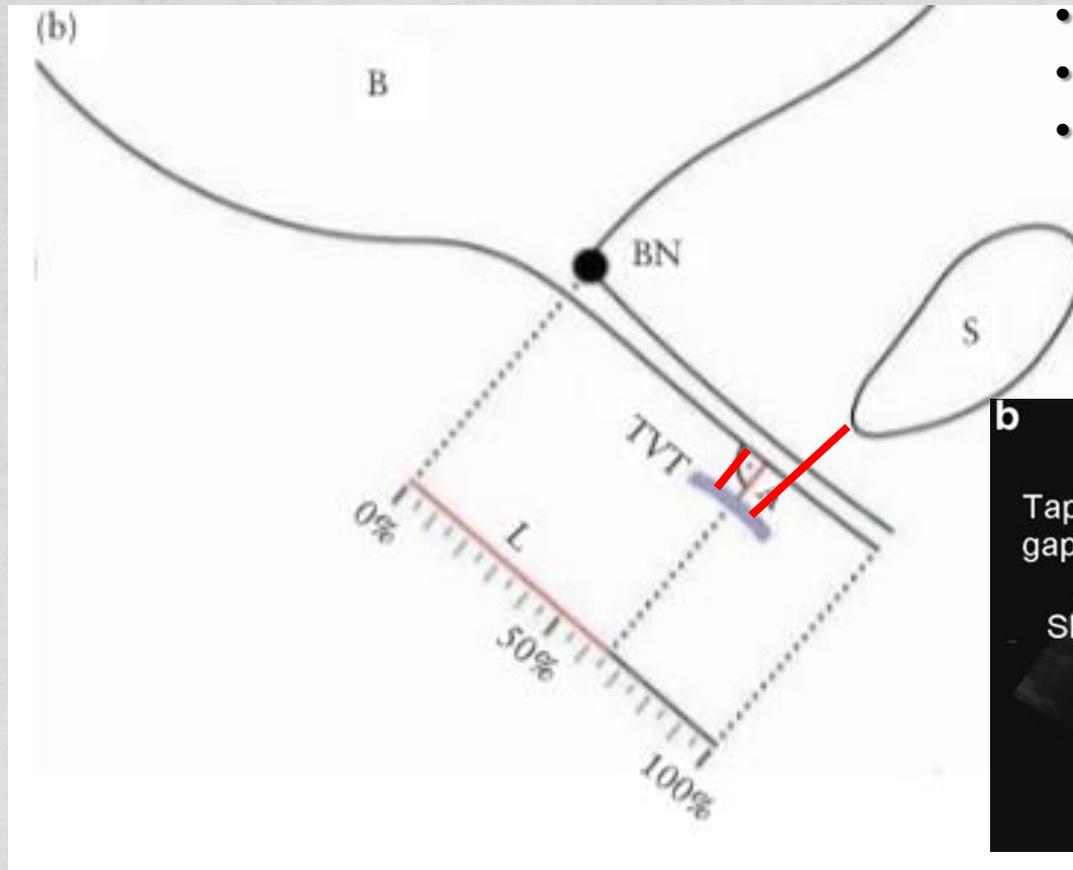
Macroplastique silicone macroparticles

used in incontinence surgery are very echogenic and located surrounding the urethra both anteriorly and posteriorly.

