W12: Approaches to Pelvic Organ Prolapse Surgery

Workshop Chair: Philippe Zimmern, United States
06 October 2015 14:00 - 17:00

Start	End	Topic	Speakers
14:00	14:30	Goals of repair and anatomical principles	Maude Carmel
14:30	15:00	Vaginal repairs	Kimberly Kenton
15:00	15:30	Laparoscopic repair & use of mesh	Kimberly Kenton
15:30	16:00	Break	None
16:00	16:20	Robotic repairs	Philippe Zimmern
16:20	16:40	Assessment of outcomes	Maude Carmel
16:40	17:00	Questions	All

Aims of course/workshop

This SUFU (Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction) initiated course, dedicated to the life and work of Dr Rodney Appell, is intended to update the reconstructive pelvic surgeon, and all interested trainees, on the pros and cons of modern surgical approaches in the management of pelvic organ prolapse. This interactive course will feature concise lectures on current debates with each approach, including robotic surgery. The course will include multiple surgical video clips, and provocative case discussions to enhance the interaction with the audience.

Learning Objectives

1. Understand key anatomical landmarks for pelvic organ prolapse repair and recognize the best indication and approach for each described repair procedure

2. Comprehend all relevant surgical techniques (including robotic) for all types of compartment prolapses

3. Appreciate the current outcome measures and how it can impact published results as well as the management of prolapse repair complications (case discussion)

ICS 2015 Montreal

Notes

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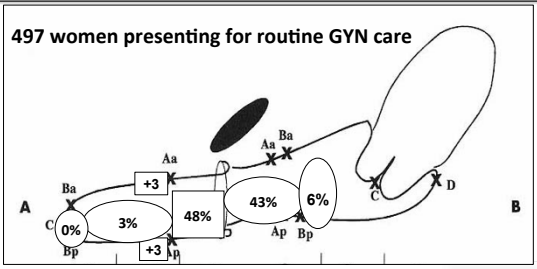
GOALS OF PROLAPSE REPAIR

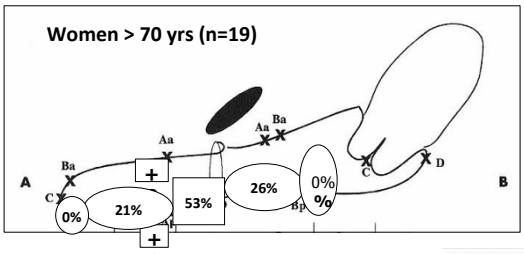
Kimberly Kenton MD, MS
Professor, Obstetrics & Gynecology and Urology
Division Chief, Female Pelvic Medicine & Reconstructive Surgery

Know NORMAL Anatomy



Swift, S., Am J Obstet Gynecol, 2000, 183:2

Normal Anatomy



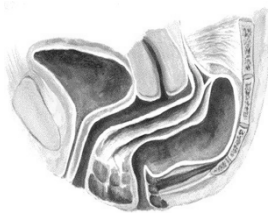
Swift, S.. Am J Obstet Gynecol, 2000, 183:2

Relationship: Anatomy & Symptoms

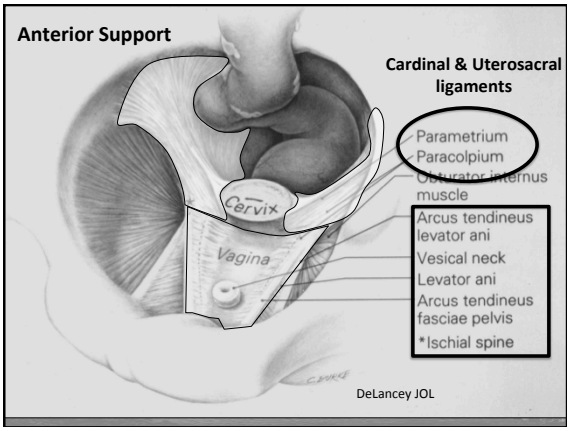
- Vaginal bulge = symptom that most strongly correlates with POP-Q
- Bulge at the hymen seem to be when patients notice it and become symptomatic
- Surgery for <+1 – likely not necessary

(Swift S et al 2003; Bradley CA et al 2005)

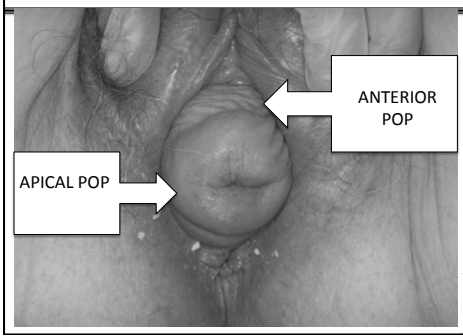
Normal Support



- Connective tissue
  - **Uterosacral ligaments**
  - **Cardinal ligaments**
- Muscle
  - **Levator ani**
- Upper 2/3 vagina
  - **Horizontal**
  - **Lay on levators**



Loss of Cardinal-US Ligament



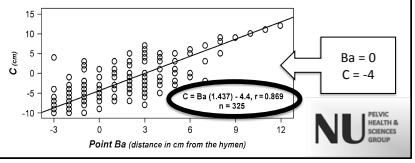
Anterior Defects

- Isolated anterior or posterior defects are RARE
- 1997 Hospital Discharge Survey
  - **Isolated cystocele or rectocele repairs**
  - **18% POP surgery US**
- REMEMBER APEX

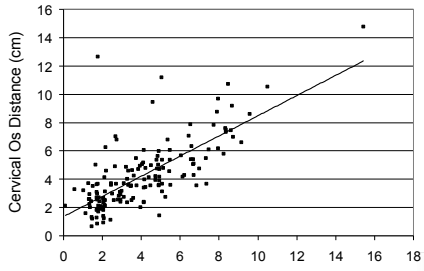
Relationship: Anterior Vaginal Wall & Apex

- 354 Women with ≥ Stage II POP
  - Linear relationship: apex & anterior & posterior vaginal walls
  - Anterior or posterior vaginal wall is ≥ Stage II ⇨ Apex is within 4 cm hymen

Rooney K. AJOG 2006.



MRI Relationship: Bladder & Apex



Summers A et al. *Am J Obstet Gynecol.* 2006;194(5):1438.1443.

What About Other Factors?

Element	R^2	Added	*P* value
Apical	.60		<.001
Vaginal length	.77	.17	<.001

77% "cystocele" size explained by apex and vaginal length

Hsu Y et al. *Int Urogynecol J Pelvic Floor Dysfunct.* 2008;19(1):137-142.

Clinical Implications

- Apical support ***DOMINANT*** factor in anterior vaginal wall support
- Surgically correcting apical descent important in correcting anterior vaginal wall POP
- Necessity for concomitant anterior repairs unclear

Posterior Compartment

- Posterior repair
  - **149 Stage III-IV POP: Isolated SCPXY**

Most prolapsed point	Pre-OP Mean+SD	1-Year Post-OP Mean+SD	P value
Anterior vaginal wall (Ba)	3.5+2.7	-2 +1	<.0005
Apex (C)	1+5	-9+2	<.0005
Posterior vaginal wall (Bp)	1+3.6	-2+1	<.0005
Genital hiatus (Gh)	4+2	3+ 1	.001

Concomitant repairs typically not necessary
Genital hiatus narrows with correction of apex
No need for concomitant anterior/posterior repair
Correction of apex corrects posterior and anterior vaginal wall defects

Guahi M et al

Posterior Repairs

- 258 women
  - **Sacrocolpopexy**
  - **Sacrocolpopexy ± PR**
    - Worse posterior support and bowel symptoms preop
- **NO DIFFERENCE IN POP-Q 3-MO & 1-YEAR**
  - **Anterior**
  - **Apical**
  - **Posterior**

Kaser D et al 2012

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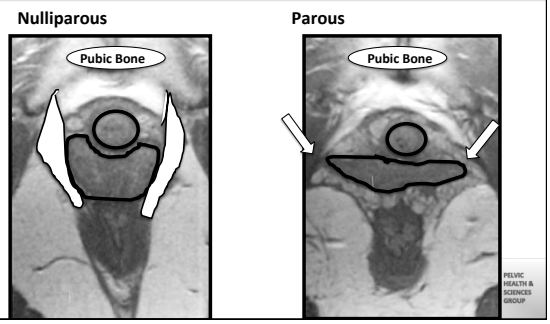
What about the muscle?

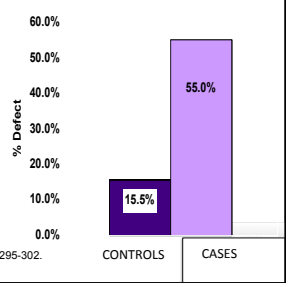
Muscle



Levator Defects

Case-Control Study

- 151 cases with POP
  - **(POP-Q ≥ +1)**
- 134 controls
  - **(POP-Q ≤ -1)**



DeLancey JO et al. *Obstet Gynecol*. 2007;109(2)(Pt 1):295-302.

Goals for POP Surgical Repair

- Understand each defect
  - **Apical**
  - **Anterior**
  - **Posterior**
- RARE to have anterior or posterior defect without APICAL defect as well
- If only going to fix one compartment, fix APEX

How select the best operation for POP repair?

- Determine outcomes meaningful to patients
- Know individual patient's goals
- Know procedures

Goals for POP Surgery

- Understand each woman's symptoms and treatment goals
- Select surgical procedure that optimizes those goals anatomically and functionally

Assessment of Outcomes of Prolapse Repairs

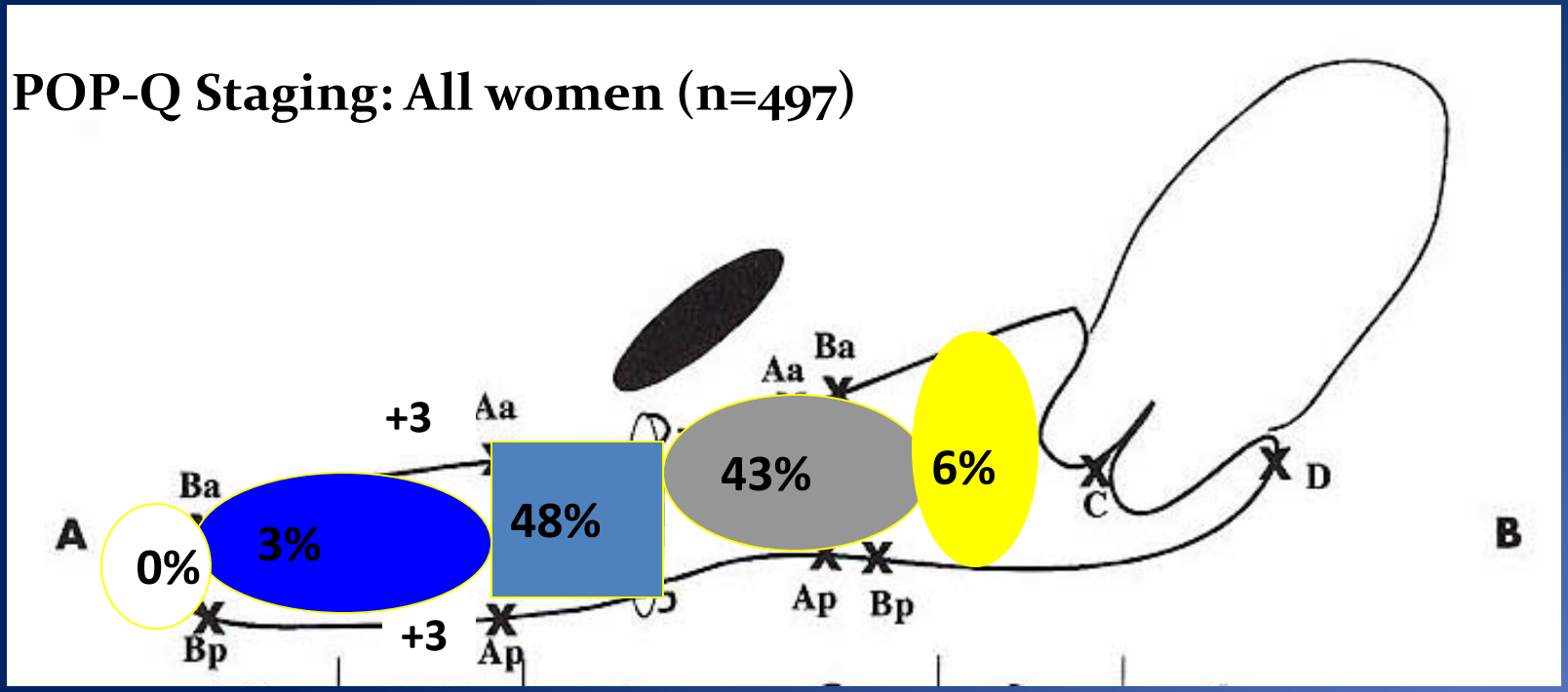
Sandip Vasavada, MD
Cleveland Clinic Glickman Urological Institute
Cleveland, Ohio

Outcomes Assessment

- What is best measure?
  - Symptoms
  - Bulge
  - Anatomic measurement (i.e. Baden-Walker or POP-Q)
  - Satisfaction
  - Physician assessment

Epidemiology of POP

Nearly half would not meet NIH definition for “optimal” or “satisfactory” anatomic outcome



(Swift S et al, 2005)

Defining success

- Some degree of loss of anatomic support is normal
- Perfect anatomic support is associated w/ worse HRQOL (PFIQ 10pts worse for Stage 0 than Stage 1 or greater)
- Symptomatic cure is more clinically relevant that anatomic cure
- Definitions of anatomic success commonly used are too strict and often not clinically relevant

What is a failure after Prolapse surgery?

- Reoperation or retreatment?
- Complications ?
- Recurrence of symptoms?
- Anatomic recurrence
  - Stage 2+?
  - Beyond hymen?
  - Stage 3+?

Outcomes at one year

	Standard	Ultralateral	Mesh	Overall
Median POPQ value (range)				
Ba	-1.5 (-3 to +1)	-1.3 (-3 to +4)	-1 (-3 to +2)	-1 (-3 to 4)
C	-6 (-9 to +1)	-6 (-10 to +4)	-6 (-7.5 to -2)	-6 (-10 to 4)
Bp	-3 (-3 to +1)	-2.5 (-3 to +4)	-3 (-3 to 0)	-3 (-3 to 4)
No prolapse beyond the hymen	25/28 (89%)	22/26 (85%)	22/23 (96%)	69/77 (90%)
Absence of POP Symptoms	32/32 (100%)	27/29 (93%)	21/23 (91%)	80/84 (95%)
No reoperations for POP	32/32 (100%)	29/29 (100%)	27/27 (100%)	88/88 (100%)
No prolapse beyond hymen, no symptoms, no retreatment	25/28 (89%)	21/27 (78%)	21/23 (91%)	67/78 (86%)

A Few More Considerations..

