Specific complications after transvaginal mesh repair with kits: how to prevent? How to manage?
Workshop 30
Tuesday 24 August 2010, 09:00 – 12:00

Time	Time	Topic	Speaker
09.00	09.05	Introduction - Background	Brigitte Fatton
09.05	09.30	Classification of complications: the first step to improve our practices ? (25 min)	Bernard Haylen
09.30	10.30	Mesh shrinkage	
		- how to assess ? (15min)	Bernard Jacquetin
		- vaginal and sexual complications (15min)	Brigitte Fatton
		- visceral complications (15 min)	Michel Cosson
		- Global discussion	
10.30	11.00	Coffee break	
11.00	11.20	Mesh exposure: management pathway (20 min)	Willy Davila
11.20	11.40	Recurrence after transvaginal mesh repair: what should we do ? (20 min)	Peter Dwyer
11.40	12.10	Interactive session – Clinical scenarios	
		-Debate around clinical cases. 1 – rectal stricture with obstructed defecation 2 – frequency, urgency and painful bladder with exposure visible at cystoscopy 3 – severe dyspareunia. Mesh exposure , skrinkage and band on examination	Michel Cosson Peter Dwyer Bernard Jacquetin
12.15		End of session	Brigitte Fatton

Aims of course/workshop

Review specific complications of transvaginal mesh repair
Review and discuss de novo dyspareunia after mesh repair.
Discuss interest of ultrasound in assessment of anatomical and functional results.
Review specific risks and limits of transvaginal mesh repair.
Review clinical scenarios and debate about typical cases of specific complications with the panel.

Specific complications after transvaginal mesh repair with kits: how to prevent? How to manage?
Workshop 30
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Educational Objectives

With the extensive use of transvaginal meshes, specific complications have been described with, sometimes, deleterious consequences for the patients. This workshop will try to highlight some critical points, to emphasize preventive measures and to define the optimal management of such complications. In addition, through clinical cases, delegates will be offered the opportunity to debate and exchange about their clinical practices and to discuss strategy of management.

AN INTERNATIONAL UROGYNECOLOGICAL ASSOCIATION (IUGA) – INTERNATIONAL CONTINENCE SOCIETY (ICS) JOINT TERMINOLOGY AND CLASSIFICATION OF THE COMPLICATIONS RELATED DIRECTLY TO THE INSERTION OF PROSTHESES (MESHES, IMPLANTS, TAPES) & GRAFTS IN FEMALE PELVIC FLOOR SURGERY

ICS-IUGA COMBINED MEETING TORONTO 2010

BT HAYLEN , RM FREEMAN, SE SWIFT, M COSSON, GW DAVILA, J DEPREST, PL DWYER, B FATTON, E KOCJANCIC, J LEE, C MAHER, DE RIZK, E PETRI, PK SAND, GN SCHAER, R WEBB







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. SECOND COLLABORATION BETWEEN TWO INTERNATIONAL ORGANIZATIONS- IUGA & ICS (c.f.Terminology for Pelvic Floor Dysfunction)

. FIRST ATTEMPT AT A FORMAL TERMINOLOGY AND CLASSIFICATION FOR COMPLICATIONS OF PROSTHESES & GRAFTS IN FEMALE PELVIC FLOOR SURGERY

. 16 CO-AUTHORS, 7 COUNTRIES, 15 INSTITUTIONS

Plymouth Hospitals NHS
NHS Trust

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

KATHOLIEKE UNIVERSITEIT LEUVEN

Mercy Health
Care first

UIC
The University of Illinois at Chicago

Mercy Health
Care first

NORTHWESTERN UNIVERSITY
1851

Kantonsspital Aarau

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AIMS OF PROJECT:

To develop a clear, clinically- based, consensus (collective opinion) Terminology and Classification for complications directly arising from the insertion of prostheses and grafts in female pelvic floor surgery

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METHODOLOGY (A):

A: Draft Report (Version1):

. **Terminology defined: Range of sources for definitions**

. **Classification developed to allow comprehensive coverage of both insertion complications and healing abnormalities**

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METHODOLOGY (B):

B: Committee Review:

.16 Co-authors

. **5** Rounds of review: (1) 3 x IUGA Standardization and Terminology Committee; (2) 2(3) x Joint IUGA/ICS (4 + 4) Working Group plus test (10 clinical scenarios);

. Each round involved independent review by relevant Committee members, collation of comments and final decision making on definitions, additions and deletions based on collective opinion (consensus).

DEFINITIONS

TERMS USED	DEFINITION
PROSTHESIS	A fabricated substitute to assist a damaged body part or to augment or stabilize a hypoplastic structure.
A: MESH	A (prosthetic) network fabric or structure.
B: IMPLANT	A surgically inserted or embedded (prosthetic) device.
C: TAPE (SLING)	A thin strip of synthetic material.
GRAFT .	
A: AUTOLOGOUS	From the woman's own tissues e.g. dura mater, rectus sheath or fascia lata.
B: ALLOGRAFTS	From post-mortem tissue banks.
C: XENOGRAFTS	From other species e.g. modified porcine dermis, porcine small intestine, bovine pericardium.
TROCAR	Narrow prosthetic/graft insertion needle device

DEFINITIONS

COMPLICATION	**A morbid process or event that occurs during the course of a surgery that is not an essential part of that surgery.**
CONTRACTION	**Shrinkage or reduction in size.**
PROMINENCE	**Parts that protrude beyond the surface (no penetration).**
PENETRATION	**Piercing or entering (i.e. the vagina).**
SEPARATION	**Physically disconnected (e.g. vaginal epithelium).**
EXPOSURE	**A condition of displaying, revealing, exhibiting or making accessible e.g. mesh exposure.**
EXTRUSION	**Passage gradually out of a body structure or tissue e.g. tape extrusion into the vagina.**
COMPROMISE	**Bring into danger.**
PERFORATION	**Abnormal opening into a hollow organ or viscus.**
DEHISCENCE	**A bursting open, splitting or gaping along natural or sutured lines**

IUGA/ICS Joint Terminology and Classification of Complications Related Directly to the Insertion of Prostheses (Meshes, Implants, Tapes) or Grafts In Female Pelvic Floor Surgery

Bernard T Haylen[o], Robert M Freeman*^[o], Steven E Swift*[o], Michel Cosson[o], G Willy Davila[g], Jan Deprest[o], Peter L Dwyer*[o], Brigitte Fatton[g], Ervin Kocjancic[o], Joseph Lee*, Chris Maher[g], Diaa E Rizk*, Eckhard Petri*, Peter K Sand*, Gabriel N Schaer*, Ralph Webb^[o]*

Standardization and Terminology Committee, International Urogynecological Association (IUGA)* & International Continence Society (ICS)^;Joint IUGA/ICS Working Group on Complications Terminology[o]

Table 1: **Terminology involved in the Classification**

TERMS USED	DEFINITION
PROSTHESIS	**A fabricated substitute to assist a damaged body part or to augment or stabilize a hypoplastic structure**
A: Mesh	**A (prosthetic) network fabric or structure**
B: Implant	**A surgically inserted or embedded (prosthetic) device**
C: Tape (Sling)	**A thin strip of synthetic material**
GRAFT	**Any tissue or organ for transplantation. This term will refer to biological materials inserted**
A: Autologous Grafts	**From the woman's own tissues e.g. dura mater, rectus sheath or fascia lata**
B: Allografts	**From post-mortem tissue banks**
C: Xenografts	**From other species e.g. modified porcine dermis, porcine small intestine, bovine pericardium**
TROCAR	**Narrow prosthetic/graft insertion needle device**
COMPLICATION	**A morbid process or event that occurs during the course of a surgery that is not an essential part of that surgery**
CONTRACTION	**Shrinkage or reduction in size**
PROMINENCE	**Parts that protrude beyond the surface (no penetration)**
PENETRATION	**Piercing or entering (i.e. the vagina)**
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TABLES – HOPEFULLY USER-FRIENDLY

COLOUR LAMINATED DOUBLE-SIDED A4

SIDE 1:

Table 1: Terminology

Table 3: Examples of Complications /CTS Codes

Table 4: Mesh Contraction Subclassification

SIDE 2:

Table 2: CTS (Category, Time, Site) Classification

CTS CLASSIFICATION (CATEGORY, TIME, SITE)

- **CATEGORIES: 7 (Originally 8)**
- **1: Vaginal: No epithelial separation**
- **2: Vaginal: Smaller exposure (<= 1cm)**
- **3: Vaginal: Larger exposure (> 1cm)**
- **4: Urinary Tract**
- **5: Rectum or Bowel**
- **6: Skin Compromise**
- **7: Patient Compromise**
- **CATEGORY (1-3, 6) DIVISIONS:**
- **A: ASYMPTOMATIC**
- **B: SYMPTOMATIC**
- **C: INFECTION**
- **D: ABSCESS**

CTS CLASSIFICATION (CATEGORY, TIME, SITE)

CATEGORY (4, 5, 7) DIVISIONS:

4: URINARY TRACT: (A) Small intraoperative defect; (B) Other lower urinary tract complication or urinary retention; (C) Ureteric / Upper tract complication.

5: RECTUM OR BOWEL: (A) Small intraoperative defect; (B) Other rectal injury/ compromise; (C) Small or large bowel injury /compromise; (D) Abscess.

7: PATIENT COMPROMISE: (A) Bleeding complication including haematoma; (b) Major degree of resuscitation or Intensive Care; (C) Mortality

CTS CLASSIFICATION (CATEGORY, TIME, SITE)

- **TIME DIVISIONS: 3 (originally 7)**
- **ACUTE**
- **T1: Intraoperative – 48hrs**
  - **Insertion issues more likely**
- **SUBACUTE**
- **T2: 48hrs – 6 months postoperative**
  - **Healing / Infection issues more likely**

CHRONIC

- **T3: Over 6 months postoperative –**
  - **late healing / mesh contraction issues more likely**

CTS CLASSIFICATION (CATEGORY, TIME, SITE)

- **SITE DIVISIONS: 5 (Originally 7)**

VAGINAL

- **S1: Vaginal: Area of suture line**
- **S2: Vaginal: Away from area of suture line**

TROCAR

- **S3: Trocar passage/ entry / exit (except intra-abdominal S7)**

OTHER

- **S4: Other Skin site**
- **S5: Intra-abdominal**

Table 2: A CLASSIFICATION OF COMPLICATIONS RELATED DIRECTLY TO THE INSERTION OF PROSTHESES (MESHES, IMPLANTS, TAPES) OR GRAFTS IN UROGYNECOLOGICAL SURGERY

CATEGORY

	General Description	A (Asymptomatic)	B (Symptomatic)	C (Infection) D (Abscess)
1	**Vaginal**: no epithelial separation Include prominence (e.g. due to wrinkling or folding), penetration (without separation) or contraction (shrinkage) Grades of mesh contraction (*a-e*) from Table 4 is incorporated	**1A**: Abnormal prosthesis or graft finding on clinical examination	**1B**: Symptomatic e.g. unusual discomfort / pain; dyspareunia (either partner); bleeding	**1C**: Infection (suspected or actual)
2	**Vaginal**: smaller ≤ 1cm exposure	**2A**: Asymptomatic	**2B**: Symptomatic	**2C**: Infection **D** = Abscess
3	**Vaginal**: larger >1cm exposure, including extrusion	**3A**: Asymptomatic 1-3A*a* if mesh contraction	**3B**: Symptomatic 1-3B (*b-e*) if mesh contraction	**3C**: Infection **D** = Abscess 1-3C (*b-e*) if mesh contraction
4	**Urinary Tract** compromise or perforation Include prosthesis (graft) perforation, fistula and calculus	**4A**: Small intraoperative defect e.g. bladder perforation	**4B**: Other lower urinary tract complication or urinary retention	**4C**: Ureteric or upper urinary tract complication
5	**Rectum or Bowel** compromise or perforation Include prosthesis (graft) perforation and fistula	**5A**: Small intraoperative defect (rectal or bowel)	**5B**: Rectal injury or compromise	**5C**: Small or Large bowel injury or compromise **D** = Abscess
6	**Skin** compromise Include discharge pain lump or sinus tract formation	**6A**: Asymptomatic, abnormal finding on clinical examination	**6B**: Symptomatic e.g. discharge, pain or lump	**6C**: Infection e.g. sinus tract formation **D** = Abscess
7	**Patient** compromise Include hematoma or systemic compromise	**7A**: Bleeding complication including haematoma	**7B**: Major degree of resuscitation or intensive care*	**7C**: Mortality * *(additional complication - no site applicable - S0)

TIME (clinically diagnosed)

T1: Intraoperative to 48 hours

T2: 48 hours to 6 months

T3: over 6 months

SITE

S1: Vaginal: area of suture line

S2: Vaginal: away from from area of suture line

S3: Trocar passage
Exception: Intra-abdominal (S5)

S4: other skin site

S5: Intra-abdominal

N.B.
1. **Multiple complications may occur in the same patient. There may be early and late complications in the same patient. i.e. All complications to be listed. Tables of complications may often be procedure specific.**
2. **The highest final category for any single complication should be used if there is a change within time. (patient 888)**
3. **Urinary tract infections and functional issues (apart from 4B) have not been included.**

IUGA international urogynecological association ICS

CODE

[ ][ ][ ] - T [ ] - S [ ]

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MESH CONTRACTION SUBCLASSIFICATION

Table 4: **Grades of Mesh Contraction: subclassification of Complication Category**

To specify the presence of a mesh contraction as part or all of the abnormal finding and the grade in terms of the presence and severity of symptoms

a	**asymptomatic**
b	**provoked pain only (during vaginal examination)**
c	**pain during intercourse**
d	**pain during physical activities**
e	**spontaneous pain**

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- EXAMPLES
- (Table 3 and Paper)

Table 3: An example of a *non – procedure – specific* table of complications directly related to the insertion of Prostheses (Meshes, Implants, Tapes) or Grafts in Urogynecological Surgery using the Category (C), Time (T) and Site (S) system. One might expect these tables to be often procedure – specific.