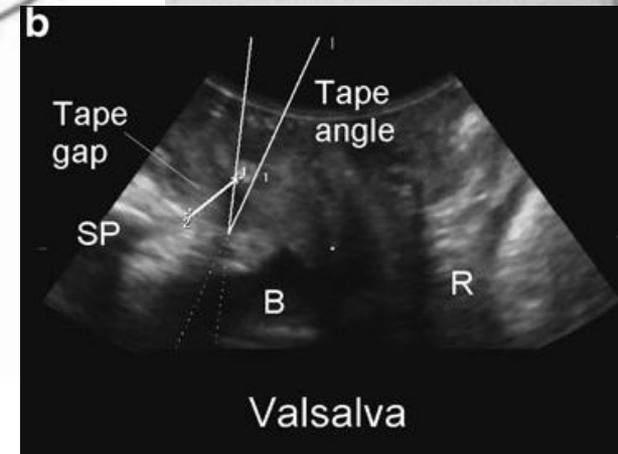
Courtesy of H.P. Dietz



Valutazione delle protesi e degli injectables: sling

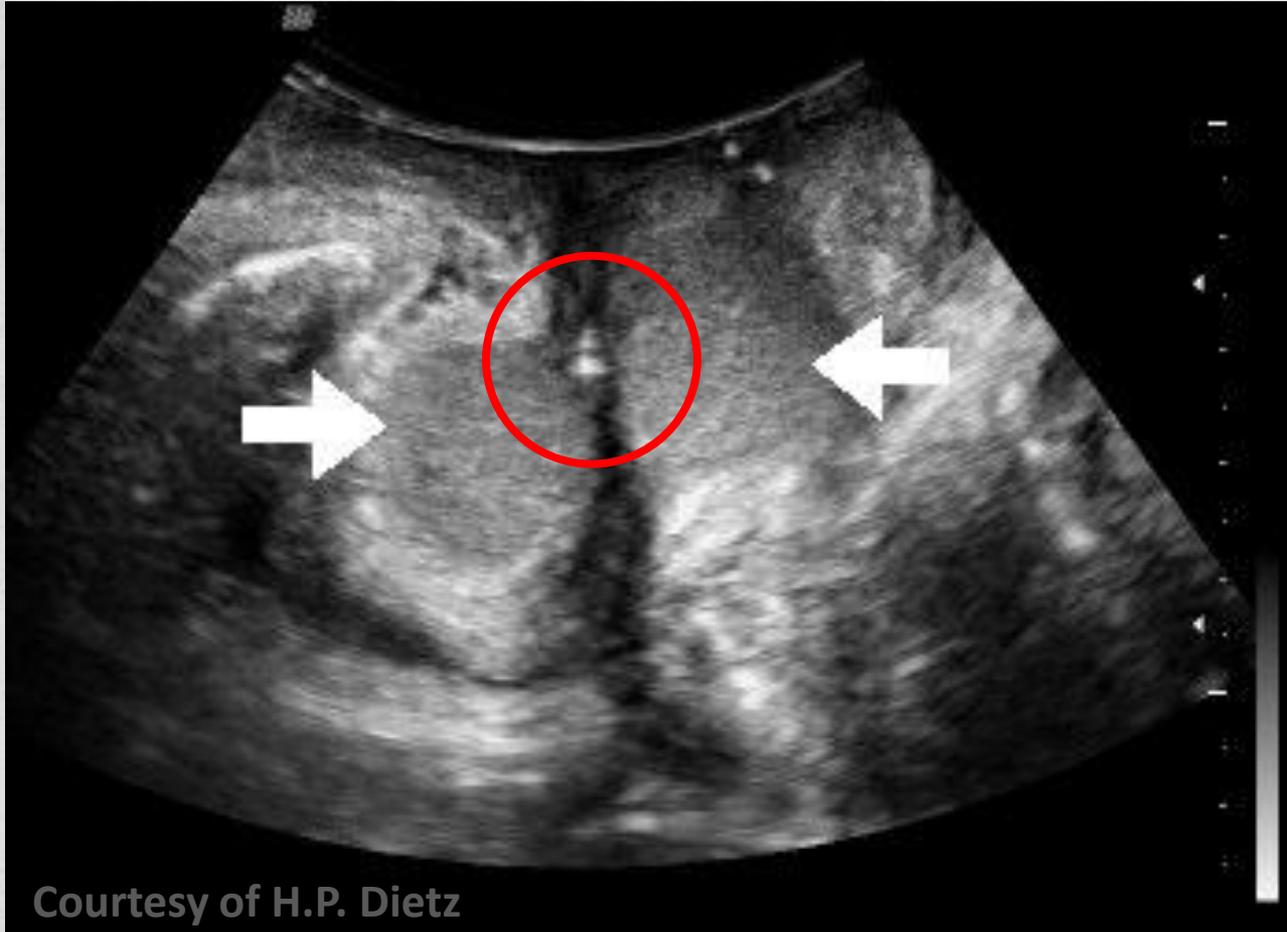


- 3-5 mm (tape-LSMU)
- 10mm LST
- 1/3 – 2/3 medio uretra (50-80%)



Kocizewski J et Al Can we place tension-free vaginal tape where it should be?
The one-third rule Ultrasound Obstet Gynecol 2012; 39: 210–214