- Just because bulge is gone, does not mean all is ok
  - Incontinence
  - Defecatory dysfunction
  - Sexual dysfunction
  - Mesh complication
- *Re-assess patient outcomes and goals and expectations*

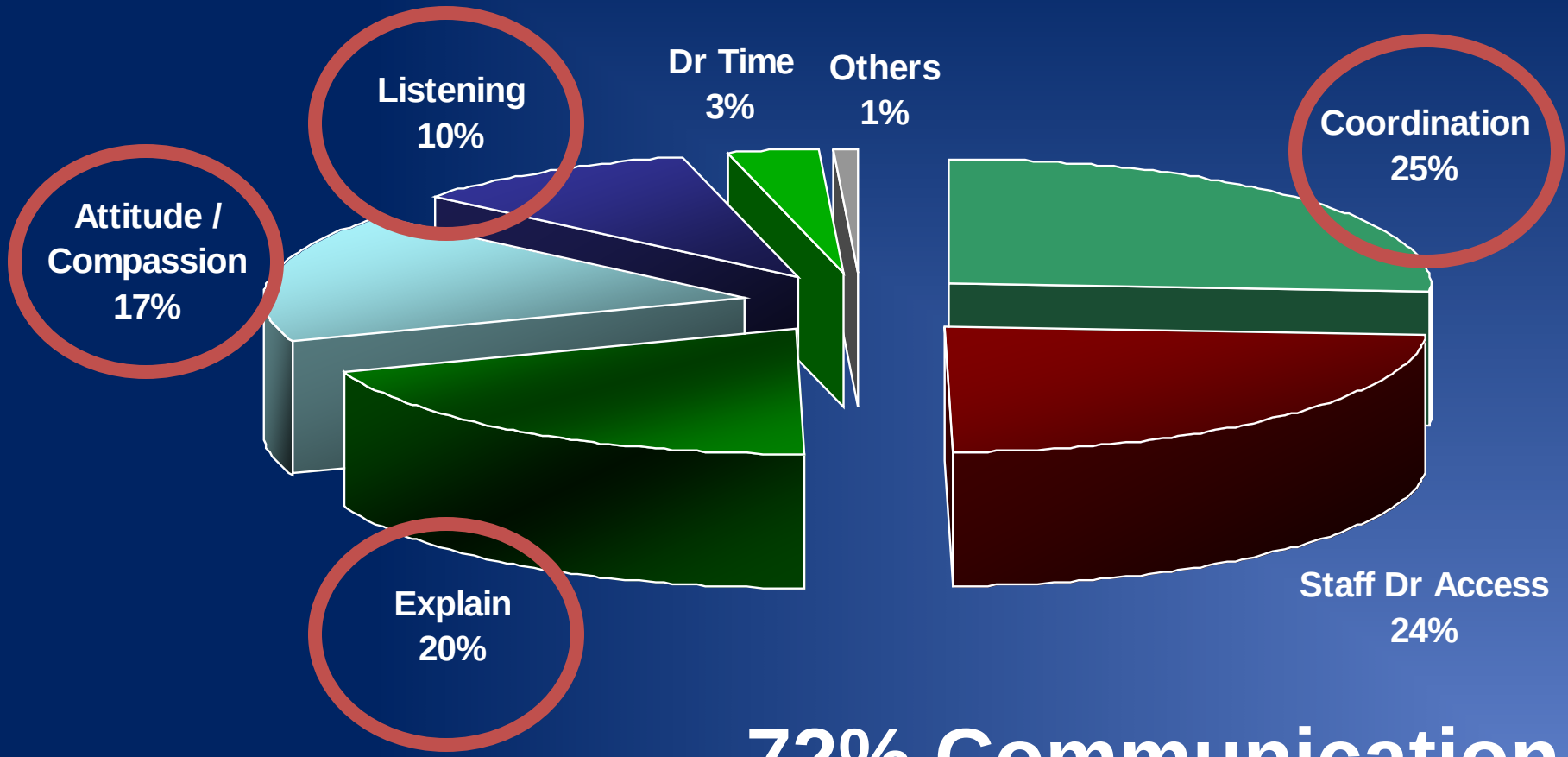
Outcomes Assessment

- Anatomy: should use POP-Q and hymen as threshold for success
- Subjective: absence of vaginal bulge
- Functional: condition specific HRQOL instrumens
- Sexual Function: validated prolapse specific (PISQ) or FSFI
- Assess repeat surgery/treatments, baseline pain and sexual function

Patient Experience

- We are looking at the end only (surgical outcome)
- Patient experience with visit and communications are very important to this
- Many opportunities to enhance this
- Will eventually connect to payment
- How does a bad patient experience affect a good outcome…

Opportunities for Improvement



72% Communication

Current Challenge

- Communications skills we learned in medical school did not prepare us for this !
- More challenging patients now than ever:
  - Expectations high
  - Demands high
  - Support low
  - Time at a premium

Conclusions

- The success rate of anterior colporrhaphy varies considerably depending upon the definition of treatment success used.
- When strict anatomic criteria are used, the success rate is low.
- When more clinically relevant criteria are used, treatment success is better with only 10% developing anatomic recurrence beyond the hymen, 5% developing symptomatic recurrence and 1% undergoing retreatment during the study follow-up.
- Patient outcomes , experience and expectations should be reviewed

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LAPAROSCOPIC SACROCOLPOPEXY

Kimberly Kenton MD, MS
Professor, Obstetrics & Gynecology and Urology
Division Chief, Female Pelvic Medicine & Reconstructive Surgery

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NO DISCLOSURES

2010 Cochrane Review

ASC vs SSLS

❑3 RCT

- ASC
  - Lower rate of recurrent vault POP
  - Lower grade POP when recurrence
  - > time to recurrence
  - Less dyspareunia
- SSLS
  - Shorter OR time
  - Quicker recovery
  - Less expensive

ASC vs SSLS

- 6 months: Apex ≥ Hymen
- N=89, vault

	Apex	Anterior	Posterior	Subjective
ASC	4%	7%	17%	94%
SSLS	19%	14%	7%	91%

Maher CF, et al. Abdominal sacral colpopexy or vaginal sacrospinous colpopexy for vaginal vault prolapse: A prospective randomized study. Am J Obstet Gynecol 2004;190:20-6.

Open versus LASC

- LAS Trial
  - 3 Centers in UK
  - Equivalence of open and laparoscopic ASC
- Y polypropylene mesh
  - Polydiaxanone sutures on vagina
  - Permanent suture to sacrum
  - Reperitonealized
- 1-year
  - Objective (point C) and PGI ('much better') equivalent
- Open and Laparoscopic ASC equivalent

Surgical outcomes of LASC

Author	Journal	Year	Design	N	Length F/U	Apical Recur
Cosson	J Gynecol Obstet Biol Reprod	2000	Retrospective case series	77	11.5 mo	1.3%*
Agarwala	JMIG	2007	Retrospective case series	74	24 mos	0%
Granese	Eur J Obstet Gynecol Reprod Biol.	2009	Retrospective case series	138	43 mos	5.1%
Maher	AJOG	2011	RCT	53 Lsc 55 Vag	24 mo	23% Lsc† 67% Vag

* Reoperation rate
† Any vaginal prolapse

Surgical outcomes of RASC

Author	Journal	Year	Design	N	Length F/U	Apical Recur
Geller	Obstet Gynecol	2008	Retrospective cohort	73 Rob 105 Abd	6 wks	0%
Elliot	J Urol	2006	Retrospective case series	30	24 mos	6%
Moreno Sierra	Urol Int	2011	Prospective case series	31	24 mos	0%
Akl	Surg Endosc	2009	Retrospective case series	80	4.8 mos	3.7%
Geller	JMIG	2011	Prospective case series	25	15 mos	0%

RCT LASC vs RASC

Paraiso et al 2011

- Primary outcome = OR time
  - **⇧OR time & pain robot**
- No DIF
  - **Anatomic, symptom, QOL outcomes**
  - **Anatomic outcomes**
- Cost $1936 ⇧with robot

Anger et al in press

- Primary outcome = COST
  - **NO difference hospital costs**
  - **12,586 vs 11573, p=.160**
  - **NO difference RASC & LASC costs in first 6 weeks**
  - **13,867 vs 12,170, p=.060**
- No DIF
  - **Anatomic, symptom, QOL outcomes**
  - **Anatomic outcomes**

Safety

Anger et al

- 10 LASC vs 6 RASC, p=.87
- 1 reoperation in each arm for SBO and port site hernia

Paraiso et al

- "No differences in intra or postoperative complications LASC vs RASC

Bottom Line:

- -Long-term outcomes for laparoscopic & open ASC comparable

Expert Opinions – 4 Important Tips

-Use graft rather than direct sacral affixation of the vagina, but avoid playing synthetic graft on a denuded vaginal apex

-Spread vaginal sutures over to spread out tension (anterior and posterior), rather than simple fixation at the apex

-Avoid excessive tension on the anterior vaginal graft to minimize the SUI risk

-Decrease presacral hemorrhage risk by suture placement thru anterior longitudinal ligament closer to the promontory, rather than at S3-4

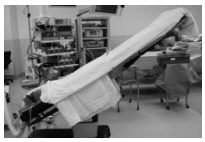
Nygaard I, Obstet Gynecol 2004;104:805-23

Patient Positioning

- Arms tucked & pronated
- Hands & bony prominences protected
- Feet resting on heels in supportive stirrups
  - **No pressure on popliteal fossa, lateral knee**

Trendelenburg

- Remember that patient may slide towards head of bed
  - **Keep bowel out of pelvis**
  - **Access to presacral space**
- Must use material to prevent sliding:
  - **Gel mat, bean bag**
  - **Shoulder supports**
  - **Taping patient to table**
- Lower extremities move closer to surgical site
  - **Must be re-positioned to a "hips neutral" position**



Positioning: Prevent Patient Sliding

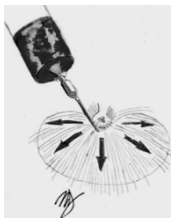
- 2 Options
  - **Shoulder Pads**

Positioning: Prevent Patient Sliding

Hug U Vac

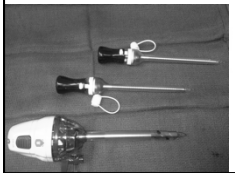
Local Anesthetic

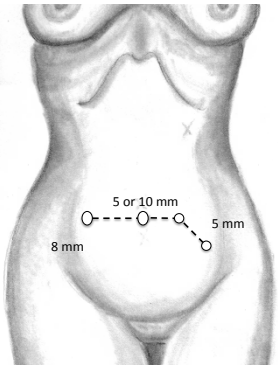
- Inject subcutaneously prior to incision
- May decrease post-op pain
- Use needle to localize accessory trocar path



Port Placement

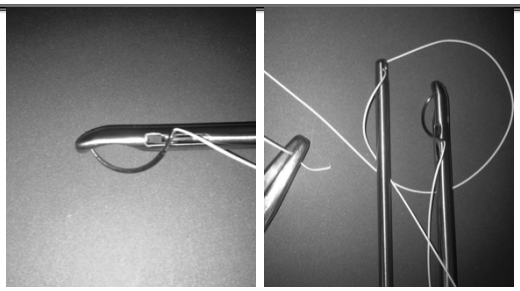
- 5 or 10 mm umbilicus
  - **10 if morcellating**
- 8 mm accessory port
  - **Pass suture**
- 2, 5 mm for sewing





Gortex® Suture for 8 mm port

Needle Drivers



Lucite Stent

Soft Polypropylene Mesh

- 2 Strips vs "Y"
- Anterior
  - **Several centimeters**
- Posterior
  - **Rectal reflection**
- NO concomitant vaginal repair

Below Promontory

Most Prominent Structure

- **73%** - Intervertebral disc
- **27%** - Superior aspect of S1

Anterior & Posterior Dissection

Posterior Suturing

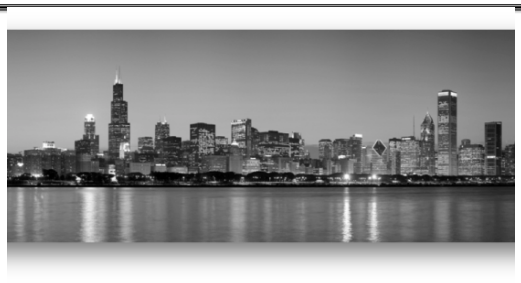
Anterior Suturing

Pre-sacral Dissection

Lessons learned ……

- Patient positioning EVERYTHING!
  - **Maximum Trendelenberg**
  - **Hug U Vac**
- Low profile Allen stir-ups
- Minimal mesh (dose effect)
- Fixation of mesh
  - **2 separate pieces**
  - **Posterior first**
- Don't over-correct anterior wall - "loose"
- Suture just below promontory

Thank you for your attention!



ROBOTIC MESH SACROCOLPOPEXY

Philippe E. Zimmern, MD, FACS
Professor of Urology

UT Southwestern Medical Center

Mesh sacrocolpopexy Background

- First described in 1962 by Lane
- Until then, treatment options were:
  - Pessary
  - Colpocleisis
  - Vaginal repair

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GOAL

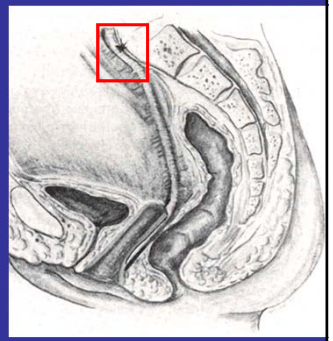
✓ Support upper vagina toward S3 and S4

✓ Sutton et al. (1981):

Life-threatening bleeding from

pre-sacral vessels

=> Suspension of the vagina to upper third of sacrum, near sacral promontory



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Indications

✓Primary repair

✓Secondary repair

Issues:

- Young patient
- Steroids; Diabetes
- Vaginal wall ulcerations

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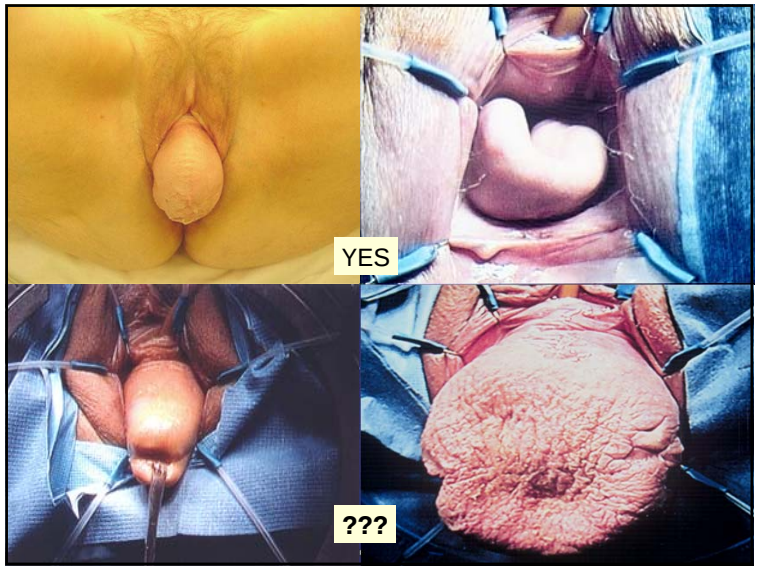

LEVEL I EVIDENCE

"The abdominal sacral colpopexy with Mersilene or polypropylene mesh has been shown
1. to have high cure rates for the most severe cases of vaginal apex prolapse…..
2. superior to vaginal surgery in 1 prospective RCT(1)…..
3. excellent results in case series in many centers…
4. complication rates are acceptable
5. low cost….

M.Walters Editorial
Int. Urogynecol. 2003

(1).Benson et al. Am.J.Obstet.Gynecol. 1996 175:1418-1422

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Types of Synthetic meshes

- Pore > 75 micron (Marlex, Polypropylene-Prolene, Trelex)
- Pore < 10 micron/Multifilament (Gore-Tex)
- Multifilament (Teflon, Mersilene, Surgipro)

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Indications

- BMI < 30
- Few prior abdominal surgeries
- No significant respiratory disease
- Younger patients (<75-80 y-old)
- Vault prolapse alone, or with one additional compartment defect
- Avoid prior abdominoplasty
- Consent for possible open repair

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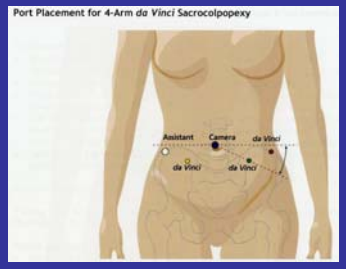
ROBOTIC EQUIPMENT

Approved by FDA April 2005



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Optional: Side docking

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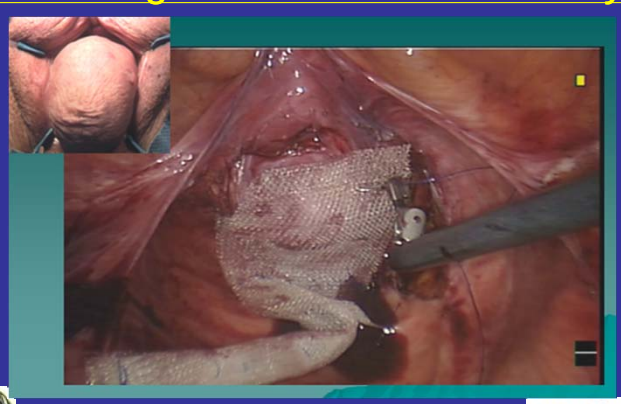
Case 3: 62 y old – S/P vag.hyst. Wanting to resume sexual activty



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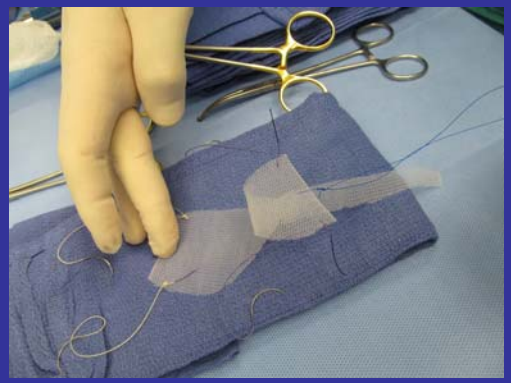
Mesh preparation on the back table (inexpensive) or use of marketed product



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Robotic mesh sacrocolpopexy MOVIE 5'

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Technical Pointers

- Difficult areas: anterior vagina and promontory
- Mesh and suture choices
- Transfixing vaginal sutures
- Tensioning the mesh

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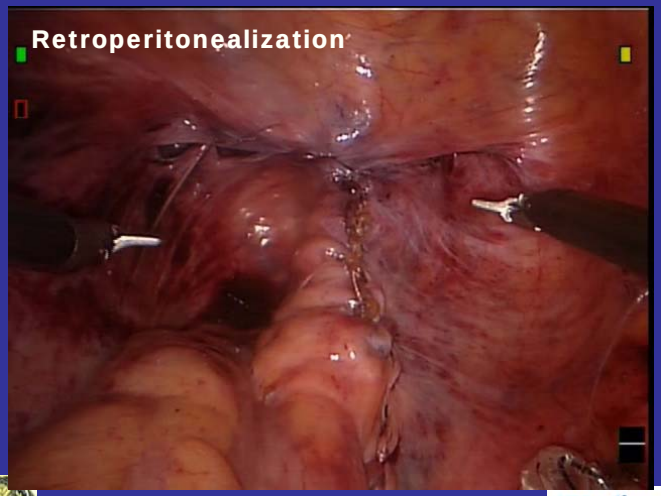
Retroperitonealization