Patient Number	Description of complications	Code	Code
000	Retropubic haematoma following a tape procedure (first 24 hours)	7A /T1/ S3	
111	Persistent thigh pain six weeks after an Obturator tape	1B /T2/ S4	
222	Bowel obstruction and 2cm vaginal vault exposure with bleeding 6 months after a mesh sacrocolpopexy	5C /T3/ S5	3B /T3/ S2
333	Mesh penetration (lateral vaginal) in a woman at a 6 week postop review whose partner is describing discomfort with intercourse	1B /T2/ S2	
444	A midline vaginal exposure of mesh (< 1cm) with redness, discharge 15 months after an anterior colporrhaphy using mesh. Mesh contraction noted.	2C*c*/T3/S1	
555	Lateral vaginal extrusion with malodorous discharge and a midline rectovaginal fistula 8 months after a posterior vaginal tape	3C /T3/ S2	5B /T3/ S1
666	Intraoperative obturator vessel injury during a transobturator tape procedure requiring major resuscitation	7B /T1/ S3	
777	Persistent intravesical tape / calculus Formation / haematuria 2 years after a retropubic tape procedure	4B /T3/ S3	
888	Pelvic abscess presenting 8 days after a mesh sacrocolpopexy complicated by an intraoperative bowel defect (final category). Initial code was 6A/T1/S5	5D /T2/S5	
999	Tender prominent mesh contraction noted 9 months after an anterior mesh repair (no symptoms, husband unwell)	1B*b*/T3/S1	
XXX	Persistent postvoid residual of 150mls with recurrent UTI requiring posterior division of suburethral tape 4 months after insertion	4B /T2/S1	

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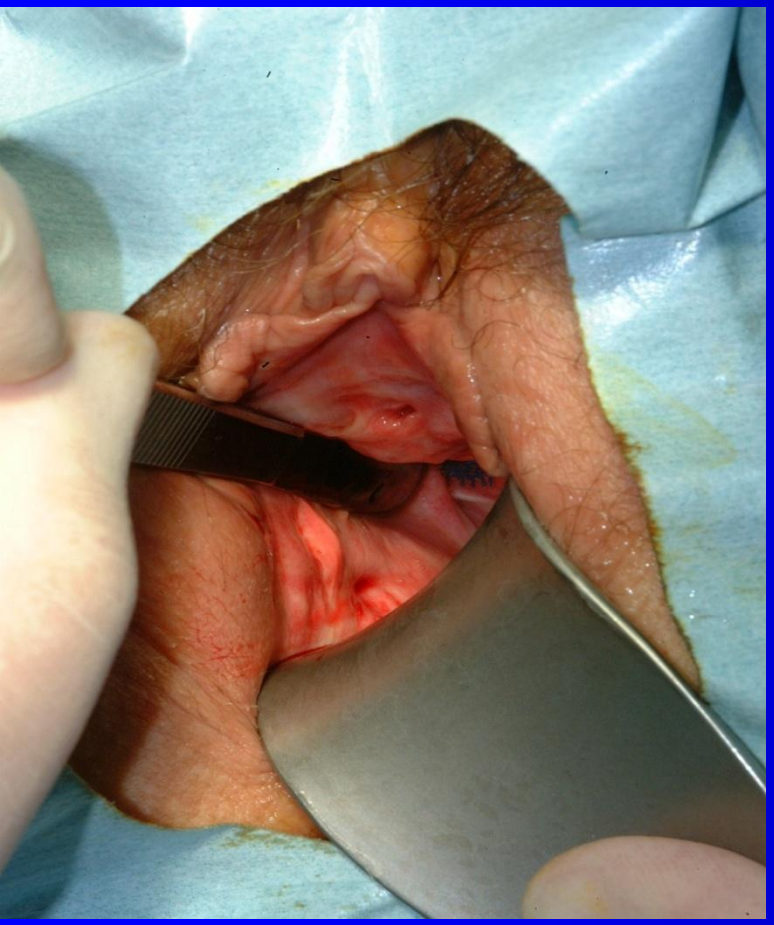
CASE STUDIES
(Paper only)

CASE 1

TAPE EXPOSURE



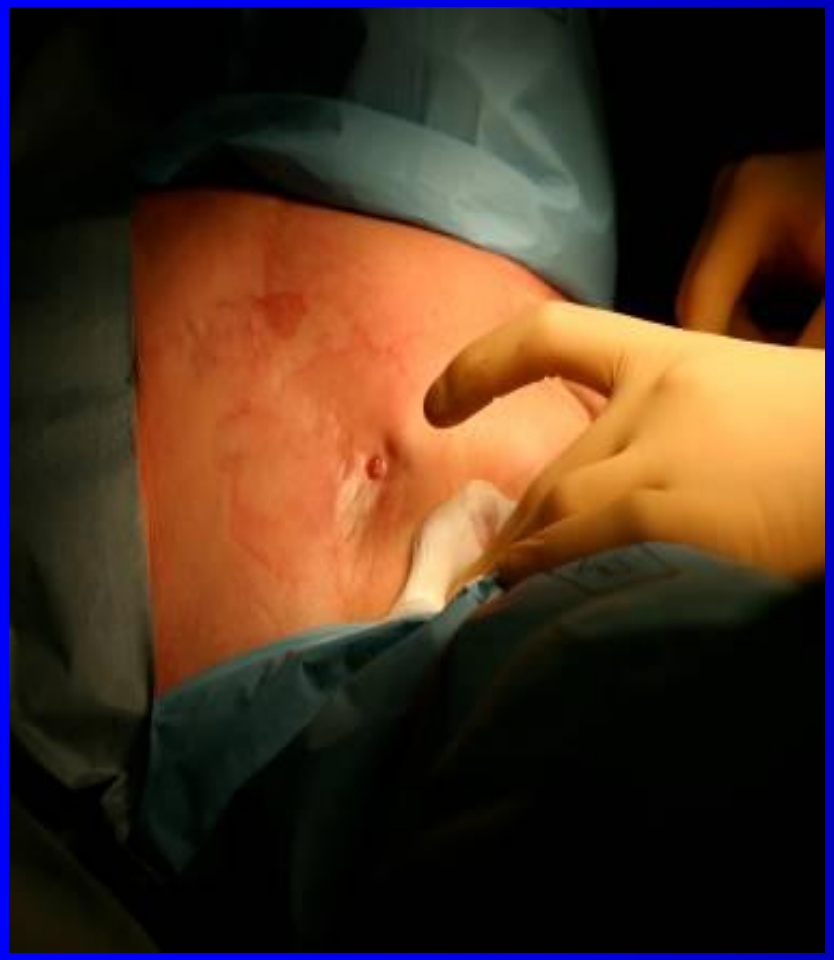
2A T2 S2

(Smaller tape exposure; Postop-review; Away from area of vaginal suture line)

54 yr, SUI

- TVT-O
- At **6 weeks**:
- SUI cured
- No discharge
- Smaller exposure

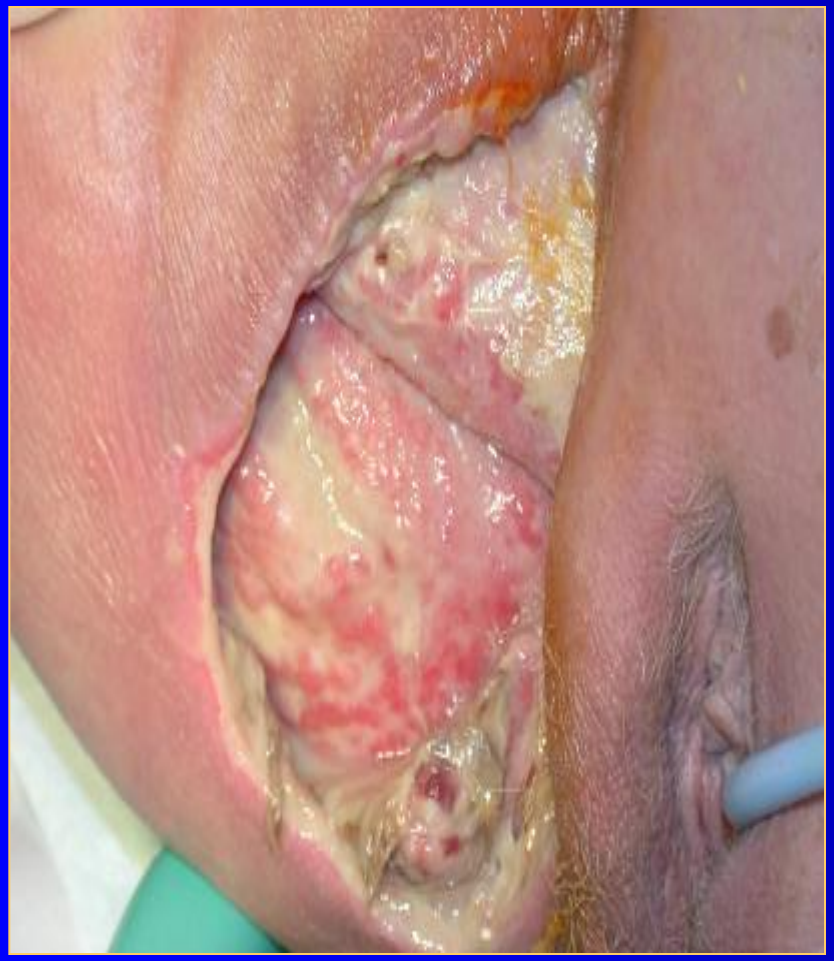
CASE 2



6C T6 S5

- **2 years follow-up**:
- Vaginal **discharge**
- **Exposure** (palpable but not seen)
- - **Cutaneous fistula** with local purulent discharge
- Retropubic suburethral sling
- 55 y, SUI

CASE 3

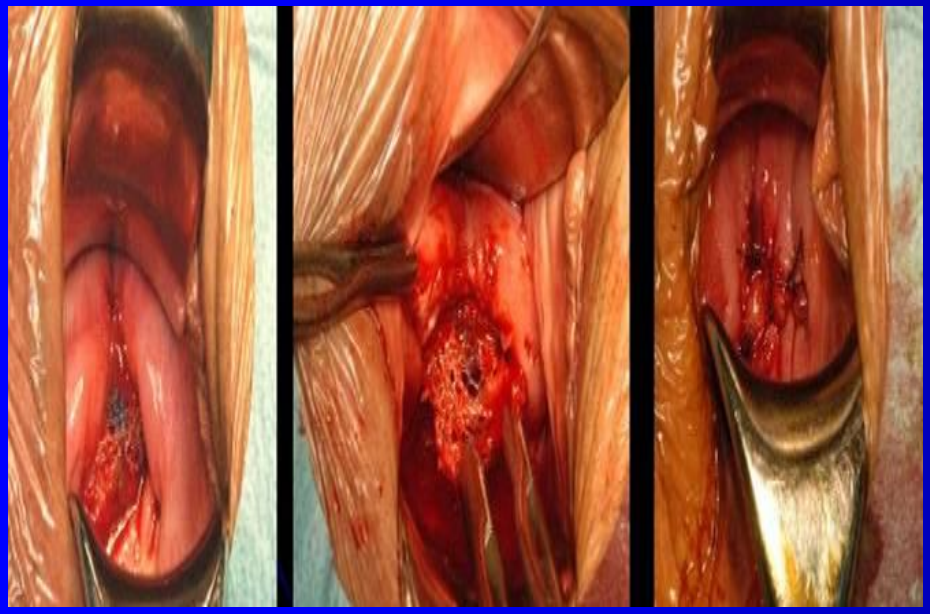


6C T3 S3 (Skin inflammation; >12/12; trocar passage)