Valutazione delle protesi e degli injectables: complicanze



Valutazione delle protesi e degli injectables: distacco mesh anteriore

**ANTERIOR
RECURRENCE**

**APICAL
RECURRENCE**

**TOTAL
RECURRENCE**



Courtesy of H.P. Dietz

In all instances recurrence is likely to be exacerbated by mesh removal

***Un problema
che nasce da lontano..***



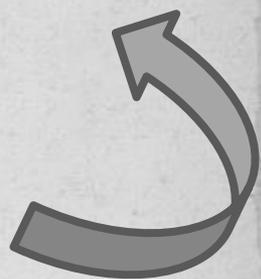
GRAVIDANZA

E PARTO

**FATTORI
DI RISCHIO**

MENOPAUSA

DISTURBI DEL PERINEO



Un problema che nasce da lontano

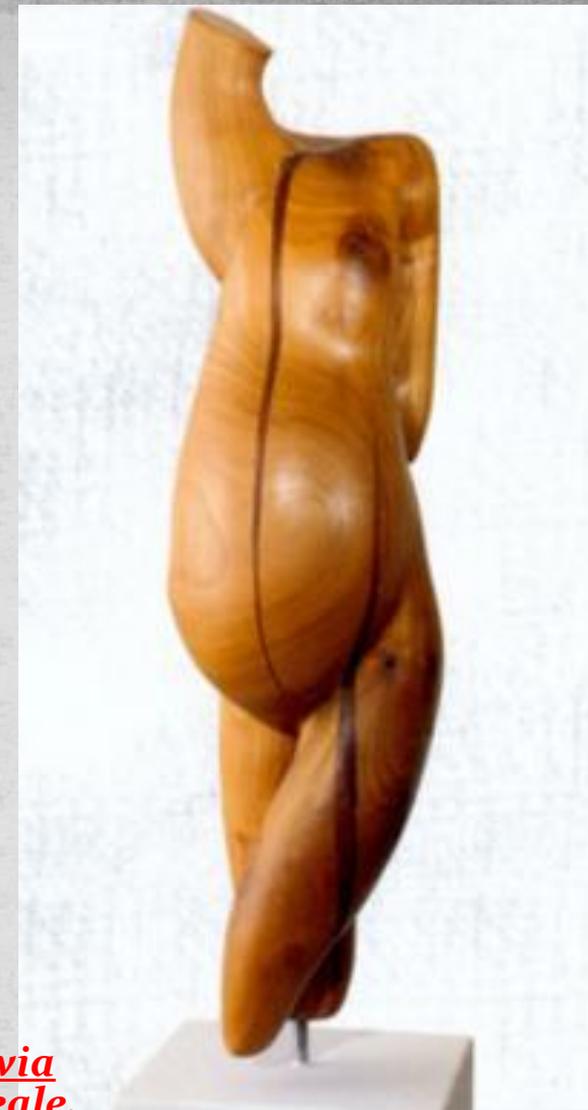
Nella vita della donna
l'esperienza ostetrica costituisce il
più importante fattore di rischio
per il successivo sviluppo delle
disfunzioni perineali