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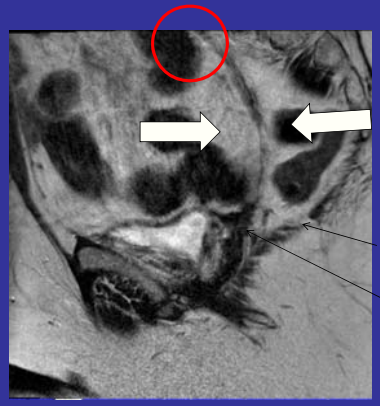
Possible oophorectomy if indicated

Follow-up MRI



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Robotic MSC- Literature review

- Several techniques described
- Few short series
- Short follow-up
- No comparative series

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Elliott, DS et al. J.Urol 2006

- N=30 mean age:67
- 21 with at least 1 y follow-up
- Mean duration: 3.1 hours
- One conversion to open
- Mean hospital stay: 1,5 day
- 2 recurrences at 7 and 9 months
- 2 vaginal mesh extrusion at 6 months

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Daneshgari, F et al. BJU 2007

- N=15 mean age: 64
- 3 conversion to open
- Mean duration: 317' (> 5 hours)
- Mean blood loss: 80 ml
- Mean hospital stay:2,4 days
- Mean follow-up: 3 months
- Mean POPQ stage: 3.1 decreased to 0

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Geller et al. Obstet Gynecol.2008

- Retrospective series
- Open (105) versus robotic MSC (78)
- More POP and supracervical hysterectomy in the robotic group
- Also less blood loss and shorter stay
- Longer operating time (mean>5h)
- Same 6 wks short term outcome (POP-Q)

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Akl et al. Surg Endosc.2009

- N=80
- Learning curve (3hrs down to 1h30')
- C:cystostomy (2), enterotomy (1),ureteric injury (1)
- Erosion: 5 (6%) (mean 5 months!)
- Conversion rate: 4/80 (5%)

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UTSW series *

- N=39
- F/up: mean 21 months
- Absorbable sutures
- Few conversions
- Vaginotomy, treated by primary repair
- Good anatomical repair similar to open repair so far

* Published in Can.J.Urol. 2013

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Update with long-term data

- Time: 2007 to 2012 (> 3 years f/up)
- N=25 Mean age:64 Parity 2,2 BMI 24
- Mean f/up: 56 months (37-86)
- No conversion to open
- Mean C -2,1(pre) to -9.5 (post/last visit)
- Mean Qol (0-10): 4,1 (pre) to 1,9 (post)
- 84% success with 4 failures (2 anterior, 2 posterior). One pessary and 3 vaginal repairs

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LSC versus Robot/RSC

- 1996 to 2013
- LSC 11 series 1221 pts Mean f/up: 26 m
- RSC 6 series 363 pts Mean f/up: 28 m
- Cure/Satisfaction:
  - LSC (124 minutes) 91% and 92%
  - RSC (202 minutes) 94% and 95%

RSC more expensive; but both provide excellent results short and mid-term

Lee, RK et al. European Urology 65:1128, 2014

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Conclusions

- 3 D vision and enhanced instrument maneuverability
- Attractive to patients
- Selective indications

=>New application - unproven long-term outcome and one RCT underway

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Current debates

- Single incision ICS Glasgow 2011
- Cost issue
- Technological improvements:
  - **Visual Stimulator for resident training**
  - **Tactile feedback**
  - **Smaller units**

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The robot of the future will look much different!

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Questions

Philippe.Zimmern@utsouthwestern.edu

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Traditional Anterior, Posterior, and Apical Compartment Repairs A Technique Based Review

Sandip Vasavada, MD
Center for Female Urology and Pelvic Reconstructive Surgery
The Glickman Urological and Kidney Institute
The Cleveland Clinic

IUGA 2015 Nice, France

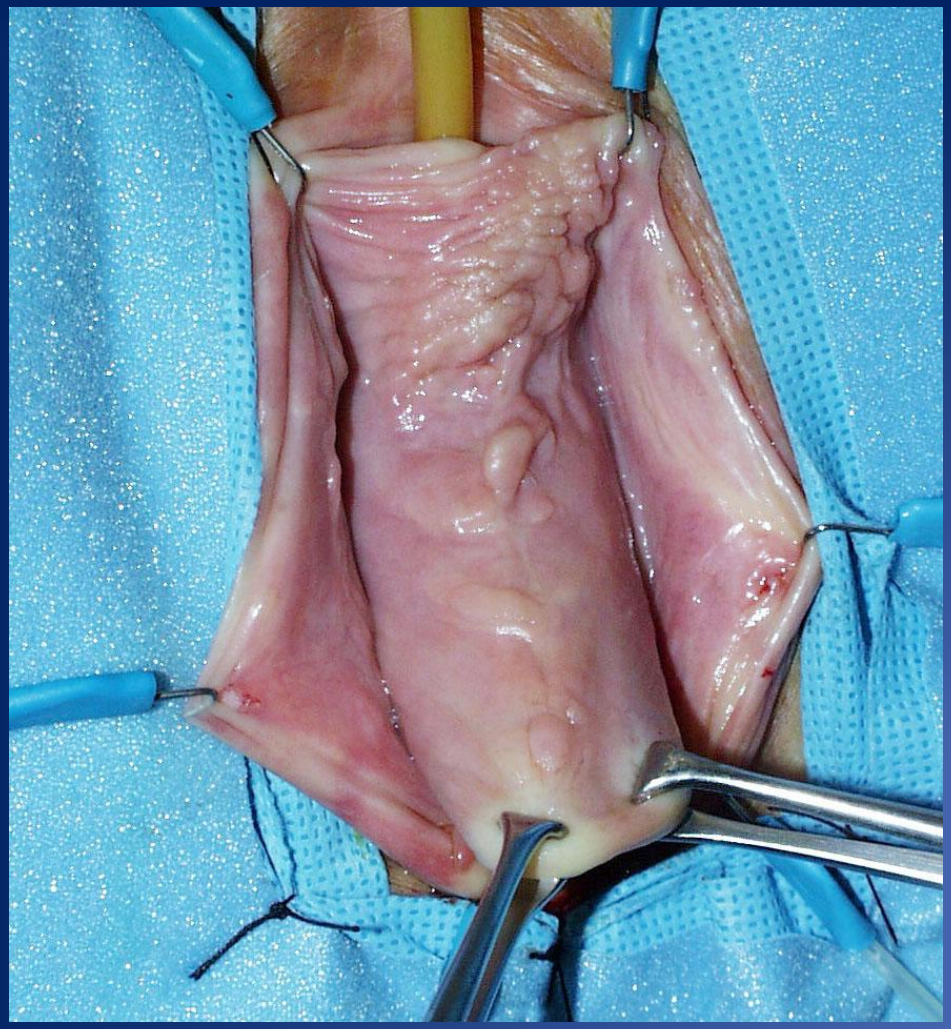
“Traditional repairs vs Augmented repairs”

- Should we abandon “traditional repairs”?
- If no, then what situations to use
  - First time occurrence of prolapse
  - Thin tissues/ atrophic
  - Sexually active patients?
- Constant need to “innovate” or “keep up”
- Is this because traditional repairs are doomed to failure…….

Challenges in Vaginal Prolapse Surgery

- Anterior Vaginal Wall Prolapse
- Apical Prolapse
  - At time of hysterectomy
  - Post-hysterectomy
- Posterior Vaginal Wall Prolapse

Anterior Vaginal Wall Prolapse

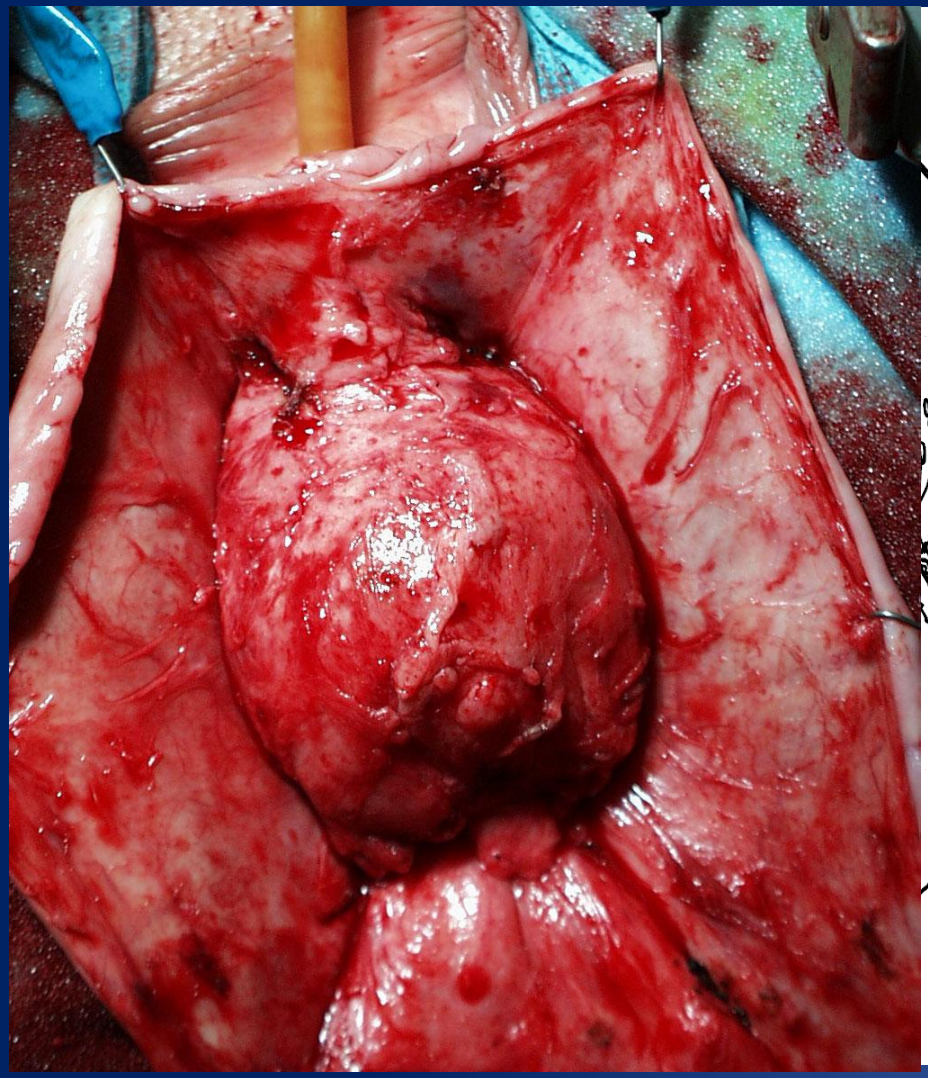


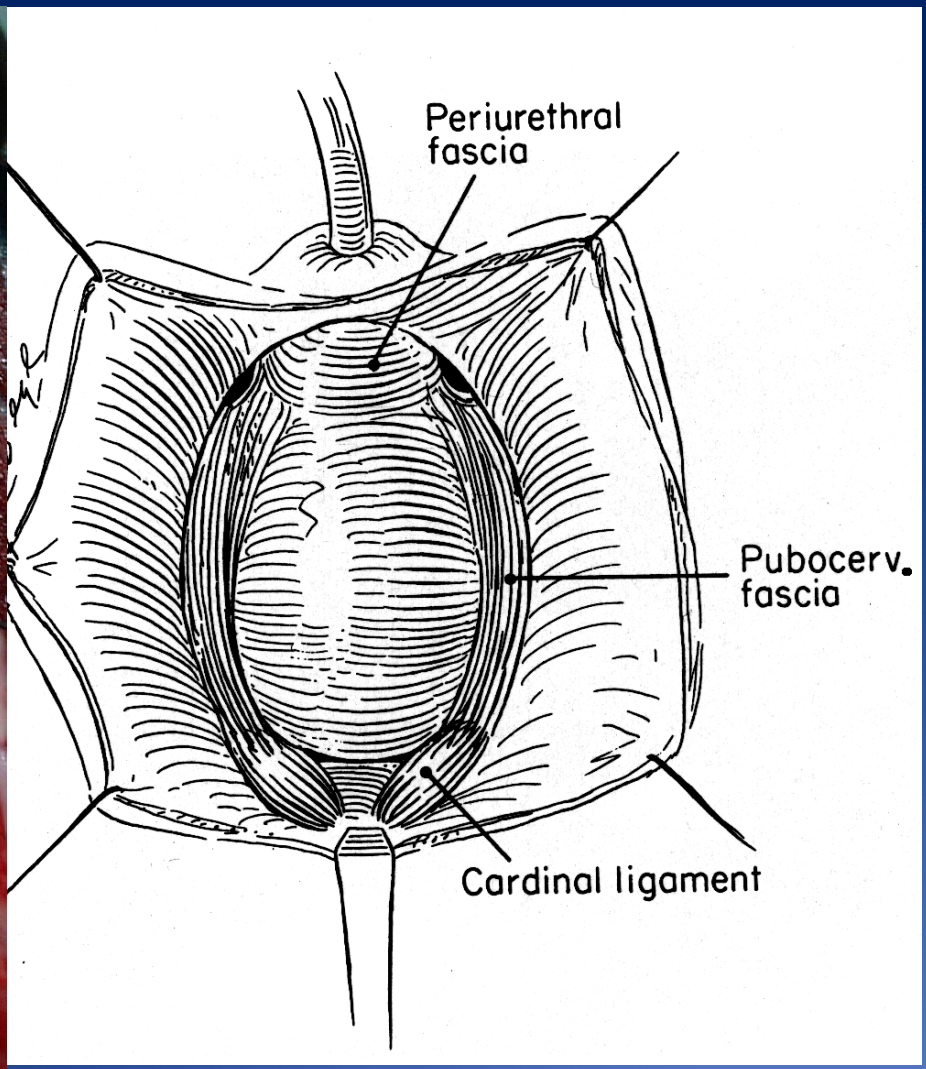
Four Defects of Anterior Vaginal Wall Prolapse

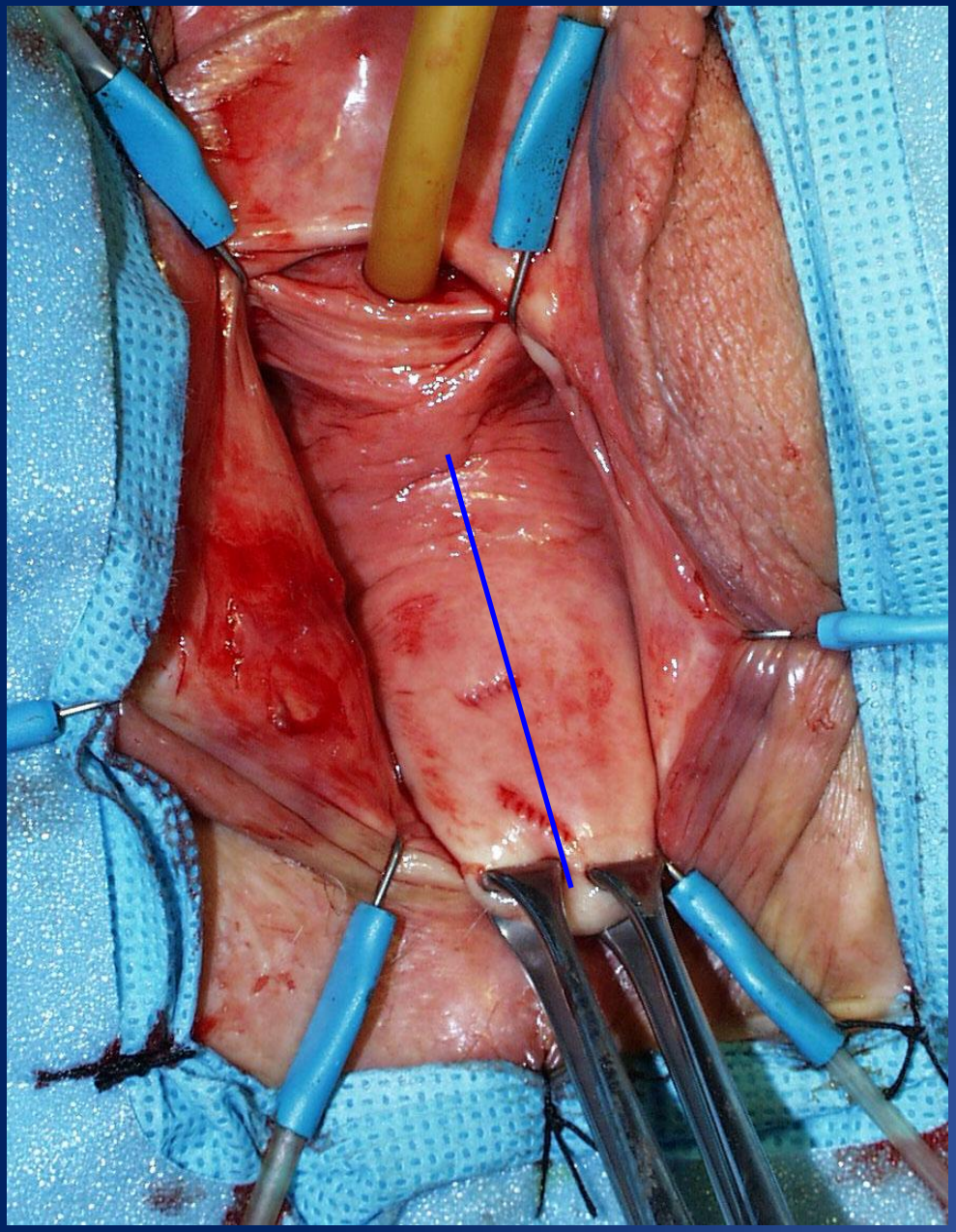
- **Repair of central defect**
  - re-approximation of widened pubocervical fascia
- **Repair of lateral defect**
  - Suspension/support of bladder base and apex
- **Urethra and BN support**
  - vaginal sling (if necessary), same or separate incision
- **Cardinal ligament repair/ Bladder base/ Apex**
  - dissection and approximation to midline