3C T3 S2 (C: Larger infected vaginal exposure; T: >12/12; S: Vaginal away From suture line

- 65 y, mixed urinary incontinence with severe SUI
- Multifilament transobturator sling
- **14 months follow-up**:
- Severe pelvic **pain**
- - **Hyperthermia** 40°C
- - Vaginal **discharge**
- - sling **exposure** (right vaginal sulcus)
- - Severe **cellulitis**

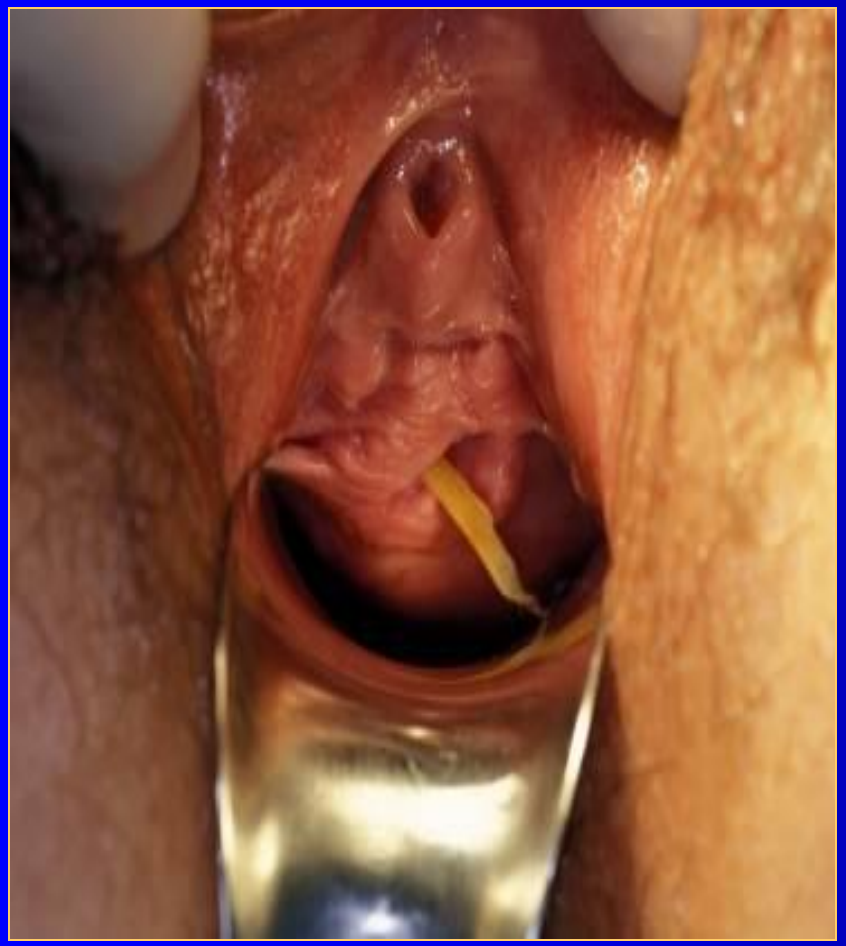
CASE 4



3B T2 S1

- 67 y, previous POP repair with hysterectomy
- **5 months follow-up** after transvaginal mesh repair for large recurrent cystocele - dyspareunia
- Large **mesh exposure 2 x 1.5 cm (anterior vaginal wall + cuff)**

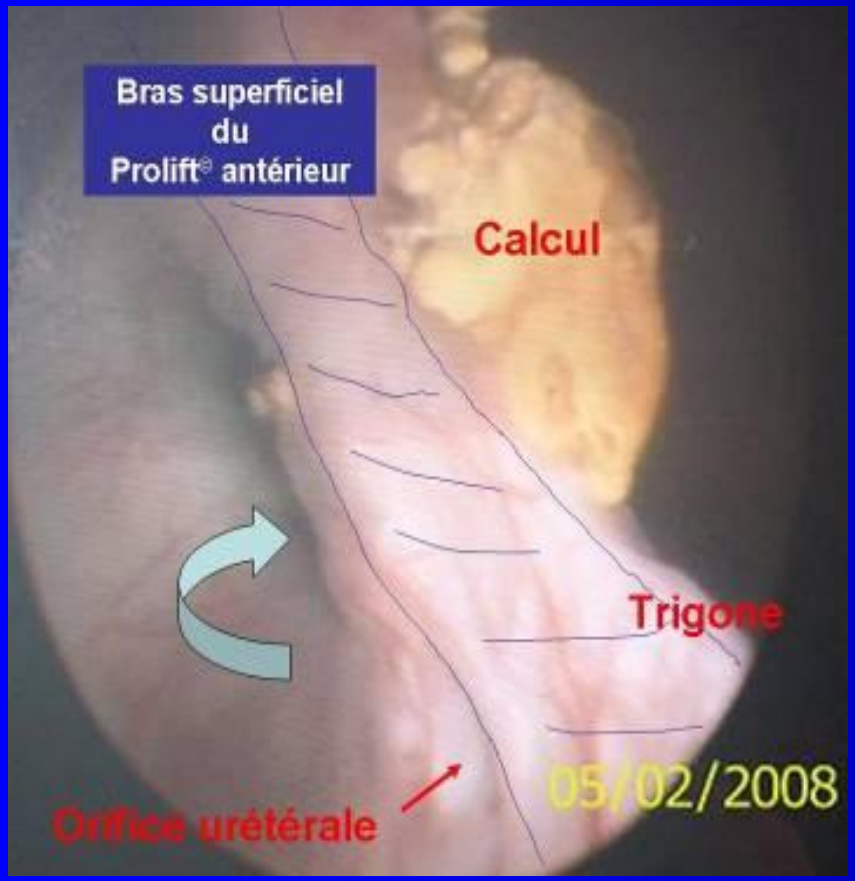
CASE 5



3C T2 S1

- 47 y, transoburator tape for SUI
- 6 months follow-up:
- **Discharge**
- **38 ° C**
- Large sling **extrusion**

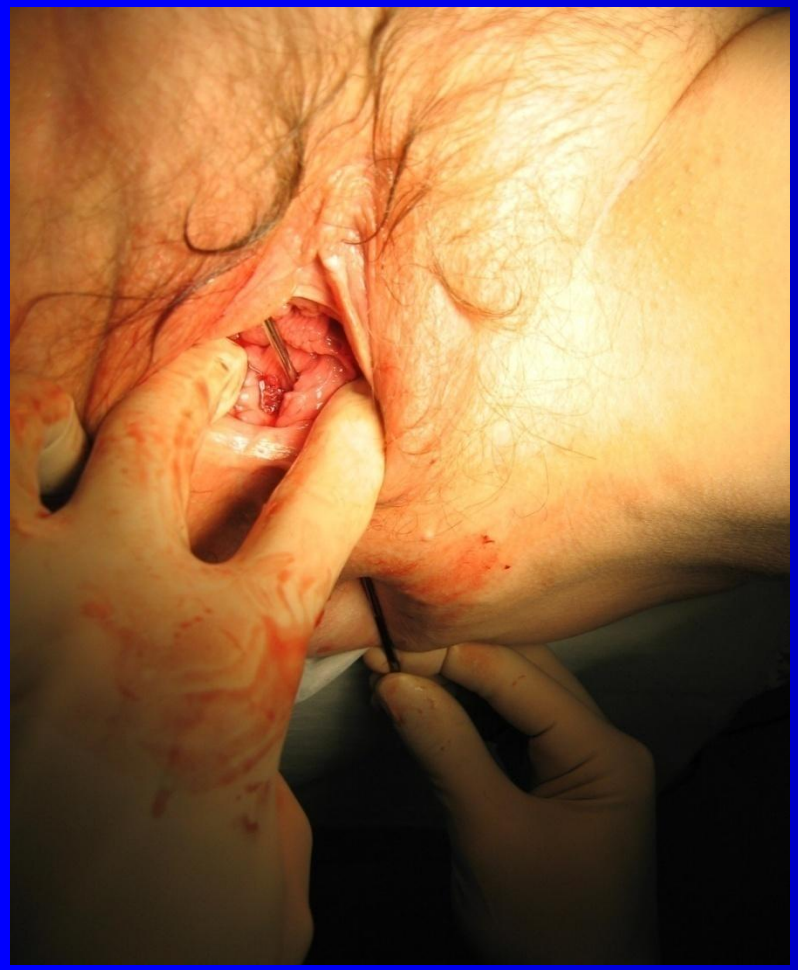
CASE 6



4C T3 S3 ; 1Bc T3 S1

- 65 y, **32 months** after transvaginal mesh repair for Grade 3 prolapse
- Recurrent **urinary tract infections**
- Urgency and urge incontinence
- Pelvic **pain** and deep **dyspareunia**
- Bladder pain
- Lumbar pain
- Radiology: **right hydronephrosis and ureteral obstruction**
- Cystoscopy: **mesh extrusion** (< 0.5cm2) with stone. **No right ureteric patency**
- Vaginal examination: severe anterior **mesh shrinkage** and pain during anterior vaginal wall palpation

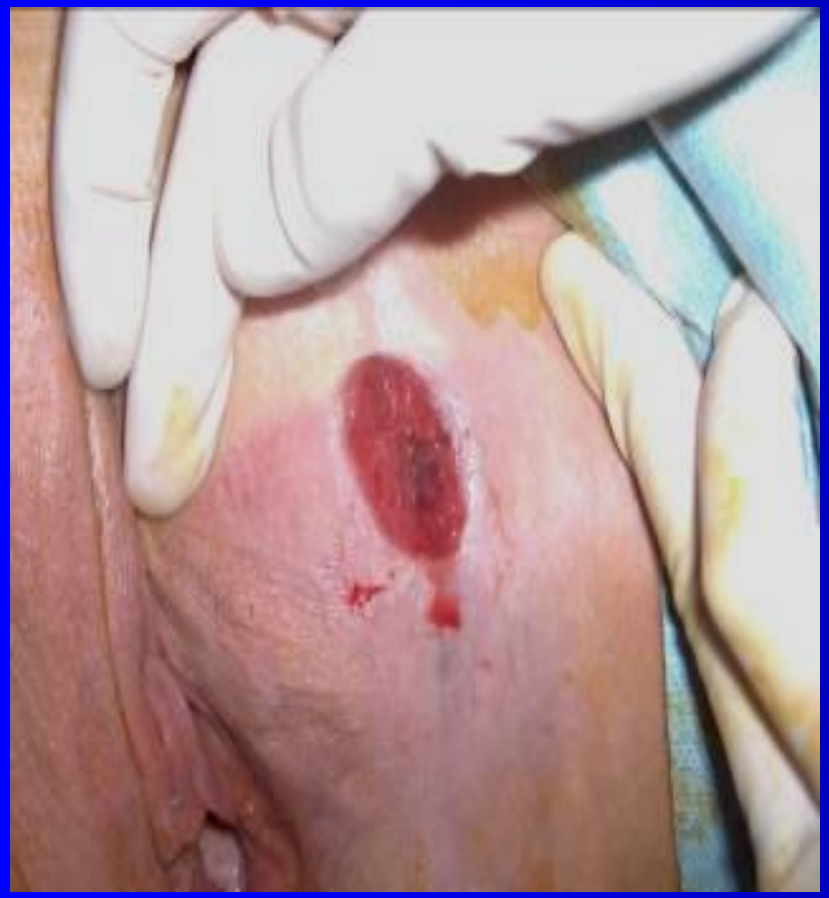
CASE 7



3C T2 S1 ; 5B T2 S3

- A 1.5 cm infected midline vaginal mesh exposure and a recto-vaginal fistula presenting 3 months after a posterior vaginal mesh procedure employing a trochar. There had been mesh penetration of the rectum.