Baessler k. 2003

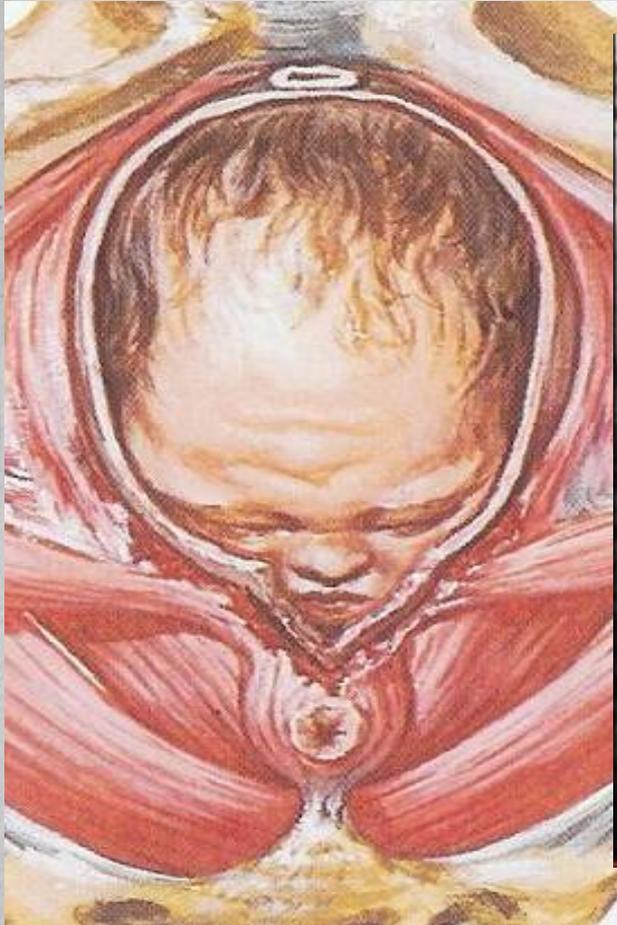
Victoria L. Handa 1996

Thomas L. 1980

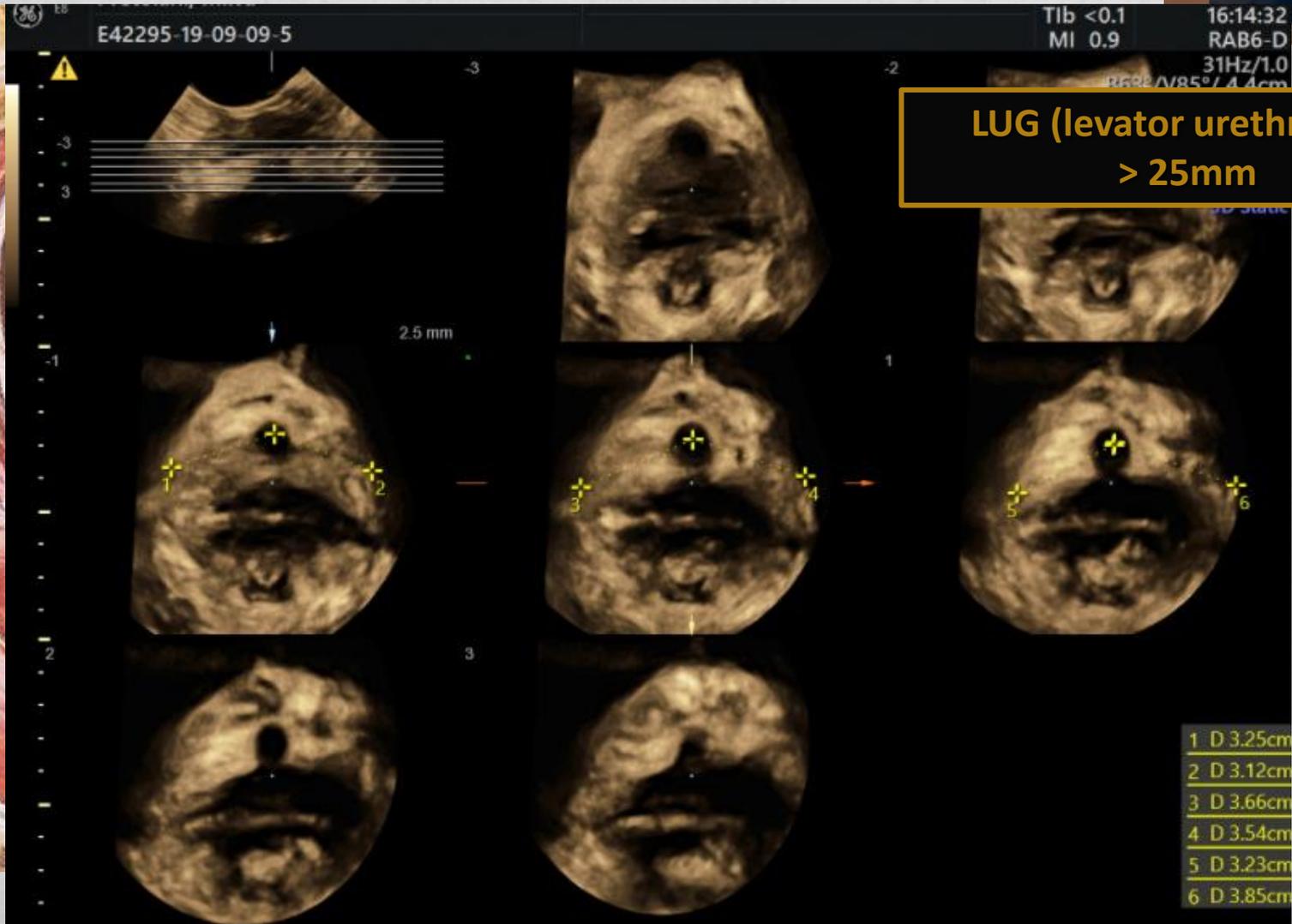
- *Si stima che **oltre l'85% delle donne che hanno partorito per via vaginale** abbia subito qualche grado di traumatismo perineale, che nel 60% dei casi richiederà un trattamento riparativo in età menopausale*
(RCOG)