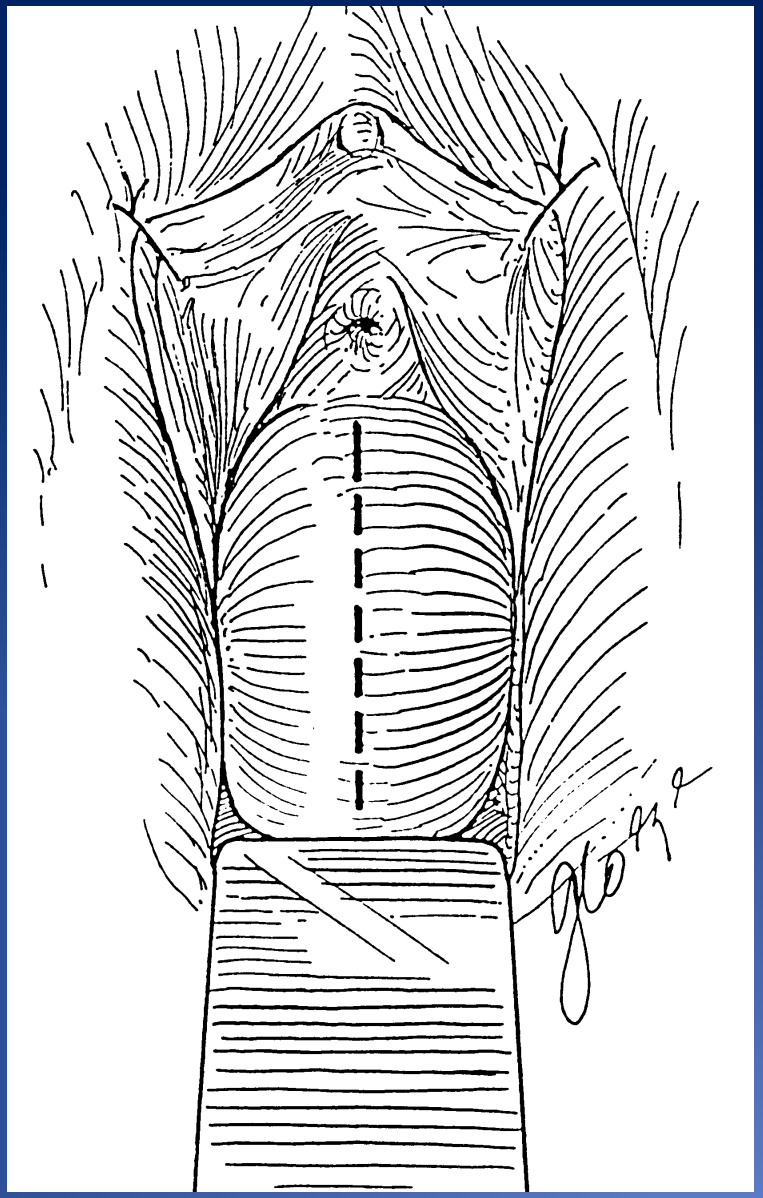
Anterior Vaginal Wall Prolapse

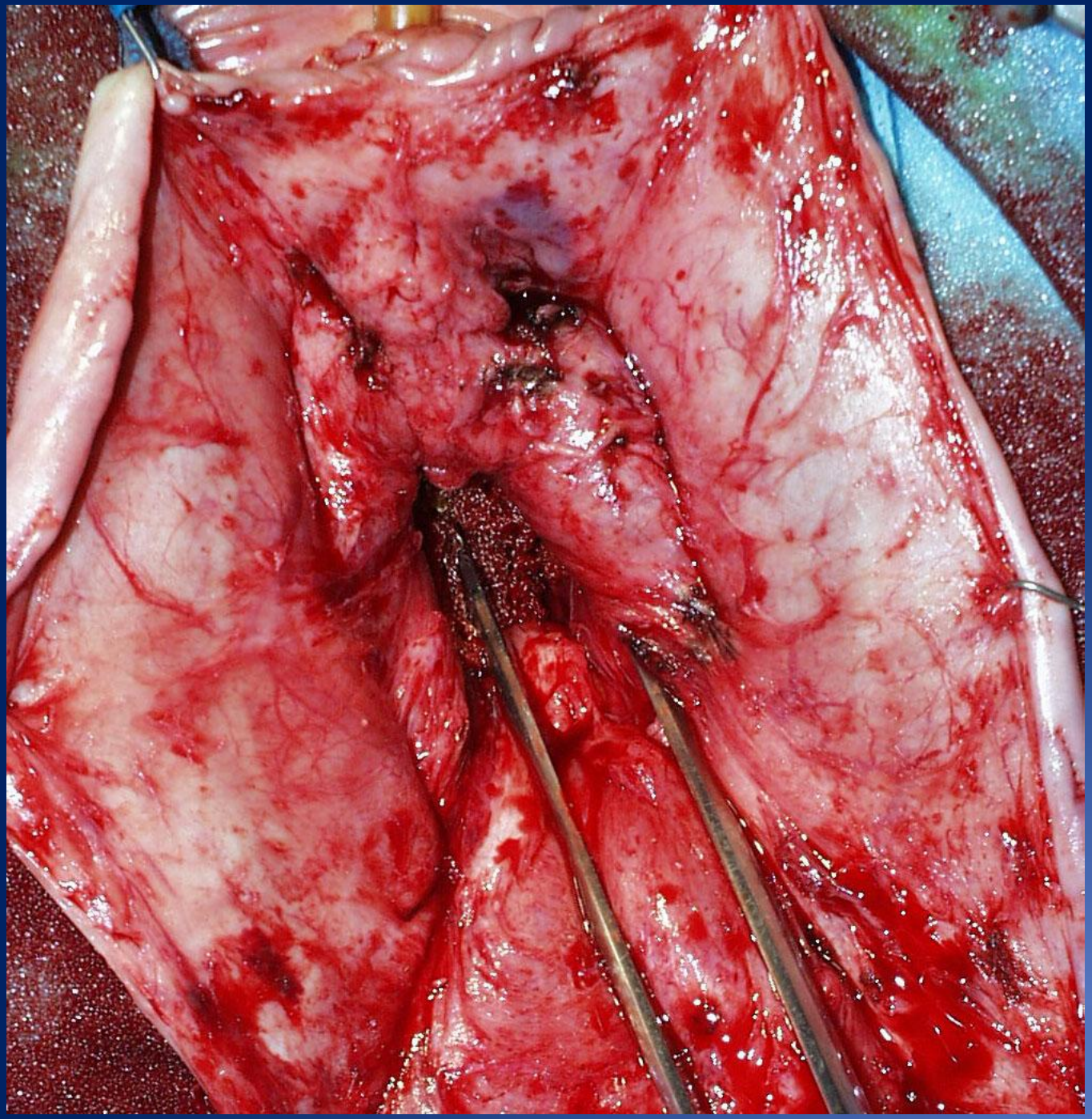
- Identify and correct all defects
  - Central and lateral defects if possible….
- Evaluate potential other coexistent defects of pelvic organ support (e.g enterocele, rectocele, vault mobility)
- Assess and selectively address potential urethral incompetence (OPUS Trial Data 2012)