CASE 8



6B T3 S3

- 62y, transoburator anterior mesh
- **24 months follow-up**
- No discharge
- Some discomfort
- **skin erosion** with local inflammation at **exit point**

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FURTHER PROCESS:

1: COMPLETE CURRENT REVISION

2: WEBSITE PUBLICATION: IUGA / ICS

3: ICS/IUGA TORONTO - AUGUST: Finalize / Sign-off

4: JOINT PUBLICATION: IUJ / NAU

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USES:

1: **CLINICAL RECORDS**

2: **ANY DATABASE/ SURGICAL AUDIT**

3: **ANY REGISTRY:** **? AUSTRALIAN**

? COMBINED IUGA / ICS

4: **ACADEMIC PUBLICATIONS**

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QUALIFICATION:

TO ALLOW COMPREHENSIVE COVERAGE OF COMPLICATIONS, THE CLASSIFICATION STILL MAY BE MORE COMPLEX THAN DESIRABLE

FUTURE:

POSSIBLE SIMPLIFICATION

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JOINT ANNUAL MEETING OF THE
INTERNATIONAL CONTINENCE SOCIETY (ICS) AND
INTERNATIONAL UROGYNECOLOGICAL ASSOCIATION (IUGA)
23 -27 AUGUST, 2010, TORONTO, CANADA

Workshop # 30

Specific complications after Trans Vaginal Mesh repair with kits: how to prevent? How to manage?

Mesh shrinkage: how to assess, how to prevent, how to manage?

B. Jacquetin
CHU Estaing
Clermont-Ferrand FRANCE

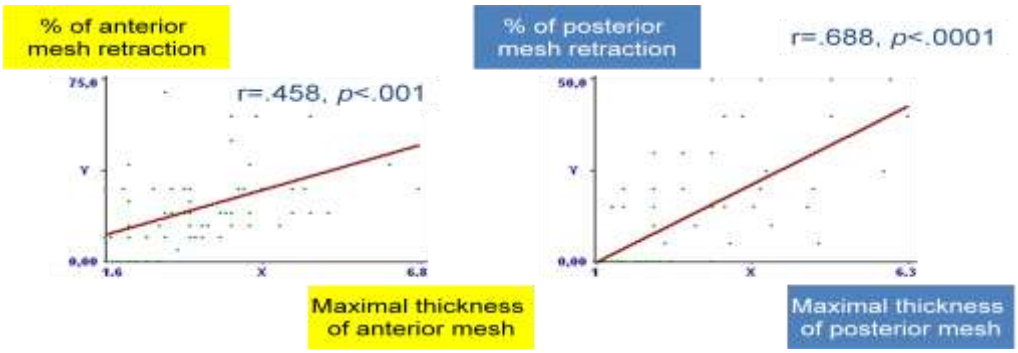
Transvaginal mesh repair has been increasingly used for the last ten years with encouraging anatomical short term results. Since 2005, standardized surgical kits using a macroporous, monofilament polypropylene mesh with manufactured tissue sparing inserters, have gained popularity among the urogynecologists because they are supposed to offer a simple and efficient tool to treat some kinds of pelvic floor defects. The surgical procedure associated with the use of these kits is generally based on the original tension-free vaginal mesh technique. Between 2000 and 2005, our French team participated in the development of the tension-free vaginal mesh (TVM) technique. Over time, it appeared that **mesh retraction** or **shrinkage** (reduction of the mesh area and loss of compliance) after tissue incorporation was probably the most contributing factor to **recurrences**, **postoperative pain** and **dyspareunia**. Recently Feiner and Maher tried to define the clinical entity of vaginal mesh contraction [1] on the basis of 17 patients who underwent a surgical intervention for the management of symptomatic mesh contraction in their referral center.

HOW must we ASSESS this new morbidity? A careful history of the woman's complaint is, of course, primordial [2], but progressively, a new "semeiology" of transvaginal mesh palpation was described allowing us to assess the importance of mesh retraction, vaginal stiffness, and the tenderness that could be elicited by mesh palpation. The TVM group described four grades of shrinkage [3], but a more detailed classification should be useful. We tried to convince the IUGA/ICS standardisation and classification group chaired by B. Haylen to take in consideration this very serious complication.

As the clinical examination will always be considered a subjective outcome measure, we investigated whether **ultrasound** could provide a tool able to **objectively** quantify the mesh retraction in a reproducible fashion. The first sonomorphological evaluation of vaginal polypropylene implants was described by R. Tunn et al in 2007 [4] about 20 cystocele and 20 rectocele cures; they concluded "there is a considerable discrepancy between the implanted mesh size and the length measured 6 weeks later by post-operative ultrasound".

Using 3D/4D ultrasound, K.L. Shek et al described the Perigee™ system for 46 women 10 months (range 2-24) after surgery [5].The mesh length was reduced at a mean of 21 mm (range 8,8-37,3) and in 5 women a dislodgement of the superior trans-obturator anchoring arms.

In our experience of 107 patients operated between March 2005 and August 2006, introïtal/vaginal 2D ultrasonography appears to be a simple and useful tool to visualize and analyse the vaginal polypropylene meshes configuration. We found out that 15-25% of shrinkage was perceived in 60 to 90% of patients, and the "clinical" mesh retraction was associated with **mesh thickening at ultrasound**. These results have been recently published [6].



Velemir L, IUGA Annual Meeting Tai Pei 2008

Moreover, severe mesh retraction was associated with a **lack of prosthetic covering of the defect**, more often in the distal part of the vaginal walls, allowing "partial" anterior or posterior recurrences. We will illustrate these findings during the presentation...

Can retraction be PREVENTED? Mesh retraction occurs during the **scarring and remodelling process**. It is related to the extent of tissue inflammation around the mesh after implantation which secondarily induces the wound contraction. This host reaction depends on both biocompatibility of the foreign material and patient's immune system. Other factors, as surgical technique and infection prevention, which might influence the phenomenon of mesh retraction are discussed in our presentation (Selection of the patients? How to stabilise the mesh? How to choose the mesh? And "tips and tricks...)

HOW to MANAGE the complication of retraction? First of all, medical treatment options must be tried: painkillers, local hormonal therapy and local anti-inflammatory drugs injections. If the symptoms persist, the patient will be referred to an expert centre where **a limited or a large excision, rarely a total removal is needed**, allowing to relieve symptoms and avoid multiple procedures. It's only when a "true" visceral erosion of the mesh or a severe infection, as tissue cellulitis, or a very contracted and painful mesh presents that a complete and sometimes difficult excision of the graft is necessary. If the arms of the mesh are involved in the symptoms, the dissection has to be carried out quite laterally (obturator foramen and/or sacro-spinous ligament), so the arms can be transected as deep as possible, needing more surgical skill. We will describe and illustrate the surgical technique and explain how the preoperative and even peroperative ultrasound evaluation could be useful for clarifying the strategy and allowing the confirmation of the total removal of the mesh. Remember that a complete resection may induce prolapse recurrence and vaginal distortion/shortening which can be taken into consideration before the surgery and can necessitate a secondary procedure.

When a mesh procedure seems indicated, it is important to remember that severe mesh retraction may result in severe complications including dyspareunia, pain and recurrence; unfortunately, the risk factors for these complications cannot, to day, be identified. This must be taken into consideration during **patient counselling** before surgery.

Better understanding, assessment and prevention of the mesh retraction phenomenon at time of augmented reconstructive pelvic surgery remains **our principal challenge** for the next years. We need for "newer graft materials with diminished shrinkage properties" [1].

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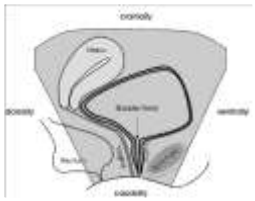
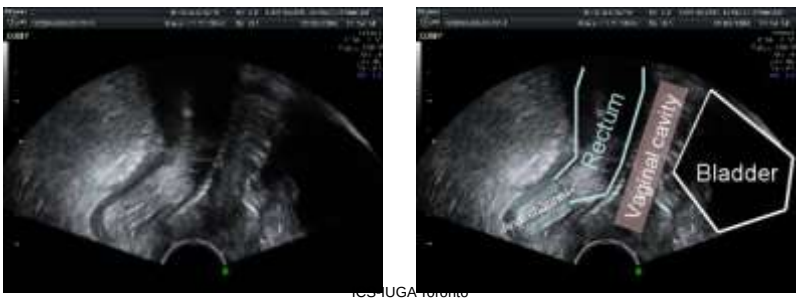
Landmarks for UroGyn ultrasound