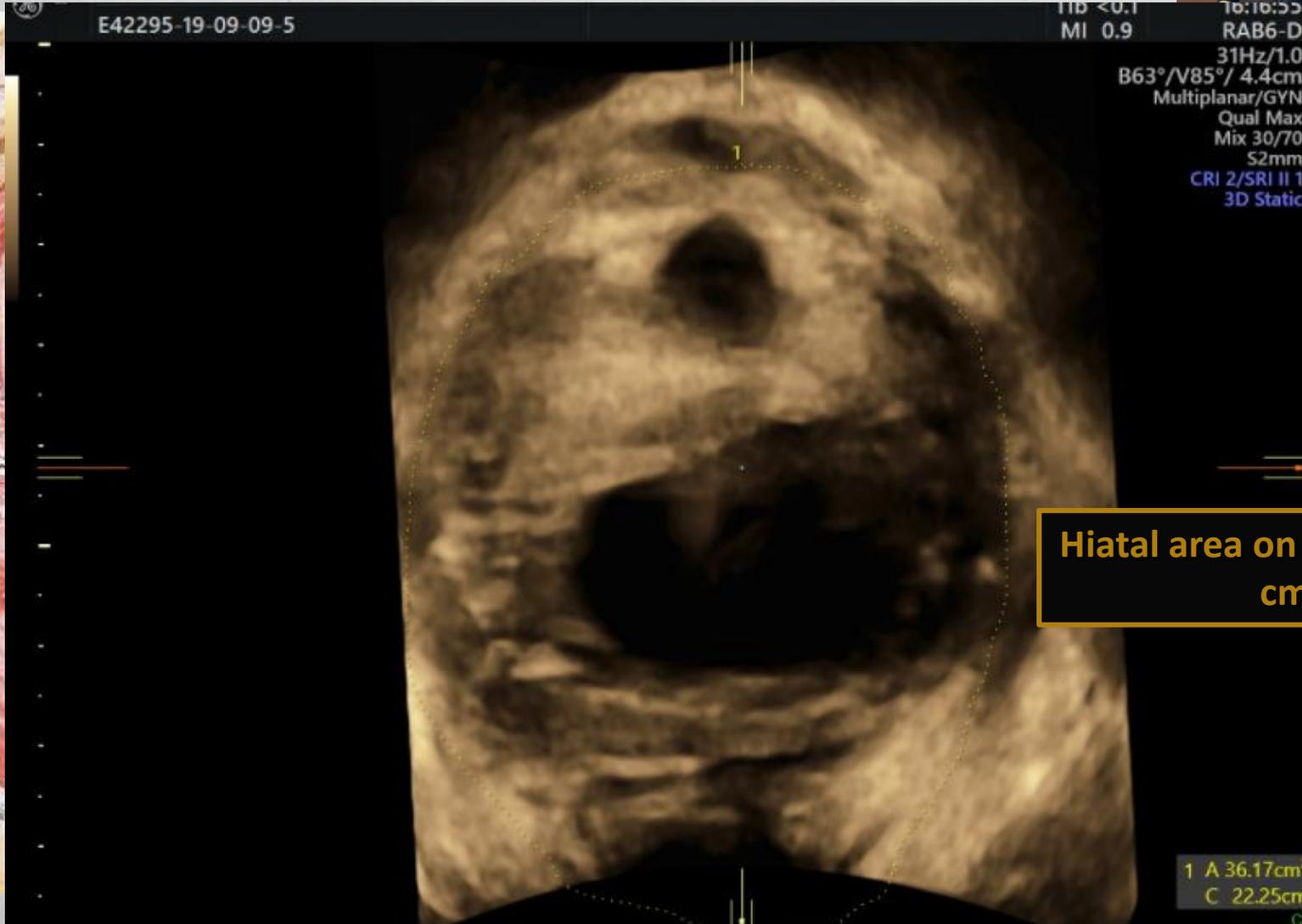
Rischio ostetrico: anal sphincter deficiency



Rischio ostetrico: levator ani avulsion



Rischio ostetrico: levator ani microtrauma



**Hiatal area on Valsalva > 25
cm²**

Valutazione dei difetti del muscolo elevatore dell' ano: perché è importante?



- **fattore di rischio maggiore nel predire la comparsa di:**
 - **prolasso genitale e sintomatologia ad esso correlata**
 - **difetti spesso ad esso associati (intussuscezione retto-rettale)**
- **minor correlazione, ma presente, con difetti funzionali (incontinenza urinaria/anale)**
- **riduzione della funzionalità del muscolo di almeno 1/3**

E' probabilmente il fattore di rischio indipendente più forte nella predizione della probabilità di ricorrenza di prolasso nel tempo (soprattutto per il compatimento anteriore), ed è fortemente suggerito di effettuare una sua acquisizione prima di qualunque procedura chirurgica per prolasso

Valutazione dei difetti del muscolo elevatore dell' ano: perché è importante?