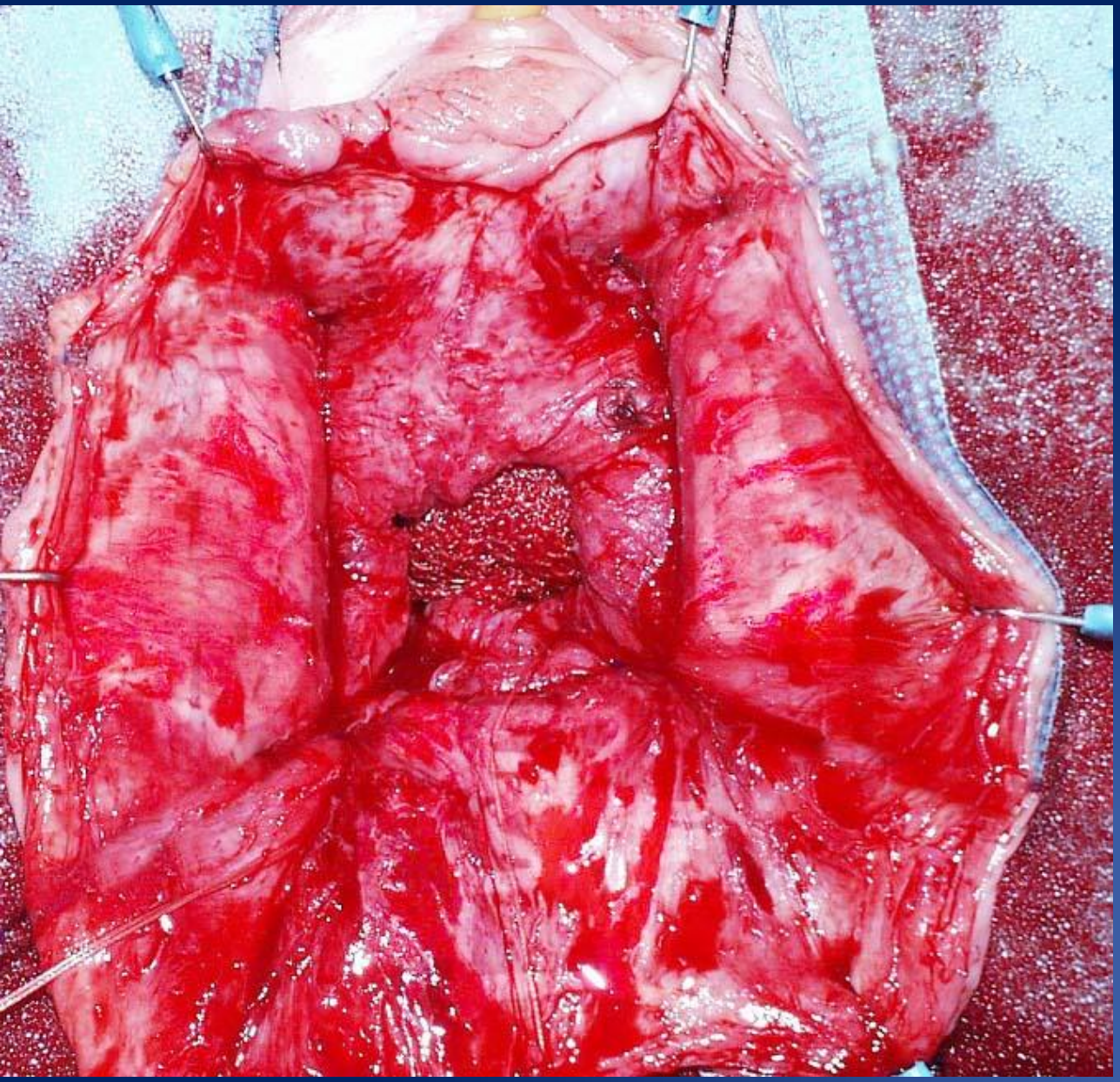


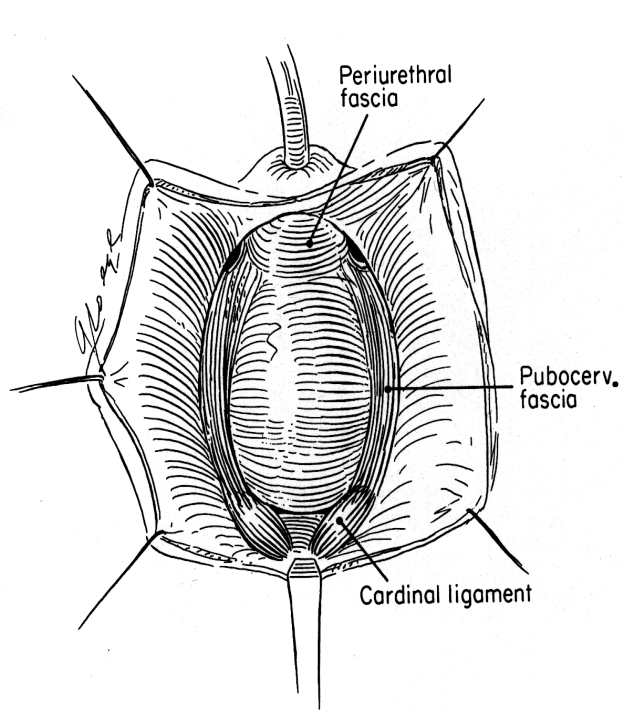

Periurethral fascia
Pubocerv. fascia
Cardinal ligament



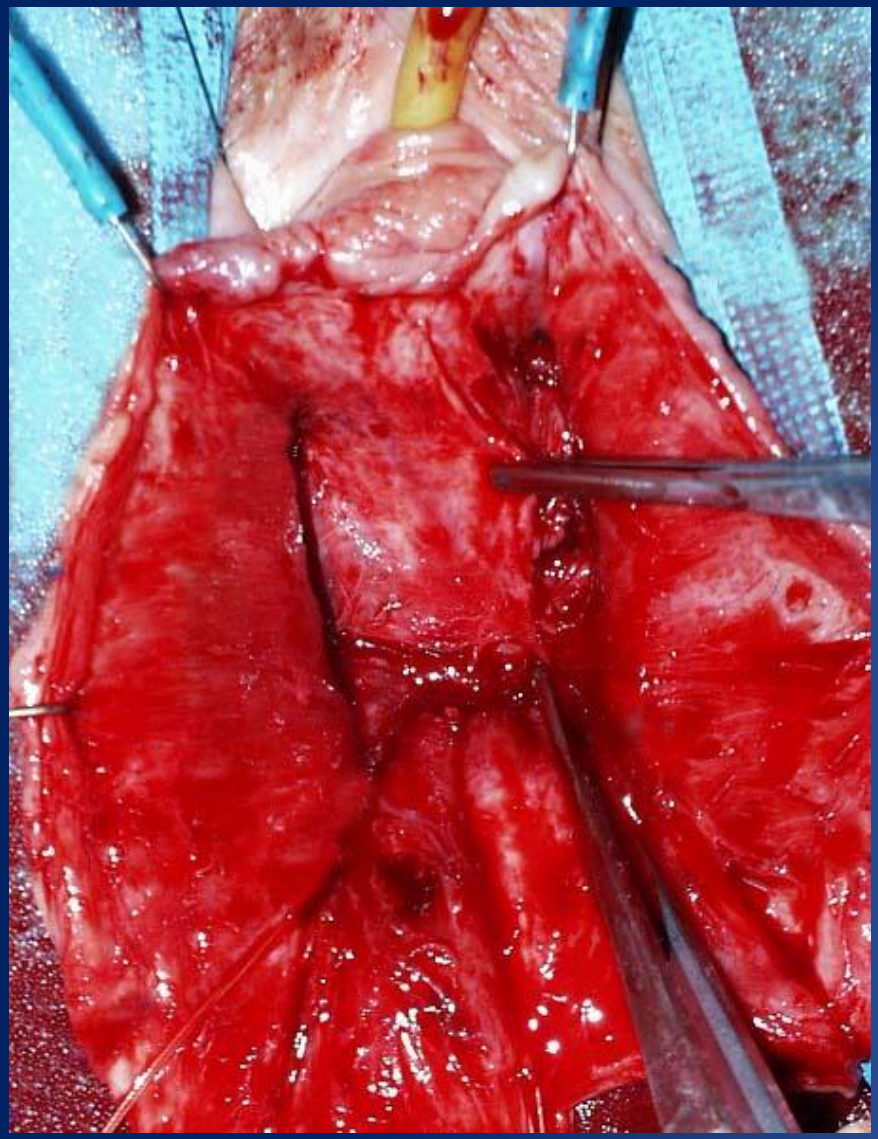


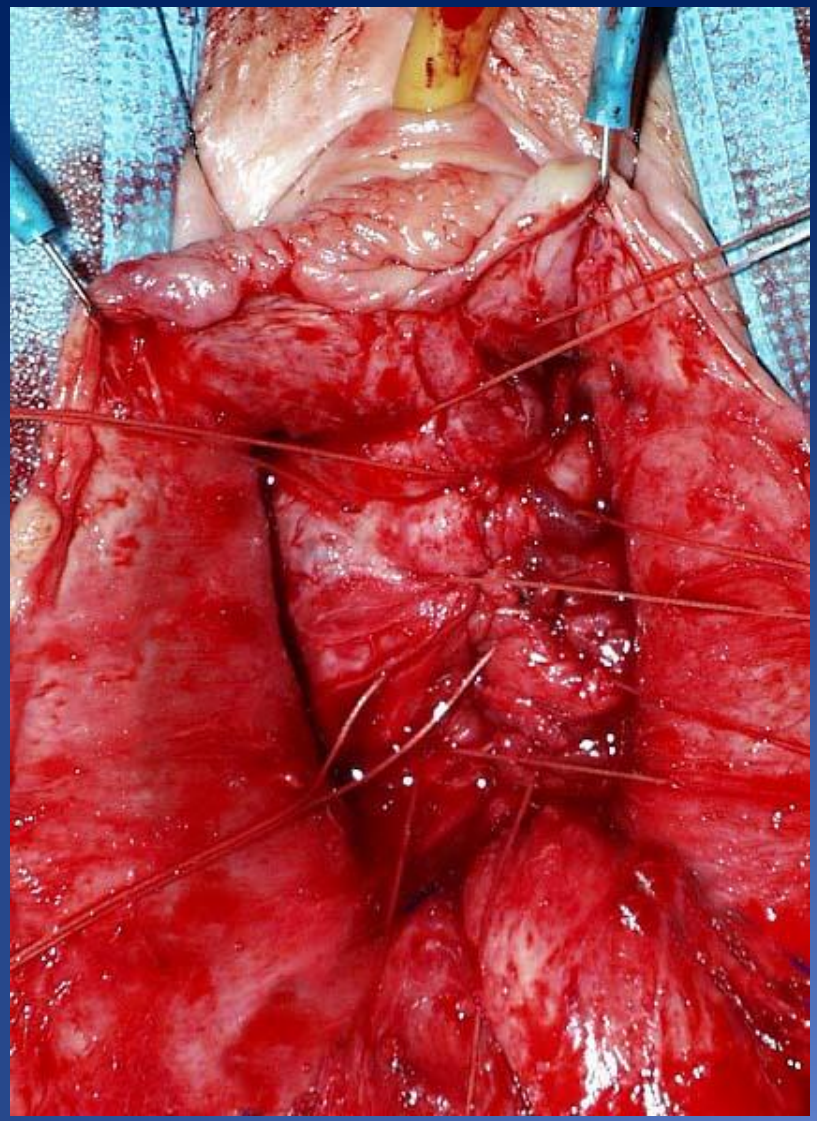


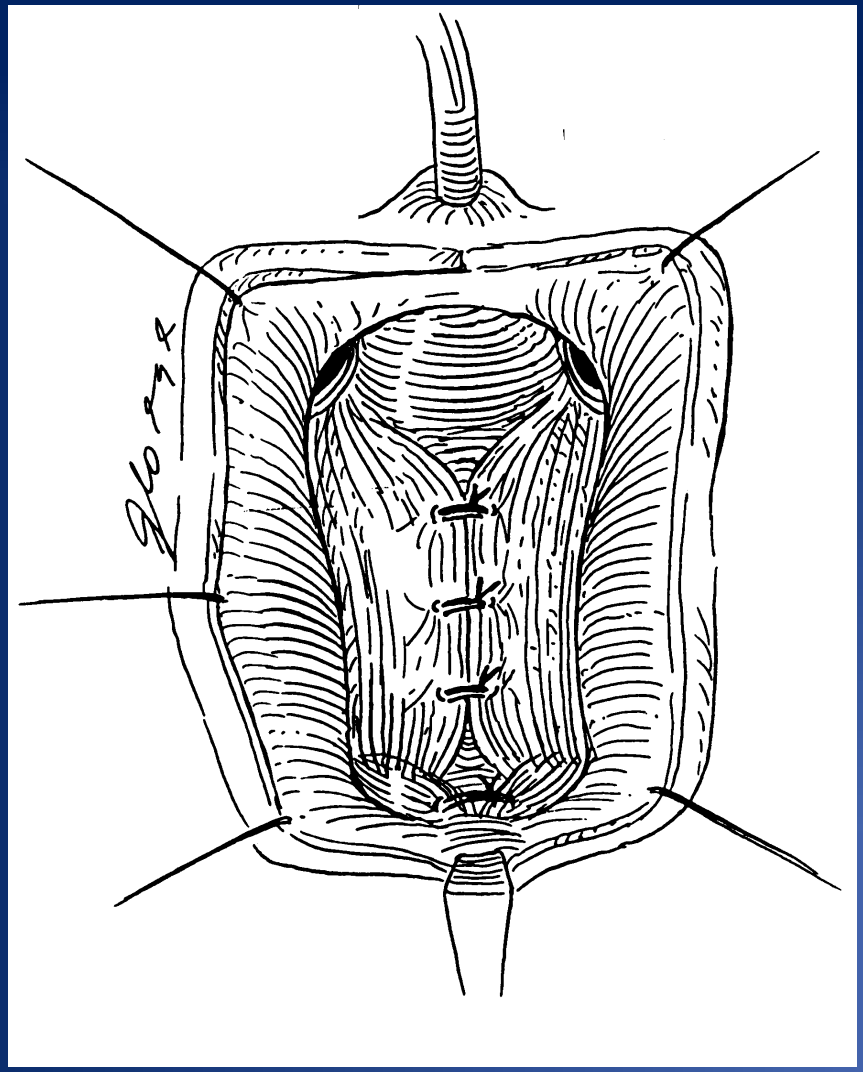


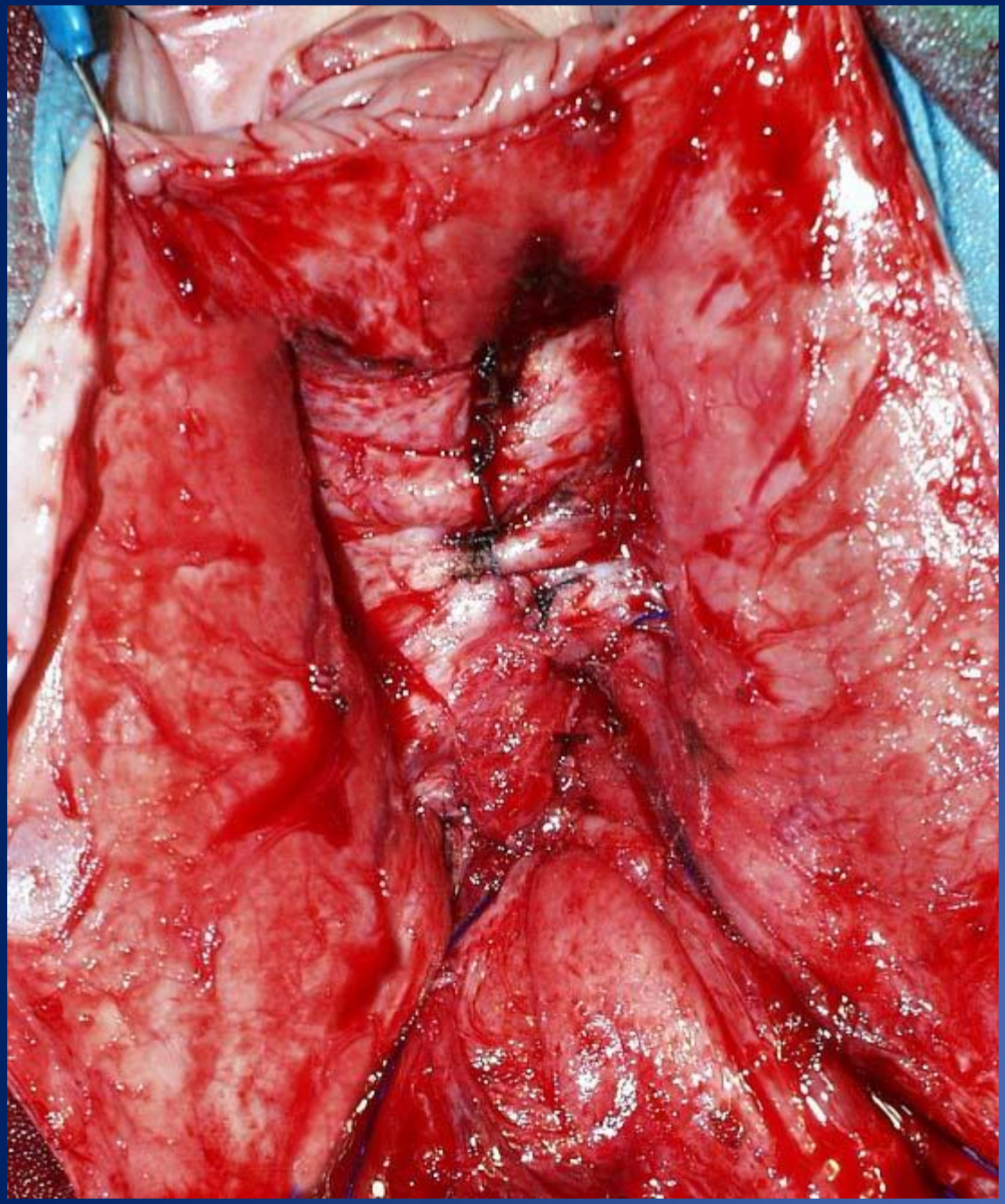

Periurethral fascia
Pubocerv. fascia
Cardinal ligament

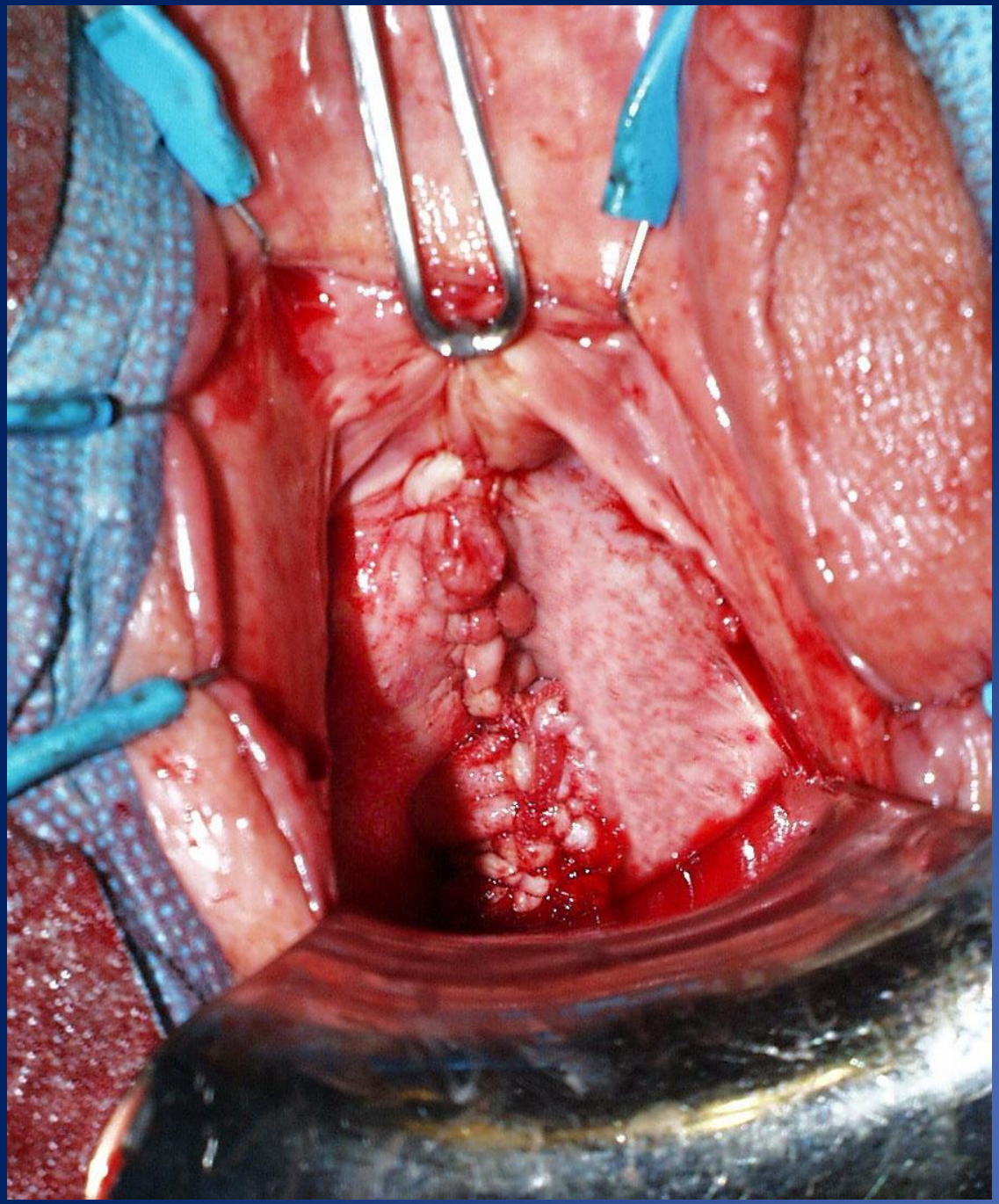
2-0 PDS sutures











Traditional Cystocele Repair

Anterior Colporraphy+/- Absorbable Mesh

- Weber, AM, Walters, MD, Piedmonte, MR, Ballard, LA (Am J Obstet Gyn 2001)
  - 109/114 patients underwent ant colporraphy 3 techniques
    - Standard
    - Standard + mesh (polyglactin)
    - Ultralateral colporraphy
  - Evaluated by POP-Q
  - Median follow up was 23.3 months
  - 7% stage I preop, 37% stage II preop, 54% stage III preop, 2% stage IV
  - 30% satisfactory outcomes after standard colporraphy alone, 42% standard + mesh, and 46% ultralateral colporraphy
  - VAS: symptom severity improved overall (6.0 +/- 2.7 → 1.1 +/- 0.8)
  - ***Addition of mesh did not seem to make a difference***

Anterior Colporraphy

- Sand, PK et al. (Am J Obstet Gyn, June 2001)
  - Prospective randomized trial of stage 2 < cystocele with and without vicryl mesh
  - Follow up at 2,6,12,52 weeks postop
  - 80 with mesh, 80 none
  - Technique: mesh reduction of prolapse only
  - After 1 yr, 43% patients without mesh and 25% with mesh had recurrence to mid vaginal plane ($p = 0.2$), concurrent slings may be protective as well
  - *Mesh does make a difference*

Cochrane Review
Maher et al, April 2013

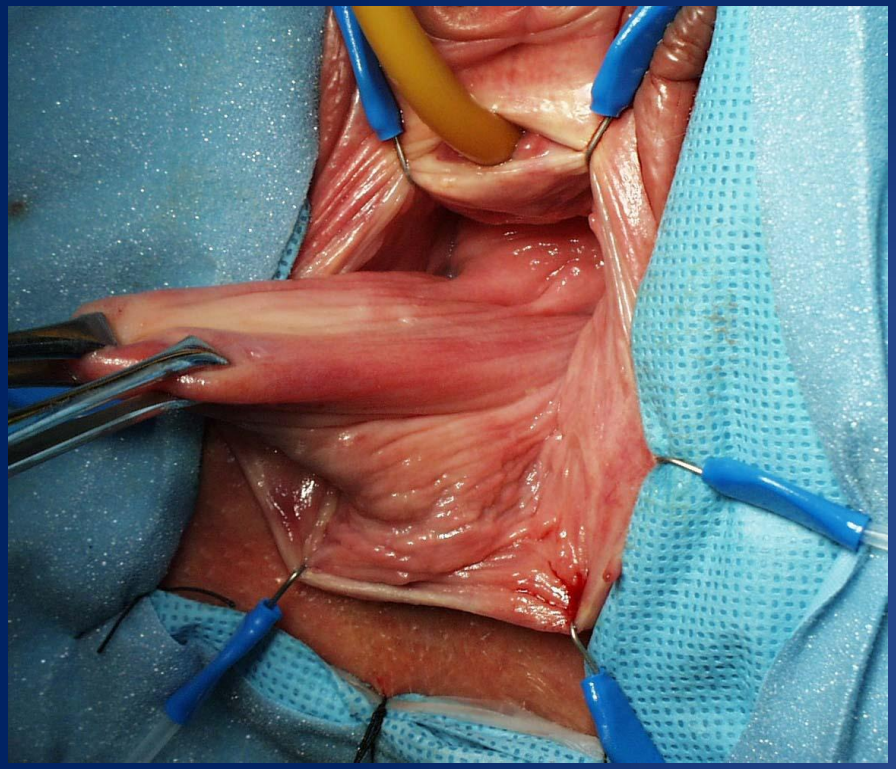
- Anterior Wall Prolapse:
  - Native tissue repair > recurrent AWP than polyglactin mesh (RR: 1.39)
  - More AWP on exam than mesh (RR: 3.15)
  - Awareness of prolapse higher native than mesh (RR: 1.57)
  - Reoperation rates similar though

Conclusions

- The success rate of anterior colporrhaphy varies considerably depending upon the definition of treatment success used.
- When strict anatomic criteria are used, the success rate is low.
- When more clinically relevant criteria are used, treatment success is better with only 10% developing anatomic recurrence beyond the hymen, 5% developing symptomatic recurrence and 1% undergoing retreatment during the study follow-up.