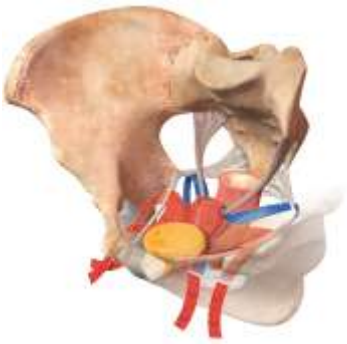


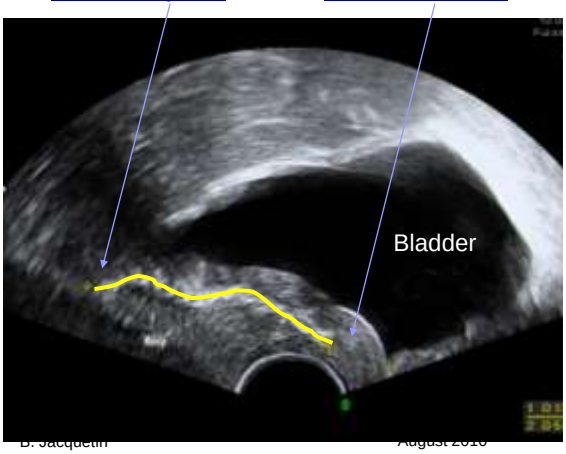
Tunn R, Int Urogynecol J 2005



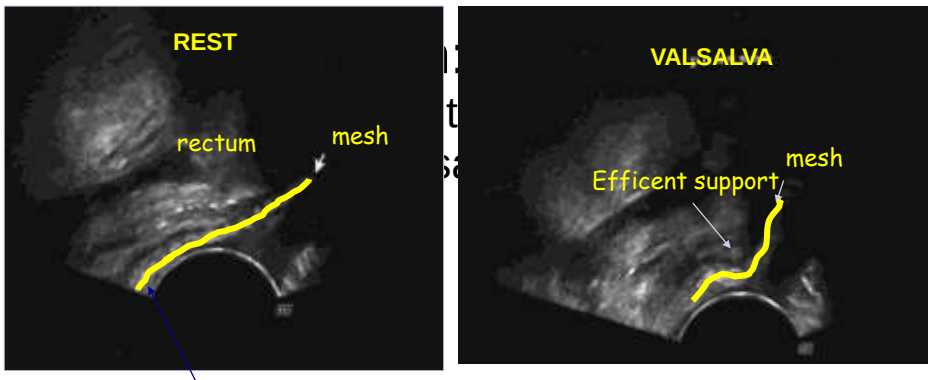
Anterior mesh

Support of the anterior vaginal wall from the ischial spine to the bladder neck



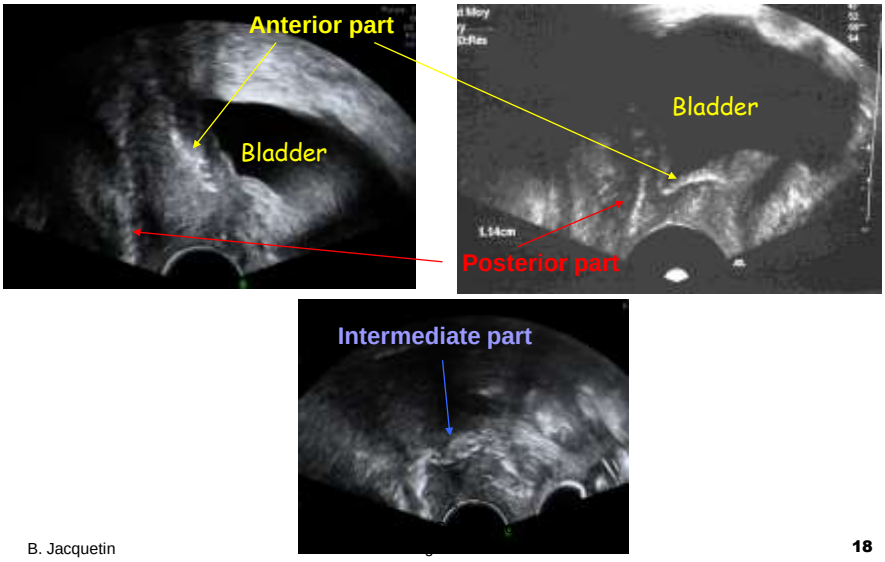


Posterior mesh

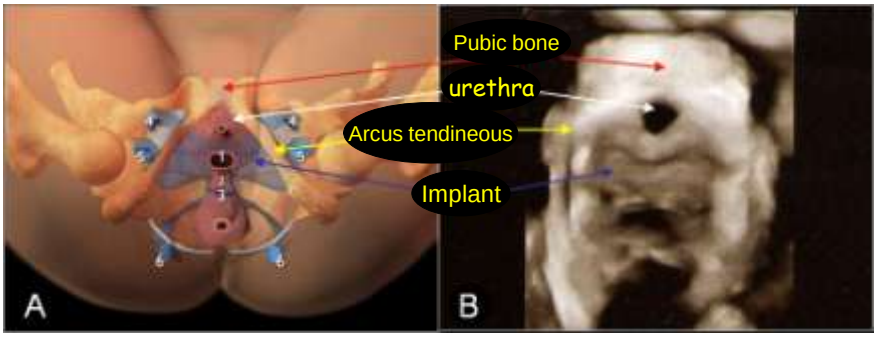


Note that the mesh comes down to the perineum

Total monobloc mesh



3D ultrasound of the anterior part of the mesh



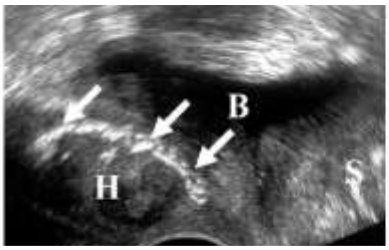
Courtesy of D.Lemery, MD

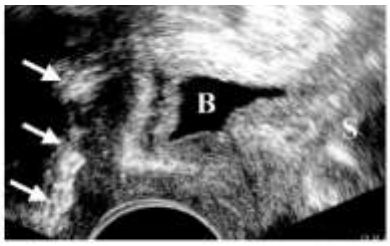
Ultrasound Obstet Gynecol 2007; 29: 449–452
Published online 1 March 2007 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/uog.3962

Sonomorphological evaluation of polypropylene mesh implants after vaginal mesh repair in women with cystocele or rectocele

R. TUNN, A. PICOT, J. MARSCHKE and A. GAURUDER-BURMESTER
Department of Urogynecology, German Pelvic Floor Center, St. Hedwig Hospitals, Berlin, Germany

Comparison of the initial length of the mesh implanted and the sonographically measured length of the mesh 6 weeks postoperatively



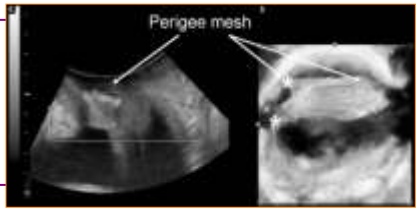


Length of implanted mesh evaluated by US

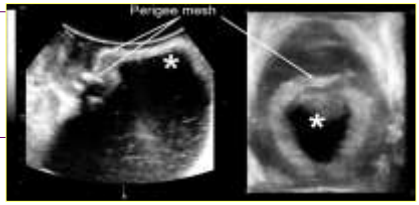
Results

Shek KL, *Ultrasound Obstet Gynecol, 2008*

Patient with good clinical result
- Mesh well spread out
- Minimal folding
- Both effective anchoring arms



Patient with recurrent cystocele
- Dislodgment of superior arm
- Voiding dysfunction

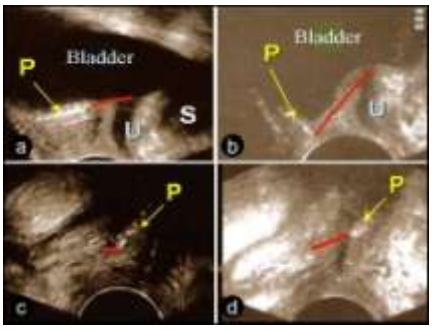


Velemir L, Transvaginal mesh repair of anterior and posterior vaginal wall prolapse: a clinical and ultrasonographic study, *Ultrasound Obstet Gynecol, 2010*

- 91 patients with anterior/posterior Prolift
- Control at ≥ 1 year follow up
- Distinction of patients with no, moderate (< 50%) or severe mesh retraction (≥ 50%)
- POPQ
- Standardized US:
  - *Distance 1*, from the distal margin of the anterior mesh to the bladder neck
  - *Distance 2*, from the distal margin of the posterior mesh to the rectoanal junction
  - Mesh thickness

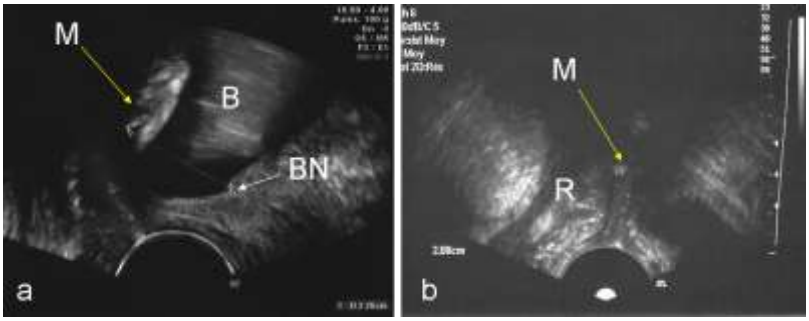
D1

D2



Rest Valsalva

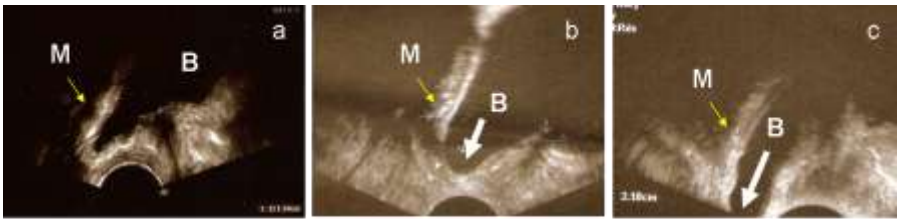
Relation with POPQ and severe mesh retraction



Severe anterior mesh retraction Ba -1

Severe posterior mesh retraction Bp -1

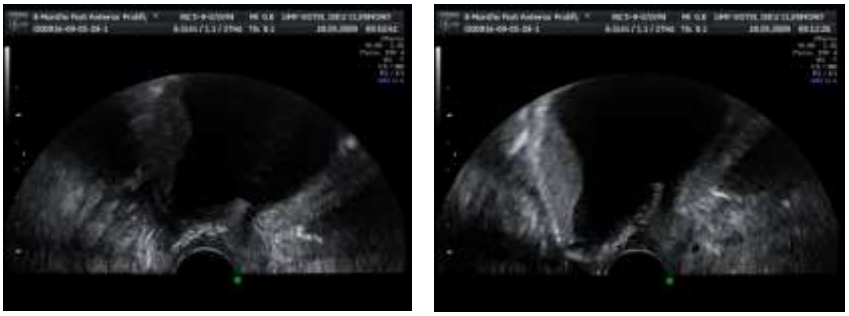
Anterior support and retraction



Moderate mesh retraction	Severe mesh retraction	
Ba - 2	Ba - 1	Ba 0

Other mecanism: severe retraction of the anterior mesh with superior anchoring arm dislodgement

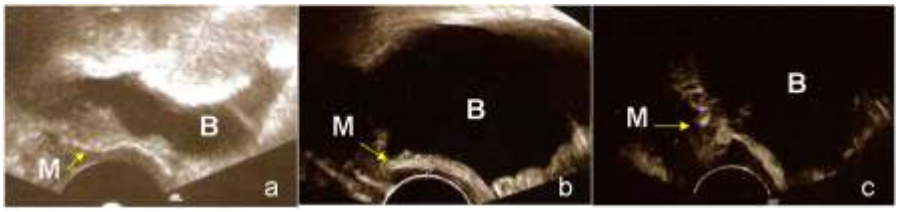
=> loss of support of the proximal part of the vagina



Rest Valsalva

Correlation between thickness, aspect and retraction +/- pain

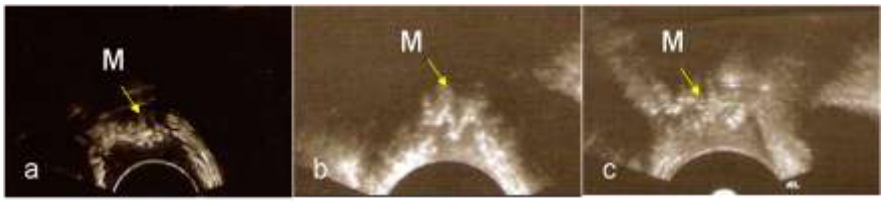
Anterior repair



Thin (1 mm) and regular	Thick (3mm) and regular	Thick (5 mm) and irregular
No retraction	**Retraction without pain**	**Retraction with pain**

Correlation between thickness, aspect and retraction +/- pain

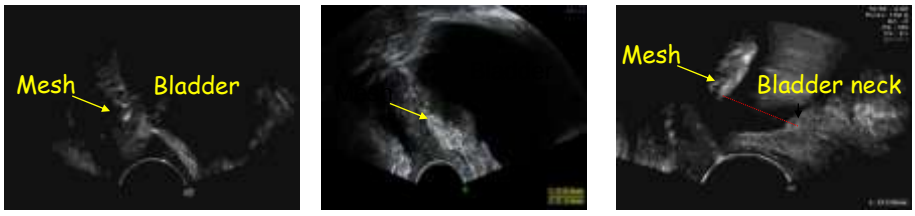
Posterior repair



Thick (3 mm) and regular	Thin (2 mm) and irregular	Thick (5 mm) and irregular
Retraction without pain		**Retraction with pain (VAS=5)**

Us assessment of mesh shrinkage

Irregular aspect	Thickness	Distance between caudal part of the mesh and anatomic landmarks

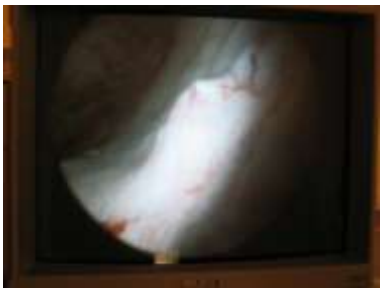


2.3 cm

Velemir L. IUGA Annual Meeting Tai Pei 2008

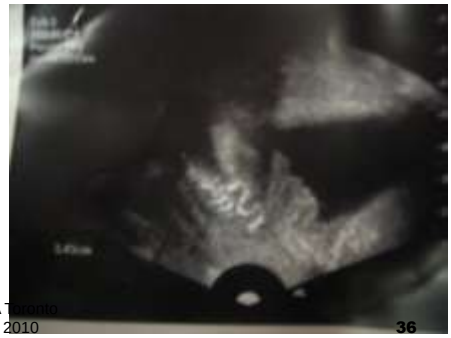
Severe mesh shrinkage after TVM

Pain and storage symptoms



cystoscopy

Perineal US scanning



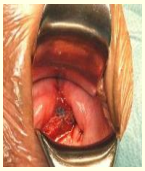
Workshop 30

Specific complications of transvaginal mesh repair: How to prevent ? How to manage

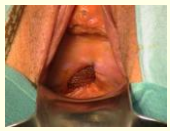
Vaginal and sexual complications

Brigitte Fatton, MD
University Hospital of Clermont-Ferrand
FRANCE

Pain and dyspareunia after transvaginal mesh repair



- Numerous causes
  - distorsion of the vagina
  - shortened or narrow vagina
  - tight perineorraphy
  - mesh exposure
    - ✓ bleeding
    - ✓ partner discomfort
  - mesh shrinkage
    - ✓ pain or tenderness



Pain and dyspareunia after transvaginal mesh repair

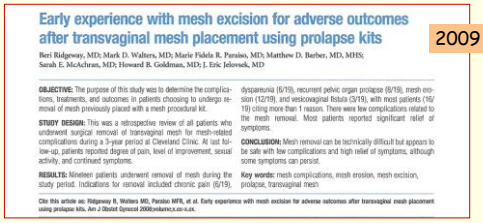
- Only few publications..
  - underreported
  - underestimated
  - incomplete knowledge
    - ✓ ethiopathogeny ?