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Fundal pressure in second stage of labor (Kristeller maneuver) is associated with increased risk of levator ani muscle avulsion

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KEYWORDS: 4D transperineal ultrasound; fundal pressure; Kristeller maneuver; levator ani muscle; pelvic floor

ABSTRACT

Objective To investigate the association between application of fundal pressure during the second stage of labor (Kristeller maneuver) and the risk of levator ani muscle (LAM) injury.

Methods This was a prospective case-control study of women recruited immediately after their first vaginal delivery in our university hospital between March 2014 and September 2016. Women who underwent the Kristeller maneuver were recruited as cases. For each case, a control (no Kristeller) was recruited matched for body mass index, use of epidural analgesia, duration of second stage of labor and birth weight. All women were invited to undergo four-dimensional (4D) transperineal ultrasound (TPU) 3–6 months postpartum. The mean outcome measure was the presence of LAM avulsion on 4D-TPU. TPU results were compared between cases and controls. Multivariate logistic regression analysis was performed to identify independent risk factors for LAM avulsion.

Results During the study period, 134 women in the Kristeller maneuver group and 128 women in the control group underwent TPU assessment. Women who underwent the Kristeller maneuver had a higher prevalence of LAM avulsion than did controls (38/134 (28.4%) vs 18/128 (14.1%); $P=0.005$). In addition, women in the Kristeller-maneuver group had a larger basal area on maximum Valalva maneuver and a greater increase in basal area from rest to maximum Valalva. On multivariate logistic regression analysis, use of the

Kristeller maneuver was the only independent factor associated with LAM avulsion (odds ratio, 2.5 (95% CI, 1.29–4.51)).

Conclusion The Kristeller maneuver is associated with an increased risk of LAM avulsion when applied in women during their first vaginal delivery. This should be taken into account when deciding to use fundal pressure to accelerate the second stage of labor and when counseling women following childbirth. Copyright © 2018 ISUOG. Published by John Wiley & Sons Ltd.

INTRODUCTION

Application of fundal pressure during the second stage of labor, also known as the Kristeller maneuver, remains one of the most controversial, understudied and under-reported maneuvers in obstetrics^{1–4}. The maneuver is usually applied to accelerate fetal head delivery⁵. Indications include suspected fetal distress, dystocia and maternal exhaustion, although it is acknowledged that often it is applied without any formal indication⁶. Published data suggest that use of the Kristeller maneuver in clinical practice varies worldwide; in some centers it is never used and is regarded as obsolete, whereas in others it is considered a routine procedure^{7,8}. Association of the maneuver with maternal and perineal complications has been reported in several studies. Among the possible consequences, fetal shoulder dystocia, fetal acidosis, maternal rib fracture, severe perineal tears, uterine rupture, dyspareunia, stress urinary incontinence, acute postpartum urinary retention and other pelvic

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Accepted: 26 April 2018



Short oral presentation award

This is to certify that

The effect of Kristeller manoeuvre on postpartum pelvic organ prolapse: prospective case-control study

as presented by

Maria Chiara Paganotto

has been selected as the best short oral presentation in its category at the

27th World Congress on Ultrasound in Obstetrics and Gynecology

16-19 September 2017, Vienna, Austria

Dirk Timmerman
Scientific Chair

Christoph Brezinka
Congress Chair

Daniela Prayer
Congress Chair



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and Gynecology

Take home messages

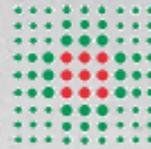


L'ecografia si inserisce nell'iter diagnostico uroginecologico come un utile strumento informativo, integrativo e non invasivo.

Esame obiettivo uroginecologico, anamnesi, ecografia ed esami strumentali forniscono in maniera integrata le informazioni necessarie per un corretto inquadramento diagnostico e prognostico della paziente, al fine di individuare e proporre l'approccio terapeutico più adeguato ed individuarne precocemente le complicanze.

Ruolo sempre più preponderante nella diagnosi precoce alla paziente asintomatica in età fertile con conseguente possibilità di prevenzione primaria delle patologie uroginecologiche.





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Dott.ssa Maria Chiara Paganotto

Azienda Ospedaliera Area Vasta della Romagna Unità Sanitaria Locale di Ravenna

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