Vaginal Vault Suspensions

Apical Prolapse

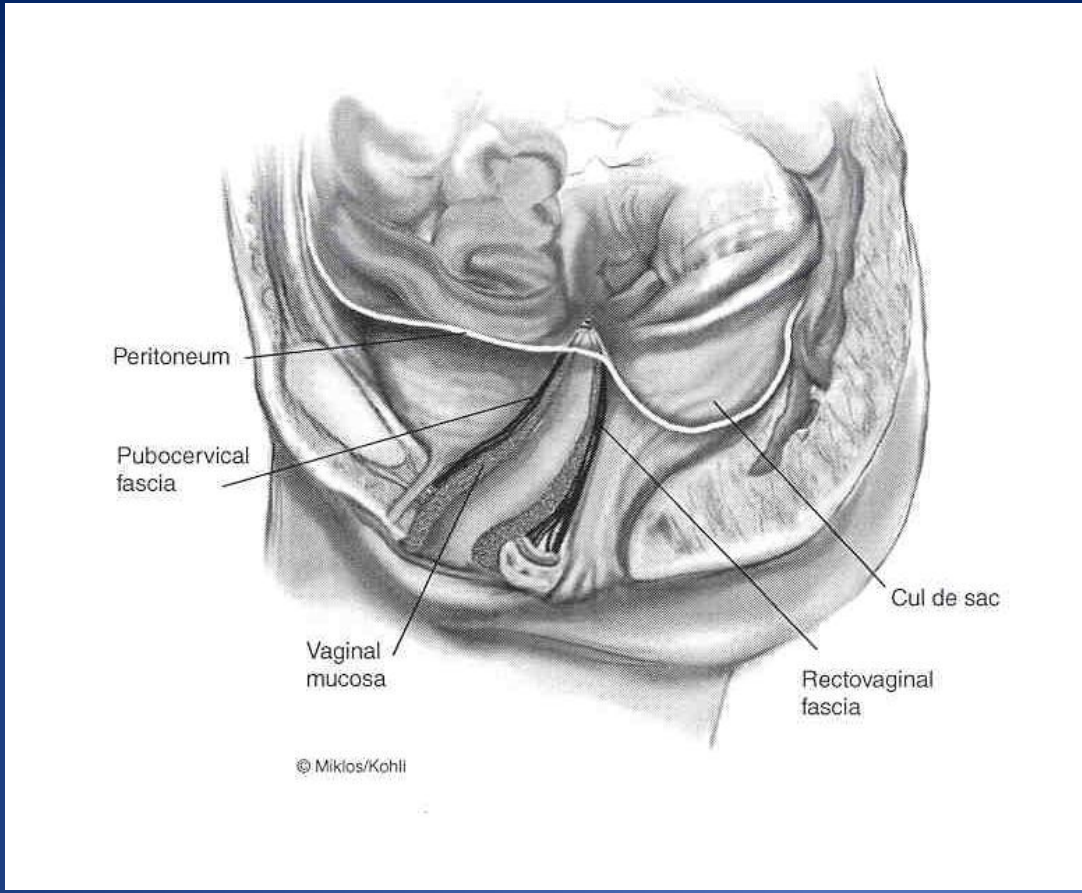


Objectives of Vaginal Vault Surgery

- Preserve normal vaginal axis
- Minimize complication rates, blood loss, postoperative discomfort, and cost
- Repair all coexistent pelvic floor defects
- Attempt to restore
  - Vaginal anatomy
  - Visceral function
  - Sexual function
  - Quality of life

Vaginal Vault Suspension

- Many patients with significant prolapse have vault support weakness
- Many subsequent failures due to lack of vault suspension
- Resuspension of the vault anchors the anterior/posterior repair
- Why don't many repair vault?
  - Not properly diagnosed
  - Lack of adequate training
  - Time consuming, complex procedures



Solid Support of the Vaginal Apex is the Cornerstone of a Good Vaginal Prolapse Repair

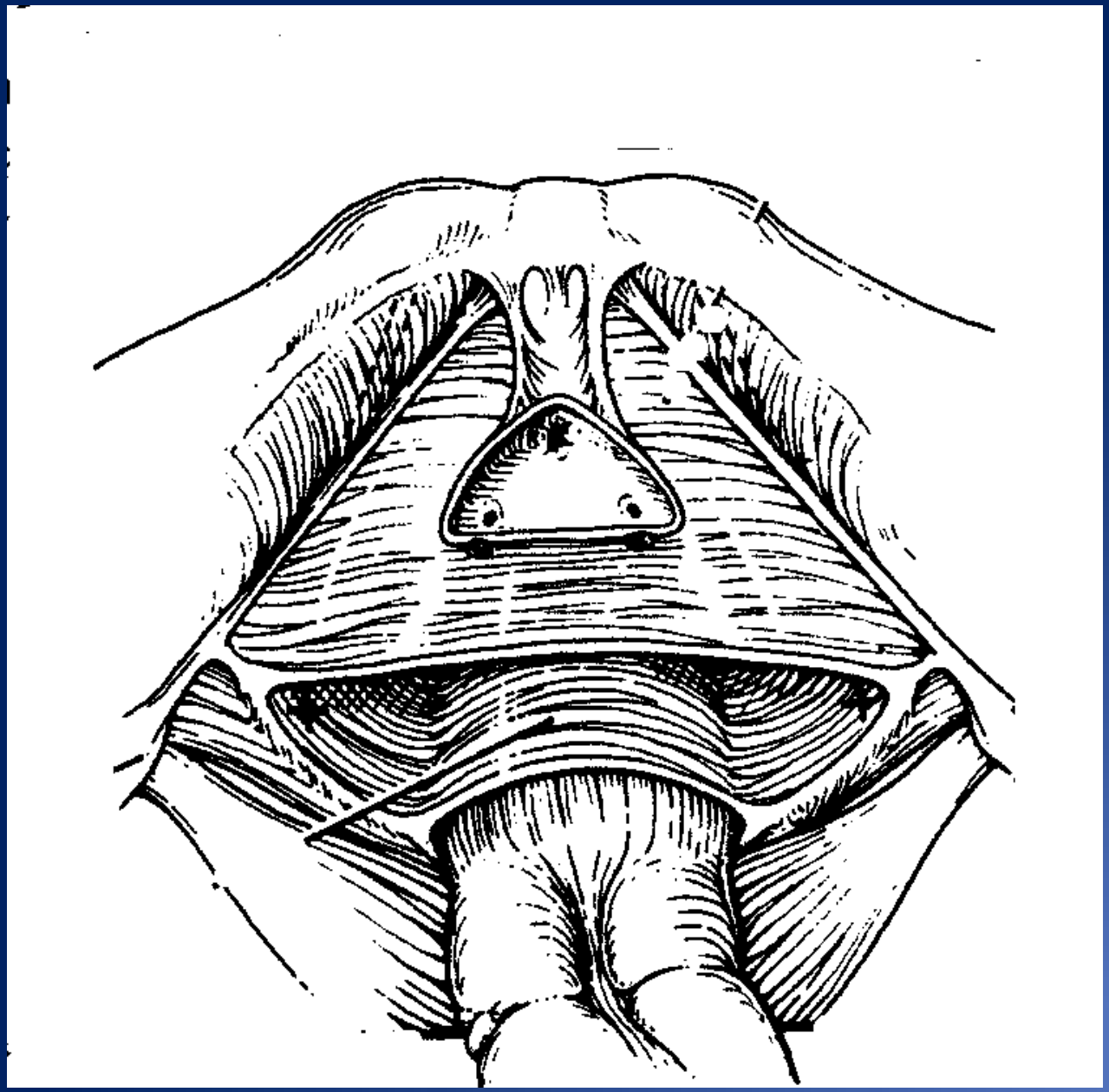
Transvaginal Procedures for Vaginal Vault Prolapse

- Modified McCall's Culdoplasty
- Iliococcygeus Vaginal Vault Suspension
- Levator Myorraphy
- Sacrospinous Ligament Fixation (SSLF)
- High Uterosacral Vaginal Vault Suspension (USVVS)
- Total Vaginal Mesh Apical Suspension
- Colpocleisis

Iliococcygeus suspension

- Transmucosal sutures placed to coccygeus fascia, bilaterally
  - inferior to white line, anterior to ischial spine
- Reported success rates similar to sacrospinous fixation
- Simplicity and decreased morbidity
- May allow for only 6-7 cm depth

Shull, et al. Am J Obstet Gynecol 1993;168:1669-77.
Meeks, et al. Am J Obstet Gynecol 1994;171:1444-54.
Peters, et al. Am J Obstet Gynecol 1995;172:1894-902.
Maher, Dwyer, et al. Obstet Gynecol 2001;98:40-4.

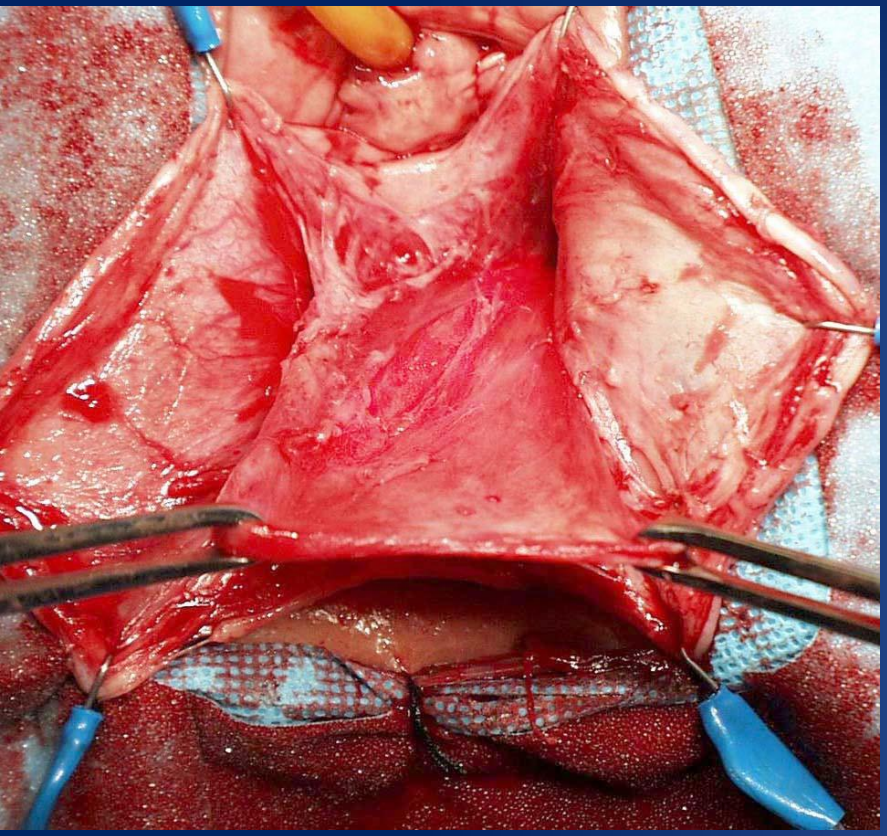


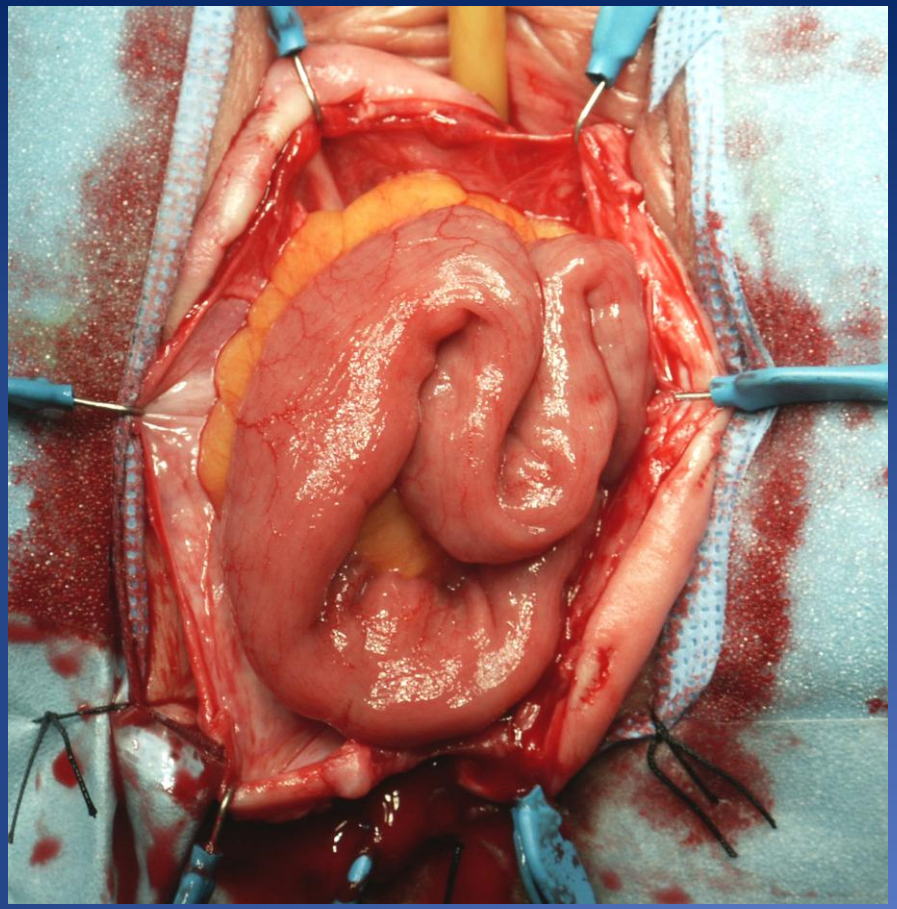
Levator Myorraphy

- Transvaginal placement of sutures through levator complex and shelf towards midline to anchor upper vagina
- Similar in concept to Mayo Culdoplasty
- Uses #1 absorbable sutures thru neovaginal apex and into levator muscles bringing them towards the midline to contralateral side. Then, 2 purse string sutures to close enterocele sac