Int Urogynecol J (2007) 18:675–678
DOI 10.1007/s00192-006-0187-6

CASE REPORT

Dyspareunia and chronic pelvic pain after polypropylene mesh augmentation for transvaginal repair of anterior vaginal wall prolapse

Lawrence L. Lin · Alexandra L. Haessler · Matt H. Ho · Lance H. Betson · Red M. Allmod · Narender N. Bhatia


Early experience with mesh excision for adverse outcomes after transvaginal mesh placement using prolapse kits

2009

Beri Ridgeway, MD; Mark D. Walters, MD; Marie Fidela R. Paraiso, MD; Matthew D. Barber, MD, MHS; Sarah E. McAchran, MD; Howard B. Goldman, MD; J. Eric Jelovsek, MD

OBJECTIVE: The purpose of this study was to determine the complications, treatments, and outcomes in patients choosing to undergo removal of mesh previously placed with a mesh procedural kit.

STUDY DESIGN: This was a retrospective review of all patients who underwent surgical removal of transvaginal mesh for mesh-related complications during a 3-year period at Cleveland Clinic. At last follow-up, patients reported degree of pain, level of improvement, sexual activity, and continued symptoms.

RESULTS: Nineteen patients underwent removal of mesh during the study period. Indications for removal included chronic pain (6/19), dyspareunia (6/19), recurrent pelvic organ prolapse (6/19), mesh erosion (12/19), and vesicovaginal fistula (3/19), with most patients (16/19) citing more than 1 reason. There were few complications related to the mesh removal. Most patients reported significant relief of symptoms.

CONCLUSION: Mesh removal can be technically difficult but appears to be safe with low complications and high relief of symptoms, although some symptoms can persist.

Key words: mesh complications, mesh erosion, mesh excision, prolapse, transvaginal mesh

Cite this article as: Ridgeway B, Walters MD, Paraiso MFR, et al. Early experience with mesh excision for adverse outcomes after transvaginal mesh placement using prolapse kits. Am J Obstet Gynecol 2008;xx:xxx.e1-xxx.e5.

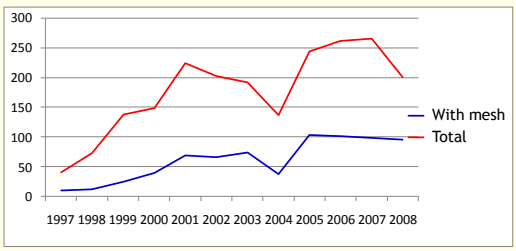
- Indications for mesh removal
  - chronic pain 6/19
  - dyspareunia 5/19
  - recurrent POP 8/19
  - erosion 12/19
  - vesicovaginal fistula 3/19

With 16/19 patients reporting more than one reason

Retrospective case series
3 years period

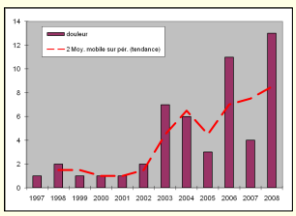
Our experience
Tertiary referent centre

University hospital of Clermont-Ferrand
study period 12 years (1997-2008)
1400 POP repair (730 with mesh)
156 operations for complications
(125 patients) in the same time



Vaginal surgery for POP with or without meshes

Results



Pain and/or dyspareunia :
50/156 (32%)
[15 isolated complication]

- When compared to the global population, patients with pain were younger and had more previous surgeries
- Complete excision in 50% of cases
- 2 reoperations often necessary
- Results : 1/3 with persistent pain (VAS: 6.2)

De novo dyspareunia

- …as an indicator of safety
- but contradictory data…

De novo dyspareunia after anterior and/or posterior repair

Table 7. Safety of anterior and/or posterior repair, summary of crude event rates (95% CI, any study design) by type of mesh/graft

	No mesh, n/N (%, 95% CI)		Combined mesh/graft, n/N (%, 95% CI)	Nonabsorbable synthetic mesh, n/N (%, 95% CI)
Blood transfusion	1/35 (2.9, 0.5–14.5)		---	11/810 (1.4, 0.8–2.4)
Damage to surrounding organs	—		4/143 (2.8, 1.1–7.0)	12/541 (2.2, 1.3–3.8)
Mesh/graft erosion	Not applicable		9/143 (6.3, 3.3–11.5)	62/1119 (5.5, 4.3–7.0)
Operation for mesh/graft erosion	Not applicable		6/143 (4.2, 1.9–8.9)	45/1068 (4.1, 3.1–5.4)
De novo urinary symptoms	---		---	34/355 (9.5, 6.9–13.1)
De novo bowel symptoms	---		---	1/47 (2.1, 0.4–11.1)
De novo dyspareunia	---	12.6%	10/78 (12.8, 7.1–22.0)	3/42 (7.1, 2.5–19.0) 7.1%
Infection	---		---	33/661 (5.0, 3.6–6.9)
Other serious adverse effects	---		---	3/278 (1.1, 0.4–3.1)

—, no studies reported this outcome.

Jia X, Glazener C, Mowatt G et al: BJOG 2008, 115: 1350-1361

SGS Papers www.AJOG.org

Does the Prolift system cause dyspareunia? 2008

Joye K. Lowman, MD, MPH; Leticia A. Jones, MD; Patrick J. Woodman, DO; Douglass S. Hale, MD

Dyspareunia	ASCP	SSF	USL Susp	AntPost repair +/-vault susp	Prolift
N included N SA	Handa N = 224 (148)	Maher N = 287 (106)	Silva N=110 (34)	**Weber** N = 165 (81)	**Lowman** N = 129 (57)
Preoperative	40,5%	?		8%	36,8%
De novo	14,5%	36,1% ¤	25,9%	**19%**	**16,7%**

TABLE 2
Type and degree of dyspareunia after Prolift

	Mild	Moderate	Severe
Degree (N = 21)	8 (38.1%)	8 (38.1%)	5 (23.8%)

	Insertion only	Deep penetration only	Insertion and deep penetration	Throughout intercourse	Certain positions
Type (N = 21)	5 (23.8%)	0 (0%)	5 (23.8%)	10 (47.6%)	1 (4.8%)

Lowman. Does the Prolift system cause dyspareunia? Am J Obstet Gynecol 2008.

RCT Mesh versus No Mesh

- Nieminen K, Int Urogynecol J Pelvic Floor Dysfunct,
  - RCT
  - anterior colporraphy: 97 (85) patients
  - ant Mesh (Sofradim, Parietene): 105 (97)

2008

Better With mesh……!! ?

Effect of operation on sexual function	No mesh n (%)	Mesh n (%)
improved	21 (47)	25 (49)
adverse	16 (36)	16 (31)
No effect	4 (9)	10 (20)

Dyspareunia	No mesh	mesh	p
Pre-op	1.9 +/- 1.1	1.8 +/- 1.0	0.7
Follow-up 24 months	2.1 +/- 1.4	1.6 +/- 0.9	0.015
p	0,331	0,20	

RCT mesh versus no mesh

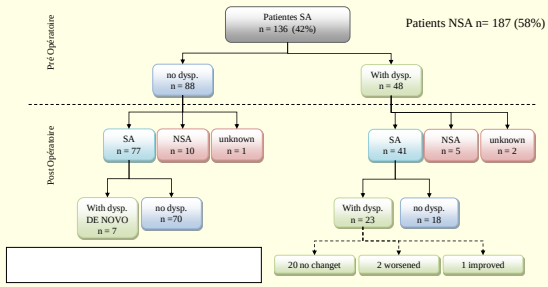
- Carey M BJOG, 2009

- 69 patients on the mesh group
- 70 patients in the no mesh group
- Overall 69 women sexually active
- Follow-up 12 months
- De novo Dyspareunia:
  - 16,7% in the mesh group
  - 15,2% in the no mesh group

2009

- Gauruder-Burmester 2009
  - 120 patients sexually active, assessed before and after surgery (Apogee or Perigee)
  - vaginal mesh repair does not interfere with a healthy sex life
  - sexual dysfunction rarely associated with urogynecologic surgery

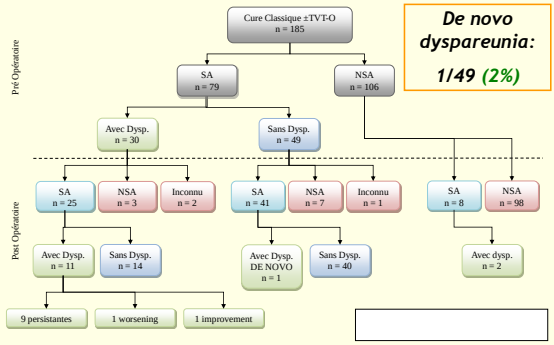
Sexual outcome after transvaginal repair



Global Dyspareunia rate : 35,3% → 25.4%

De novo Dyspareunia rate : 7.9%

Sexual outcome after traditional repair



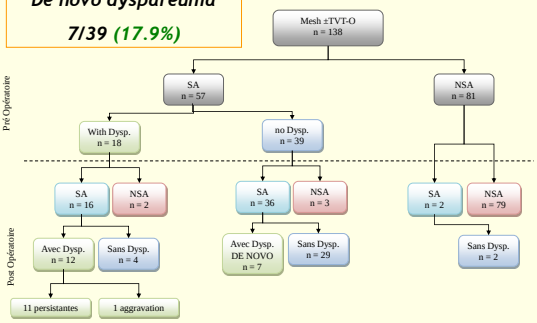
De novo dyspareunia:

1/49 (2%)

Sexual outcome after mesh repair

De novo dyspareunia

7/39 (17.9%)



Prevention

- Factors to be considered before surgery
  - pre-operative sexuality
  - partner relationship
  - previous surgery
- Factors to be considered during mesh placement
  - type of mesh
  - mesh tensioning
    - ✓ avoid excessive tension
  - mesh position
    - ✓ avoid folds, bends
      - Mesh should lie flat

TABLE 6
Minimizing Risks of Dyspareunia

- Use tips to minimize risks of extrusion
- Type I, soft, macroporous mesh
- Minimize mesh load
- No tension on mesh or mesh arms
- Ensure mesh lies flat, no "bunching" at apex
- Maintain proper estrogenization

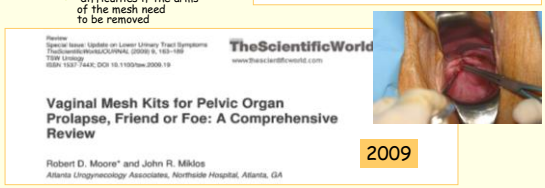
Boyles SH, McCrery R, Obstet Gynecol 2008; 111: 969-975
Moore RD, Miklos JR, The Scienfic World J 2009; 9: 163-189

Dyspareunia: Management

- Interdisciplinary management
- Appropriate management
  - anti-inflammatory medications
  - local injections
  - physical therapy
  - behavioural therapy
  - psychotherapy
  - mesh excision if shrinkage and clinical trigger zone
    - ✓ difficulties if the arms of the mesh need to be removed

TABLE 7
Management of Dyspareunia

- Conservative measures
  - Pelvic floor physical therapy
  - Anti-inflammatory agents
  - Vaginal estrogen
  - Trigger point injections (steroid with anesthetic)
- Surgical intervention
  - Release any tension felt on mesh arms
  - Remove any "bunched up" mesh
  - Typically entire graft does not need removal



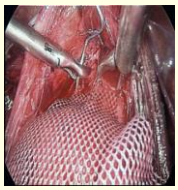
2009

Conclusion

- we need further studies
  - prospective assessment ++
  - rigorous methodology
  - validated questionnaire
  - standardized tools
- Preoperative sexual life is a main predictor of sexual health after surgery

Don't forget that whatever surgery you perform, there is still a risk of postoperative dyspareunia….

Colposacrocolpopexy
The Gold standard
in young women…



Author (year)	Surgery	nb	Preop Sex	Postop Sex	Sexual outcome
Higgs (2005)	ACSP	148	136	62	de novo dyspareunia : 10 patients
Handa (2007)	CSP	224	148	171	de novo dyspareunia: 14,5%

Handa VL et al, Am J Obstet Gynecol 2007; 197:629 e1-629 e6

- Recent review of English literature on laparoscopic SCP
  - 50 articles screened, 22 selected and 11 finally included
- Postoperative Sexual function evaluated in 8 studies, with 7.8% (0 – 47%) of patients reporting sexual dysfunction after surgery
- Conclusion: More studies are needed to better evaluate sexual health

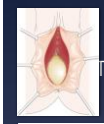
Visceral complications of vaginal meshes for pelvic floor repair :

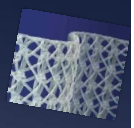
Pr Michel COSSON, MD, PhD
University Hospital Lille
FRANCE

Disclosures

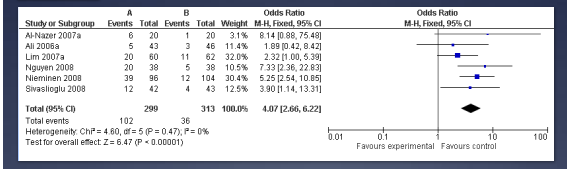
- Fees for educational sessions for surgery :
  - Ethicon
  - Olympus
  - Ipsen
- Development of patents in POP surgery :
  - Ethicon
  - Cousin Biotech
  - Storz
- Research grants : Ethicon unconditional grant for biomechanical research on pelvic tissues

Objective Failure anterior compartment





Tissue Vs. Polypropylene Mesh



Vaginal meshes

Complications

Are vaginal meshes more dangerous ?

	Traditional vaginal repair	Sacral colpopexy	Mesh kits
No of studies	48	52	24
No of patients	7827	5639	3425
Mesh erosion or infection	0.5	2.2	5.8
Visceral injury	1.0	1.7	1.1
Cystotomy	0.4	1.0	0.7
Ureteral injury	0.3	0.2	0.1
Bowel injury	0.4	0.5	0.3

Diwadkar, Obstetrics and Gynecology 2009

Perop and specific Mesh complications

- Per and post operative
- Due to the technique : dissections
  - Injuries, haematoma
- Due to the mesh
  - Infections, erosions, contractions
- Severe : reintervention, symptomatology

Prolift severe complications

TVM France March 2005- Nov. 2007

29 severe compli / 1533 surgeries = 1,89%

		Nb	Hémat.	Erosion	Pain	Infect.
MC	Lille	422	2	0	2	0
BJ	Clermont-Fd	268	4 (1embol.)	0	6	0
JB	Rouen	255	1	0	0	0
PD	Dunkerque	182	2	1 FVV	2	1 (septi)
CR	Brive	148	2	0	1	0
OG	Strasbourg	89	0	0	2	0
HC	Nice	87	1	0	0	0
RV	Paris (Diac.)	82	1	0	1	0
	Total (%)	1 533	13 *(0,87)*	1 *(0,06)*	14 *(0,93)*	1 *(0,06)*

III- MESH CONTRACTION :

- Probably physiologic 30-40% normal
- Use large meshes ++
- Problem if symptomatic
- Rare but severe if surgery is needed

Ultrasound Obstet Gynecol 2007; 29: 449–452
Published online 1 March 2007 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/uog.3962

Sonomorphological evaluation of polypropylene mesh implants after vaginal mesh repair in women with cystocele or rectocele

R. TUNN, A. PICOT, J. MARSCHKE and A. GAURUDER-BURMESTER
Department of Urogynecology, German Pelvic Floor Center, St. Hedwig Hospitals, Berlin, Germany

Length of implanted mesh evaluated by US…

Table 1 Length of mesh at implantation and at postoperative sonographic follow-up

Mesh type	Mesh length (cm, mean ± SD) at implantation*	Mesh length (cm, mean ± SD) postoperatively	Post-op mesh length as % of initial length	% of vaginal length supported by mesh
Transobturator (cystocele)	6.8 ± 1.1	2.9 ± 0.6	43.2	43.4
Perigee	6.4 ± 1.2	2.9 ± 0.6	45.4	43.7
Prolift Anterior	7.5 ± 0.4	3.0 ± 0.8	39.3	42.9
Transischioanal (rectocele)	9.9 ± 0.8	3.3 ± 0.5	33.6	53.7
Apogee	10.3 ± 0.7	3.4 ± 0.6	32.8	55.5
Prolift Posterior	9.1 ± 0.4	3.2 ± 0.4	35.2	50.3

*Initial mesh length (adjusted intraoperatively by the operator).

40% 50%

Mesh shrinkage classification:

Grade			
1	asymptomatic		Degree of retraction *A* : < 1/3 *B* : > 1/3, < 2/3 *C* : > 2/3
2	Provoked pain only (during vaginal examination)		
3	dyspareunia	Occasionally: + Usually: ++ Always: +++	
4	Pain during physical activities	Occasionally: + Usually: ++ Always: +++	
5	Spontaneous pain	Occasionally: + Usually: ++ Always: +++	

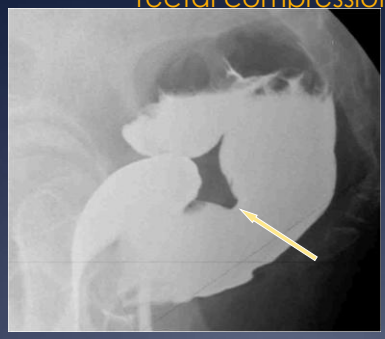
Visceral complication after mesh placement

- Peroperative complications
  - Bladder injury diagnosis ++, mesh implantation
  - Rectal injury : diagnosis ++, no mesh implantation
- Postoperative complications
  - Organ erosion : possible for the rectum, local compression
  - extremely rare +++
  - for the bladder : at the time of implantation arm inside the bladder
- Organ compression
  - For the rectum ++
    - At the time of implantation ? Direct suspensions ++
    - Late contraction

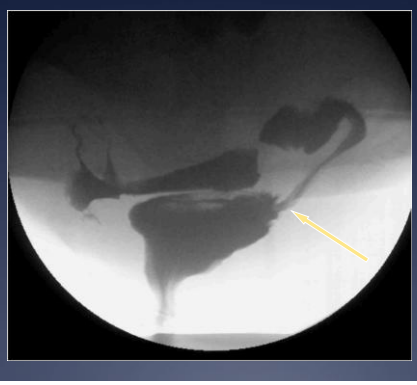
Rectal compression by the posterior mesh

- Symptoms : Delay for the diagnosis 1 to 2 years postop
  - perineal pain, dyspareunia
  - increase of constipation, dyschesia
- Diagnosis
  - rectal examination +++ compression, pain
    - Vaginal examination is not helpfull
  - perineal sonography, defecography, MRI
    - rectal compression by the mesh

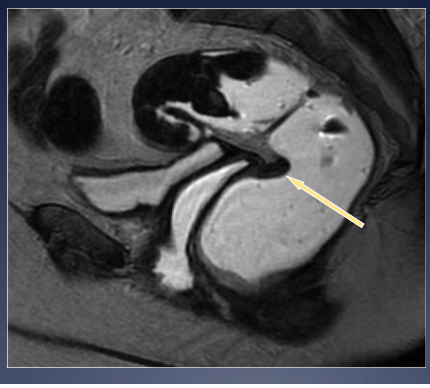
Defecography rectal compression



Horizontal vagina, rectal compression

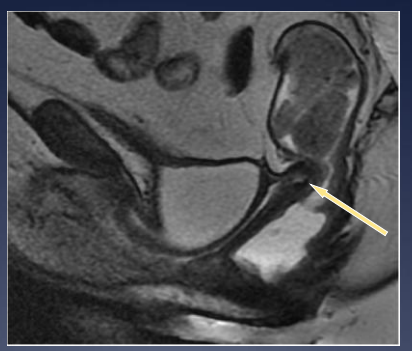


MRI contraction of the mesh



MRI

- Cystocele
- Uncomplete rectal evacuation
- Rectal compression



Materials and Methods

- Monocentric retrospective cohort study
- 600 consecutive patients
- Between january 2005 and january 2009
- Data obtained from
  - Hospital notes
  - Phone interviews
    - To check if patients had re-intervention in an other hospital
- 523 patients included
  - Exclusion criteria
    - Death during follow-up (n=8)
    - Unavailable for phone intreview (n=69)

Patients characteristics (1)

Age (years) / Median [range]	64 [26-90]
Vaginal deliveries / Median [range]	3 [0-11]
Follow up duration (months) / Median [range]	37 months [14-62]
Previous Surgery	
- Previous hysterectomy / No. (%)	110 (21%)
- Previous prolapse surgery / No. (%)	98 (18.7%)
- Previous continence surgery / No. (%)	69 (13.2%)

Patients characteristics (2)

Type of prolift ® mesh used / No. (%)	**(n=523)**
- Anterior	48 (9.2%)
- Posterior	103 (19.7%)
- Anterior and posterior (with uterine conservation)	286 (54.7%)
- Anterior and posterior (without uterine conservation)	22 (4.2%)
- Total(previous hysterectomy)	64 (12.2%)
Concomitant surgery / No. (%)	**n=244 (46.7%)**
- Hysterectomy	44 (8.4%)
- Prolapse	23 (4.4%)
- Urinary continence surgery	178 (34%)
- Anal continence surgery	11 (2.1%)
- Peroperative complication (suture visceral injury)	4 (0.8%)
- Previous surgery complication	7 (1.3%)
- Other	11 (2.1%)

Delay between Prolift and Re-intervention

Type of re-intervention	n	Median delay (month)
Prolift Complication	**n=17 (3.25%)**	**15 months**
Mesh exposure	n=12 (2.3%)	13
Mesh infection	n=1	0.5
Vaginal synechia	n=2	25
Rectal compression	n=2 (0.4%)	18
Prolapse Surgery	**n=14 (2.7%)**	**23 months**
Direct	n=9 (1.7%)	25
Indirect	n=5 (1%)	20
Continence Surgery	**n=34 (6.5%)**	**13 months**
Mesh exposure	n=3 (1.7%)	8
SUI de novo	n=21(4% total) (6%)	15
Persistence SUI	n=7(1.3%total) (3.9%)	5
Reccurence SUI	n=2	23

Conclusion

- Prevention of mesh complications
  - Dissection between fascia and organ not under the vaginal mucosae
  - Not to much tension on the mesh +++
  - Rectal examination / compression
  - Select good indications +++
  - Give complete informations to the patient before surgery

Mesh exposure: Management pathway

G. Willy Davila, MD
Department of Gynecology
Urogynecology/Reconstructive Pelvic Surgery
Cleveland Clinic Florida
Weston/Fort Lauderdale, Florida, USA

Mesh exposures (2010)

What are the options for managing this exposure ?

- Leave it alone, it will heal over
- Estrogen cream x 6 months
- Remove the entire implant
- Trim the exposed mesh in office
- Remove exposed mesh and re-approximate vaginal skin in OR

How would you handle this exposure?

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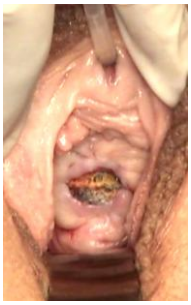

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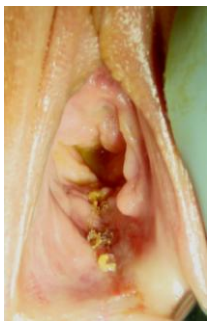

Not all mesh exposures are the same….

Multiple variables, not limited to:

- Type of mesh/graft
- Implantation technique
- Tissue preparation and handling
- Associated reconstructive materials
- Peri/post-operative events

Erosion risk factors

- non-porous (non-type 1) mesh
- braided sutures
- associated hysterectomy
- mucosal trauma
- skin implantation depth/level
- excessive tension
- severe atrophy
- hematoma formation

Prevention is clearly key

- Choice of material
- Intraoperative hemostasis
- Depth of implantation
- Fixation with non-braided sutures

Polypropylene graft repairs

- 87 pts. f/u mean 24 mos. (9-43)
- Fascia not plicated
- Gynemesh placed into PV space without tension
- Results:
  - 77 (91%) – cured (pt. Ba mean -2.65)
  - 5 (5.7%) – st. 2
  - 2 (2.3%) – st. 3
  - Erosions: 7 (8.3%)

DeTayrac. J Reprod Med 2005;50:75-80

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Low-weight PP mesh for AR - RCT

- 201 subjects (104 graft)
- f/u – 12 mos.
- Graft overlay plication – 4 arms
- Recurrence rates:

	graft	no graft	p
stage 2	7 (6.7%)	37 (38.5%)	s
symptomatic	4-7%	6-10%	ns

- Erosion rate – 18 (17.3%), 2/3 persist at 1 yr.

Hiltunen R. Obstet Gynecol 2007;110:455-62.

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Does the risk of erosion neutralize the benefit of synthetic mesh use in the anterior compartment ??