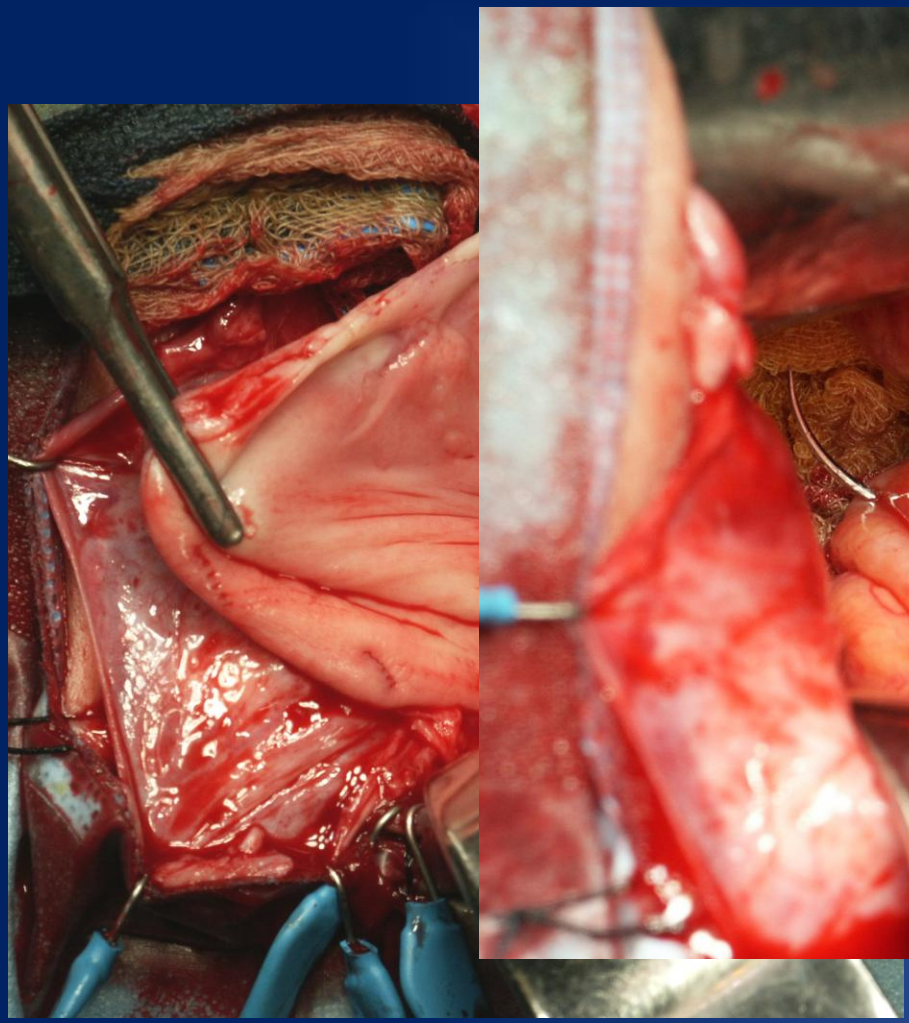
Levator Myorraphy

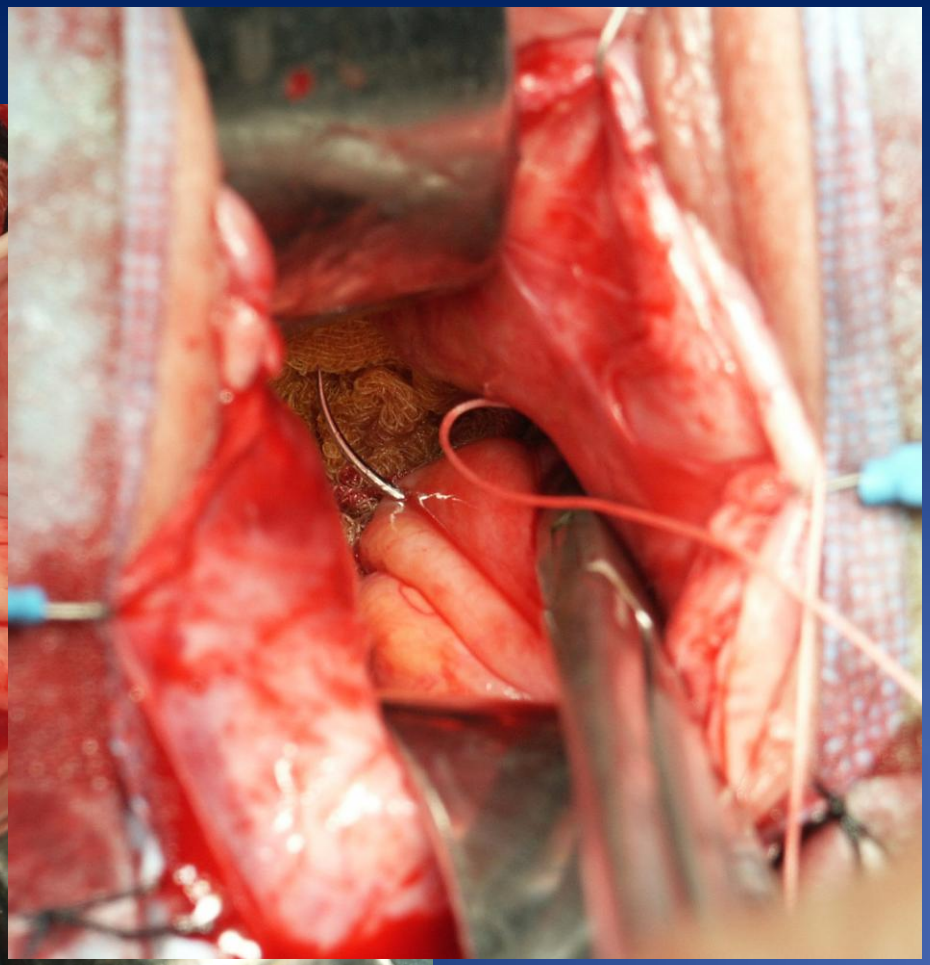
Exposing peritoneal sac



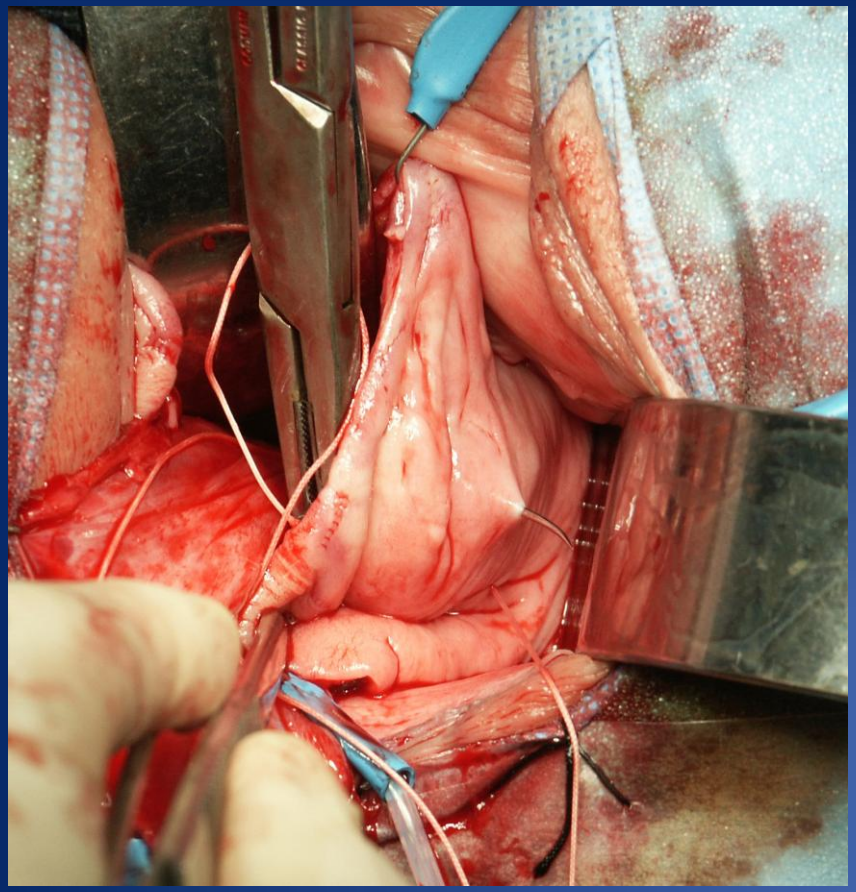


Vault suspension sutures

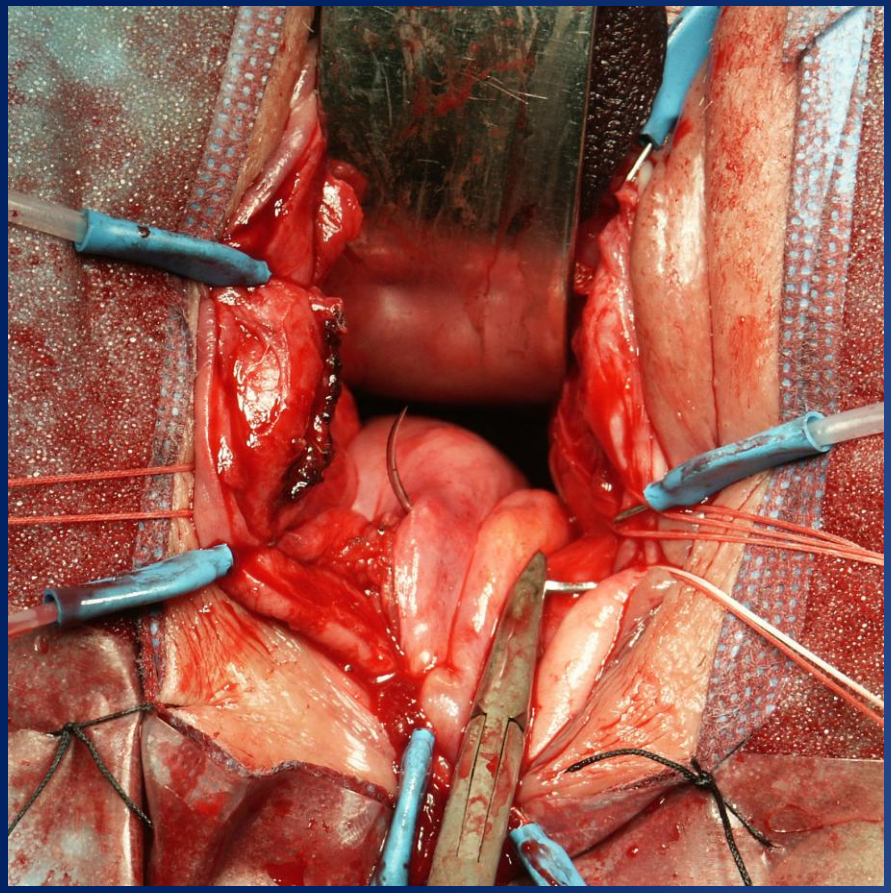


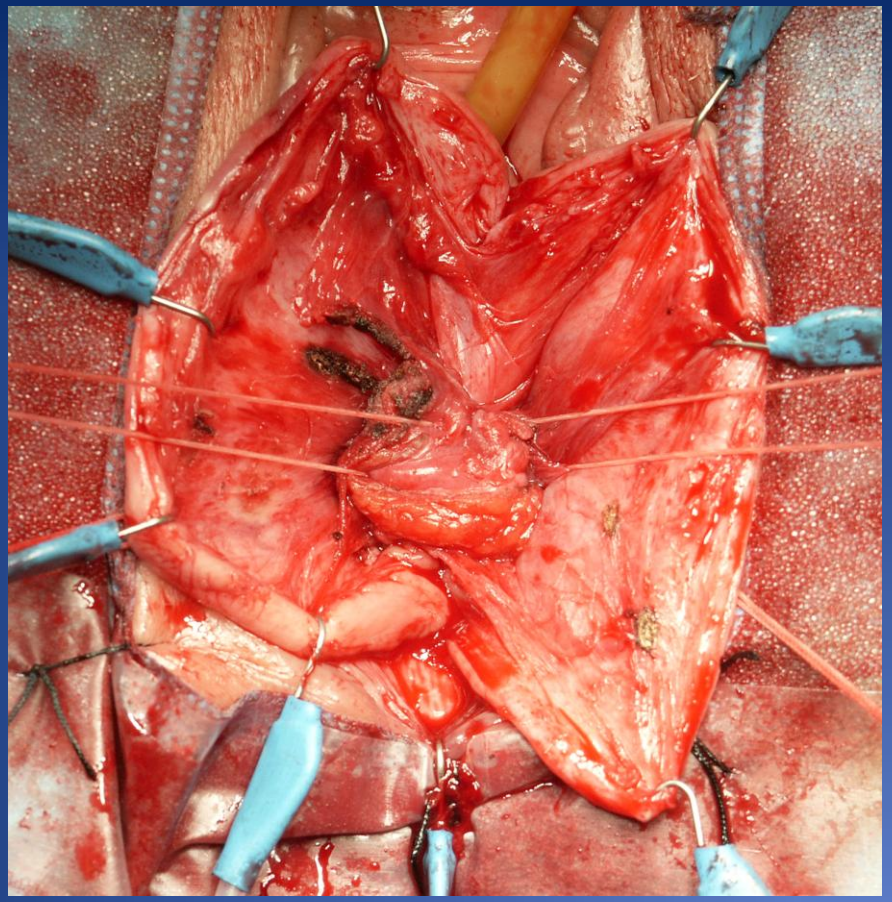


Out of peritoneal sac
1 cm from original entrance



Purse string sutures
Pre-rectal



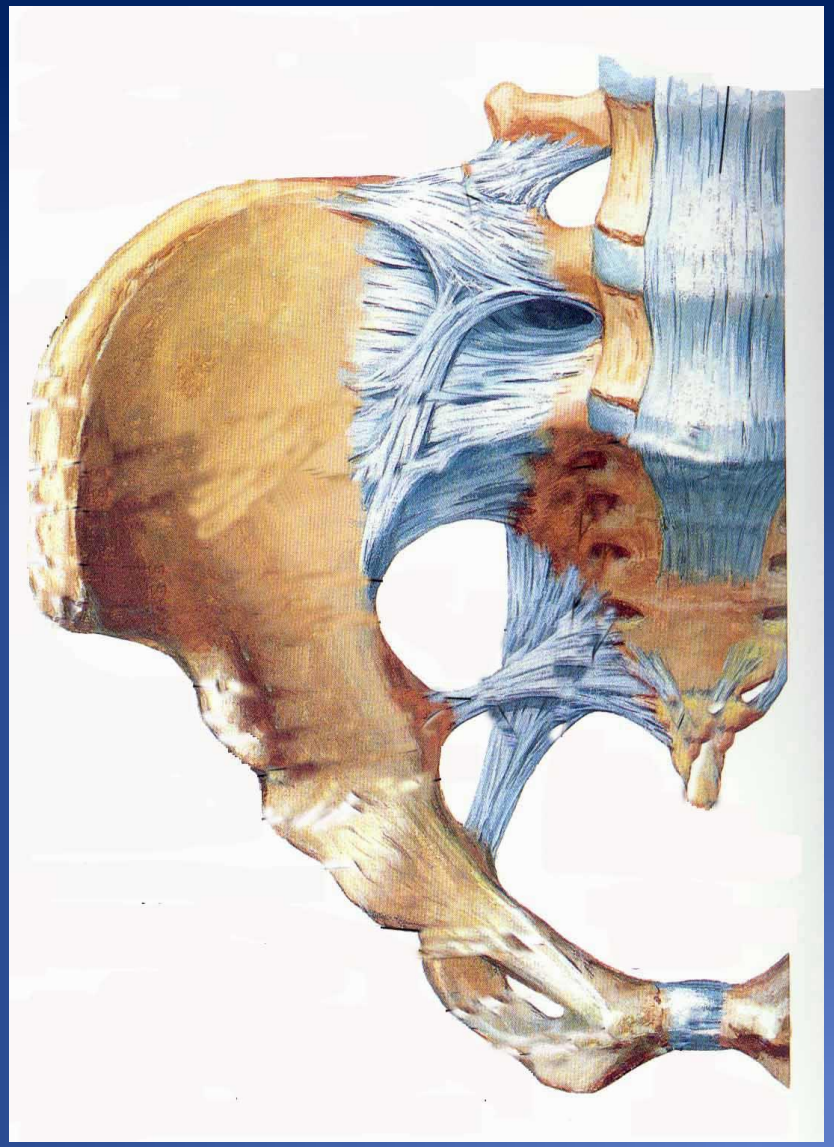


Levator Myorraphy Results

- Lemack, GE et al (Eur Urol Dec 2001)
  - 35 patients (mean age 71, f/u 27.0 months)
  - 5 recurrent prolapse (3 ant enterocele, 1 vault)
  - 7/35 recurrent cystoceles (5 grade 1, 2 grade 2)
  - Satisfaction > 90% in 17/35
  - One ureteral injury

Sacrospinous Ligament Fixation

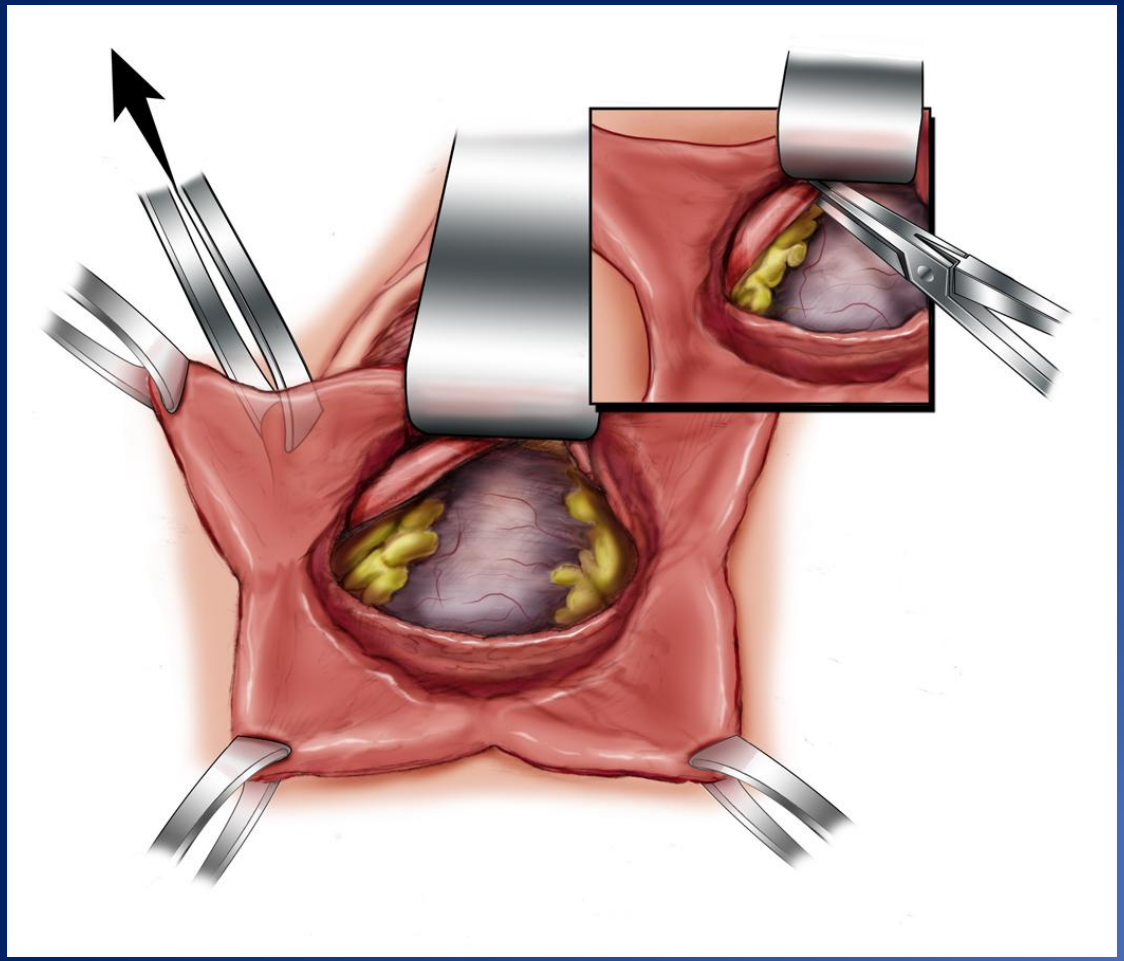
- Objective success 73-97%
- Various definitions of success
- Sites of failure often not specified
- Prospective trials:
  - ASC vs SSLF
  - Abd better (Benson)
  - Maher (equivalent)