Synthetic Perigee RCT

- 76 women randomized: standard AR v. Perigee
- f/u 1 yr., mean age 59-61

	AC	Perigee
TVH (%)	53	46
Op. time (min)	120	135
Mesh exposure (n)	0	2 (5%)
Pt. Ba	-1 (-3,1)	-2 (-3,0)
Good result (%)	55	87
Dyspareunia (%)	16	9

Nguyen J. Obstet Gynecol 2008;111:891.

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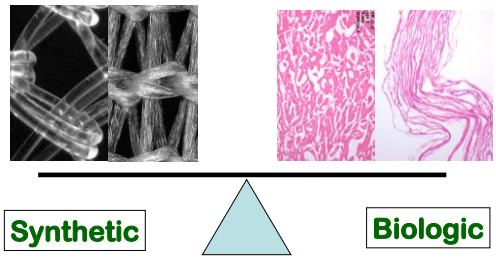
9 AC recurrences to prevent 1 mesh exposure

Nguyen J. Obstet Gynecol 2008;111:891.

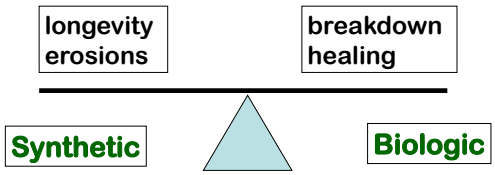
Synthetic mesh replaces endogenous fascia

Do not place over plicated fascia

Choice of graft materials



Choice of graft materials



Biologic graft exposures can typically be left alone – will epithelialize

Mesh erosions after ASC

- Review 8 yr. experience
- 57 pts. ASC synthetic mesh
- f/u 19.9 mos. (1.3-50)
- 7 (12%) erosions
  - 5 mesh
  - 2 suture
- Time to erosion - 14 mos. (4-24)
- All required surgical revision

Kohli, Karram. Obstet Gynecol 1998;92:999

Healing difficulties with synthetic grafts

- Are typically "exposures" without granulation
- Occur in 6-14% of cases
- Many are asymptomatic
- Can be managed in the office or OR
- Unknown effect on longevity of the repair

Classification of healing abnormalities

	Simple	Complex
Timing relative to surgery	< 12 weeks	> 12 weeks
Granulation inflammation	Absent	Present
Site relative to incision	At incision	At other site
Organ involved	Vagina	Other viscus

IUGA grafts symposium, 2005.

Recognized issues with grafts

- Erosions
- Sexual dysfunction
- Long term effects

Recognized issues with grafts

- Erosions
  - Are they complications, or expected treatable consequences ???
    ex: urinary retention after TVT
- Sexual dysfunction
- Long term effects

Recognized issues with grafts

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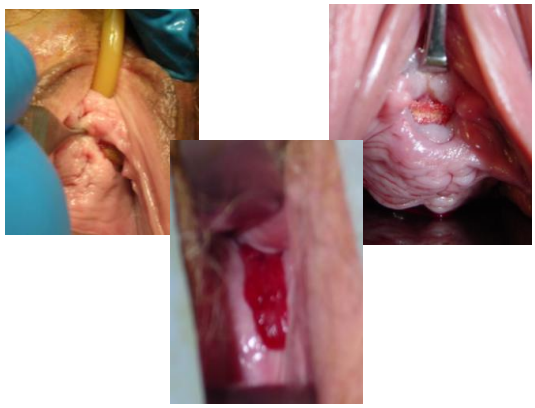
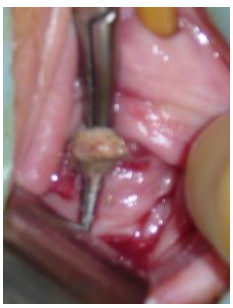
  - Are they complications, or expected treatable consequences ???
    ex: urinary retention after TVT
- Sexual dysfunction
  - Dyspareunia rates no higher than baseline
- Long term effects

Recognized issues with grafts

- Erosions
  - Are they complications, or expected treatable consequences ???
    ex: urinary retention after TVT
- Sexual dysfunction
  - Dyspareunia rates no higher than baseline
- Long term effects
  - Main issue, especially in atrophic women
  - Mesh contraction and pelvic pain

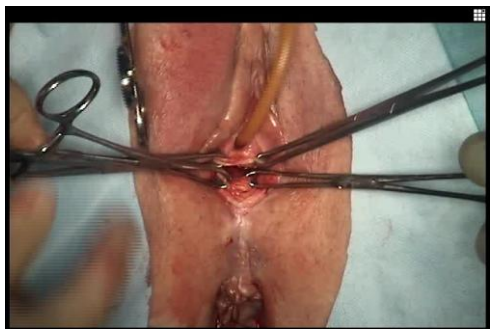


Why use only type 1 mesh



- Previous concept:
  - Pores too small to allow macrophages to follow bacteria in
- Current concept:
  - Formation of mucousy coating which allows bacterial adherence: "Biofilm"

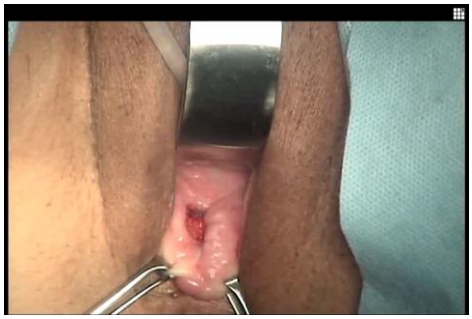
Type 3 mesh removal



Type 3 mesh (IVS, Surgipro)

- Not incorporated
- Encapsulated
- Develops “biofilm” coating – bacterial growth enabled

Type 1 PP erosion presentation



Type 1 mesh (macro-mono)

- Well incorporated
- Rarely infected or rejected
- Erosions develop most likely due to hematoma or atrophic thinning
- Implantation technique is important

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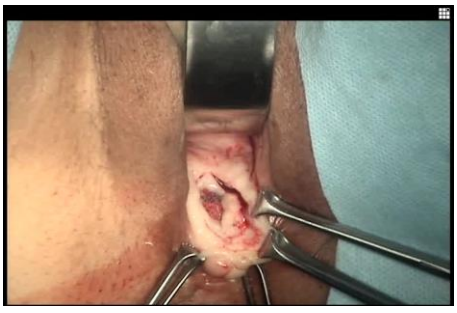
- Rarely a need to remove the entire graft

Type 1 mesh (macro-mono)

- Well incorporated
- Rarely infected or rejected
- Erosions develop moist likely due to hematoma or atrophic thinning
- Implantation technique is important

- The ONLY mesh that should be used in the pelvis

Erosion management



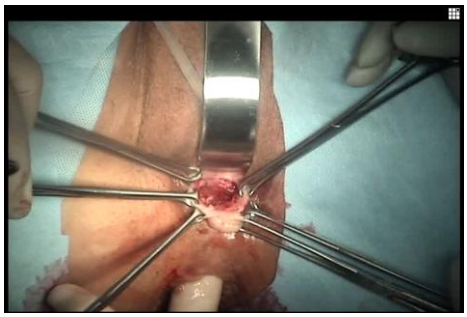
Type 1 erosion management

- Infiltrate with vasoconstrictive agent
- Circumscribe lesion leaving healty vaginal epithelium

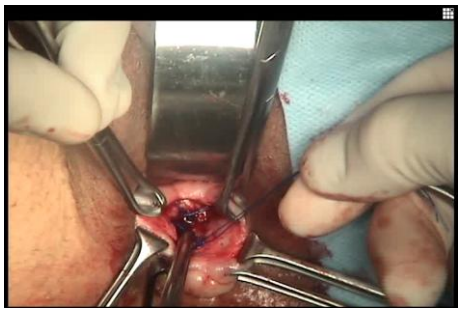
Type 1 erosion management

- Infiltrate with vasoconstrictive agent
- Circumscribe lesion leaving healty vaginal epithelium
- Undermine epithelium – to allow reapproximation without tension
- Excise exposed section – avoid visceral trauma

OR erosion management



OR management of erosion



Type 1 erosion management

- Infiltrate with vasoconstrictive agent
- Circumscribe lesion leaving healty vaginal epithelium
- Undermine epithelium – to allow reapproximation without tension
- Excise exposed section – avoid visceral trauma
- Re-approximate mesh edges
- Close vaginal epithelium

Exposure management: Summary

- Prevention is key
- Type 1 PP mesh usually well incorporated
- Is likely an unavoidable consequence of mesh usage in pelvis
- In the absence of pain or mesh contraction, rarely requires entire graft removal

Recurrence after transvaginal mesh repair: what we should do?

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Recurrence of vaginal prolapse after surgery is a common problem. In the epidemiological study by Olsen et al, women had a lifetime risk of POP or urinary incontinence of 11% with a third of these requiring further surgery. The recurrence of prolapse would be even higher as many women would elect after failed surgery to put up with recurrent prolapse rather than having further surgery. It is also important to remember that not all women with recurrent anatomical prolapse require further treatment. Fifty per cent of all parous women have some loss of pelvic support on examination, although only 10 to 20% of these women are symptomatic.

Women with recurrent pelvic organ prolapse do not need extensive investigation but do need to be examined carefully to determine the site of a recurrent prolapse and the defect responsible. It is important to distinguish between anterior compartment prolapse, apical compartment prolapse and posterior compartment prolapse either a rectocele or enterocele. It is also important to determine why the recurrence occurred and whether the recurrence is at the site of the previous repair (mesh or not) or whether the recurrence is at another site which wasn't previously surgically repaired.

Previous mesh repair may have failed to provide long-term vaginal support deal for a variety of reasons. The initial defect in support may have not of been fully appreciated. A common example of this is in women with a cystocele who have an anterior repair (with or without mesh reinforcement) is performed but the loss of apical support is not addressed. These patients frequently have recurrent of high cystocele and vault prolapse +/- enterocele. This also applies to posterior compartment prolapse.

When recurrence occurs at the site of the previous mesh repair; there may not have been adequate attachment of the mesh to secure structures (eg pelvis, ligament) postoperatively. There may have been excessive strain placed on the repair due to lifestyle factors such as excessive heavy lifting or excessive body weight. It is also important to avoid surgical over-correction. Examples of this is the Burch colposuspension leading to posterior compartment prolapse and the sacrospinous colpopexy causing increasing anterior compartment prolapse +/- stress incontinence.

Should women with specific defects have only these defects repaired or should a total vaginal repair of anterior posterior and apical compartments be performed in all cases. Certainly prolapse recurrence after vaginal repair whether using mesh or not can occur as a result of prolapse in another unrepaired compartment, even when preoperatively there is no defect found on careful examination. In a recent study by Fatton et al (1) evaluating the extraperitoneal uterosacral vault suspension, 14.5% of the patients experienced a prolapse recurrence. Recurrences occurred at the operating site in only half of the patients. In the 8 remaining cases, recurrences occurred in a non operated site with 7 patients developing prolapse in the anterior compartment after posterior mesh reinforcement. Total vaginal repair would perhaps decrease the risk of recurrence but would lead to greater surgical dissection and operating times; and also postoperative morbidity. Interactive discussion will be encouraged at this point of contention.

It is important to have a good understanding of the anatomy if adequate surgery for prolapse is to be performed. DeLancy described three different levels of support in the vagina with level one being the upper vertical axis using the cardinal uterosacral complex to support the upper vagina, cervix and lower uterine segment to the posteriolateral pelvic sidewall. Therefore placement of mesh or sutures along the arcus tendinious fascia pelvis will only provide level two support, and will not provide good apical support. Likewise use of the sacrospinous

ligament by direct application of the vagina to the ligament certainly predisposes to anterior compartment prolapse. It is unclear at this stage whether using mesh between the sacrospinous ligament and apical vagina avoids this problem of recurrent apical prolapse.

Finally, dissatisfaction following surgery is not only caused by recurrence of prolapse. A good anatomical result can be obtained but unless there is also a good functional result with normal urinary and bowel function and well as sexual function, the outcome for the patient may not be a successful one. The maintenance of normal or improved sexual function is an important consideration. If vaginal length or calibre has been adversely affected by previous repair, then the abdominal approach (eg colposacropexy) is a better option as further vaginal surgery is more likely to narrow the vagina than the abdominal approach.

Refs.

1. Fatton B, Dwyer PL , Tan PK , Achtari C. Bilateral extraperitoneal uterosacral vaginal vault suspension: a two year follow-up longitudinal case series of 123 patients. *Int Urogynecol J Pelvic Floor Dysfunct*. 20; 4: 427 -34. 2009