Uterosacral Vaginal Vault Suspension

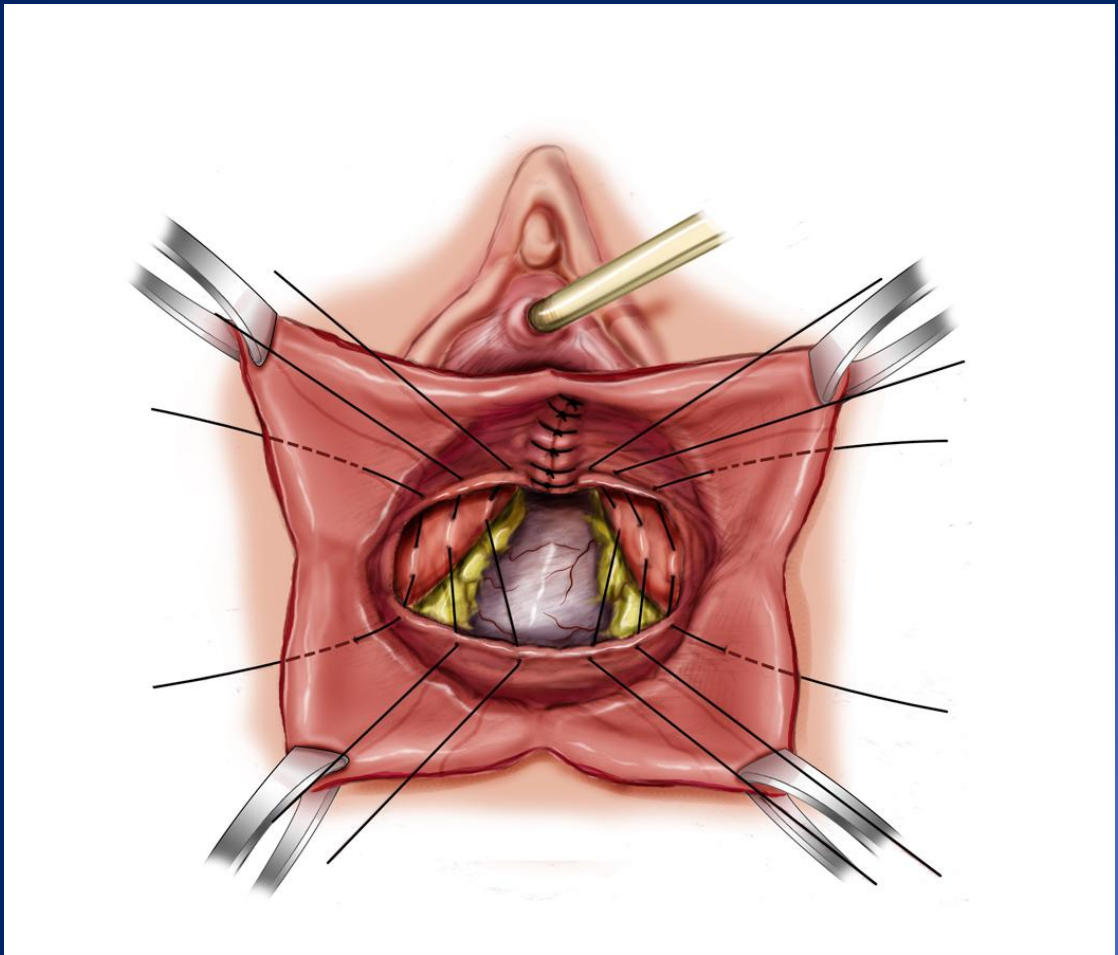
- Placement of sutures through “normal” vaginal apical suspension points
- Thought to be more physiologic suspension of apex
- Addresses level I and II support continuity
- Low, but not insignificant complication of ureteral injuries as the ligament is close to the ureters especially distally

Uterosacral Vaginal Vault Suspension

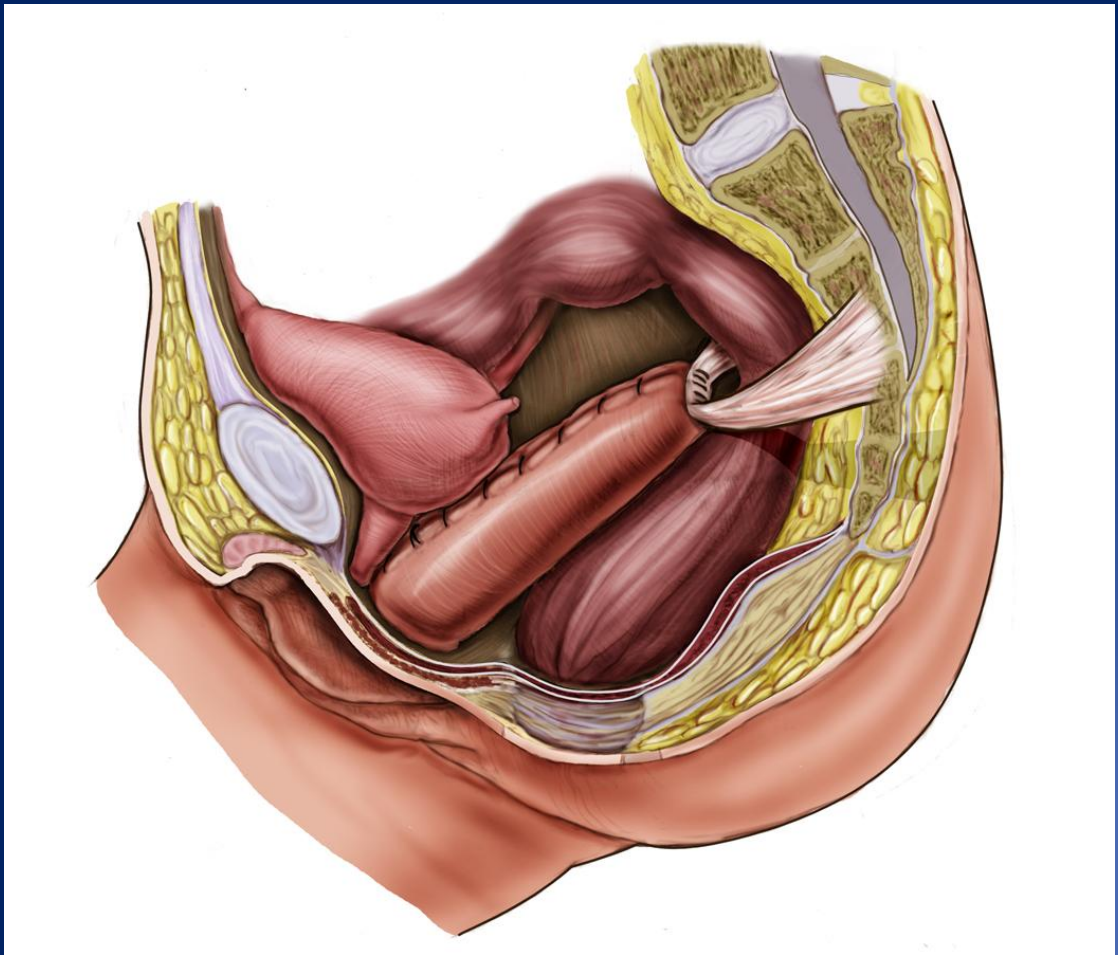


Uterosacral Vaginal Vault Suspension

Uterosacral VVS



Uterosacral VVS



Uterosacral VVS Results

First Author	Year	No.	Follow-up Months (range)	Definition of anatomic success	Anatomic success –all segments	Anatomic recurrence by segment	Reoperation for POP
Jenkins	1997	50	(6-48)	Not defined	96%	Anterior 4%	None reported
Comiter	1999	100	17 (6.5-35)	Grade 0-1	96%	Apex/enterocele 4%	4 (4%)
Barber	2001	46	15.5 (3.5-40)	Stage 0/1 or asymptomatic Stage 2	90%	Apex 5% Anterior 5% Posterior 5%	3 (6.5%)
Karram	2001	168	21.6 (6 -36)	Grade 0-1	88%	Apex 1% Anterior or posterior 11%%	11 (5.5%)
Shull	2001	289	Not stated	Grade 0-1	95%	Apex 1% Anterior 3.5% Posterior 1.4%	None reported
Amundsen	2003	33	28 (6-43)	Stage 0 or 1	82%	Apex 6% Posterior 12%	None reported

Optimal Trial

- Goal: Compare SSLF and USVVS and perioperative PFMT
- 374 women randomized between 2008 and 2013
- Follow up for 2 years (84.5% completed)
- Primary Outcome:
  - no apical descent greater than 1/3 into vaginal canal or a/p descent beyond hymen
  - No bothersome bulge symptoms
  - No need for retreatment
- Results: SSLF 60.5% vs USVVS 59.2%, PFMT no changes in scores in UI, Prolapse or anatomic

Posterior Compartment Repairs

Posterior Wall Prolapse

- May occur in up to 50% of patients with concomitant anterior and apical defects
- Rectocele
- Enterocele
- Sigmoidocele
- perineocele

Rectocele repairs when to do ?

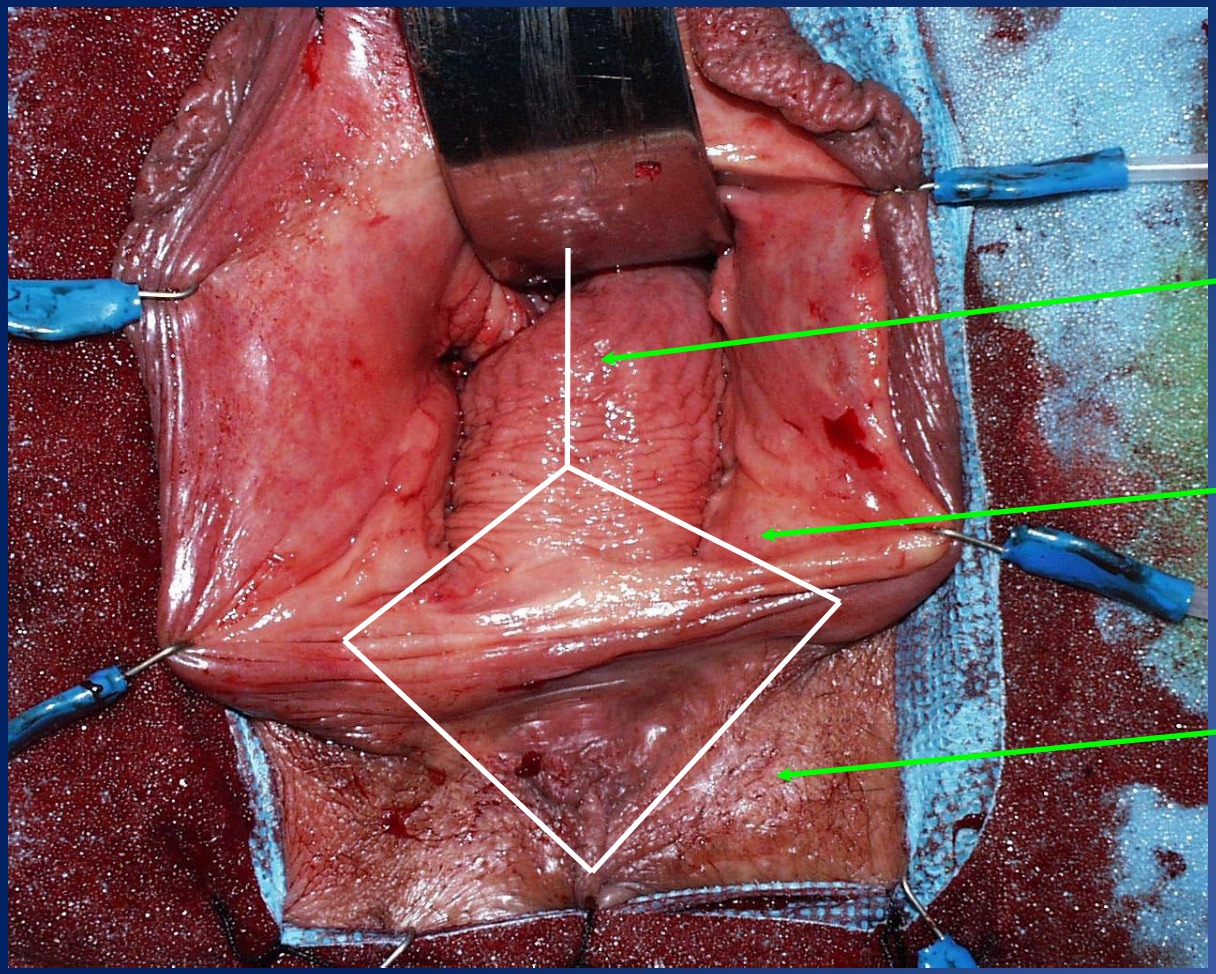
- Symptomatic
  - Defecatory dysfunction
  - Digitation
  - Symptomatic bulge
- Asymptomatic: caution….
  - Size ??
  - Risks and benefits ?
    - Pain
    - Dyspareunia
- How about at time of sacrocolpopexy ?

PELVIC FLOOR REPAIR
Traditional

- ***Rectocele repair*** by plication of prerectal and pararectal fascia
- ***Narrowing the levator hiatus*** by approximation of levator fascia
- ***Perineal repair*** by approximation of bulbocavernous, transverse perineum and anal sphincter

** one need not do all of these in all patients **

Pelvic floor repair

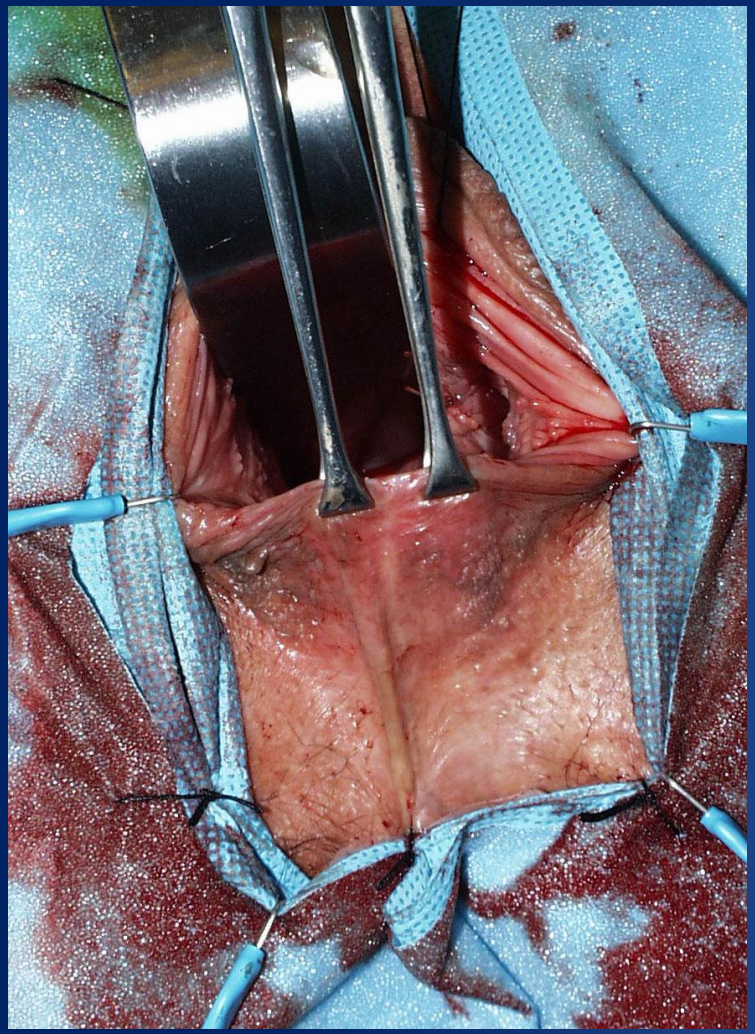


3) Pre rectal incision

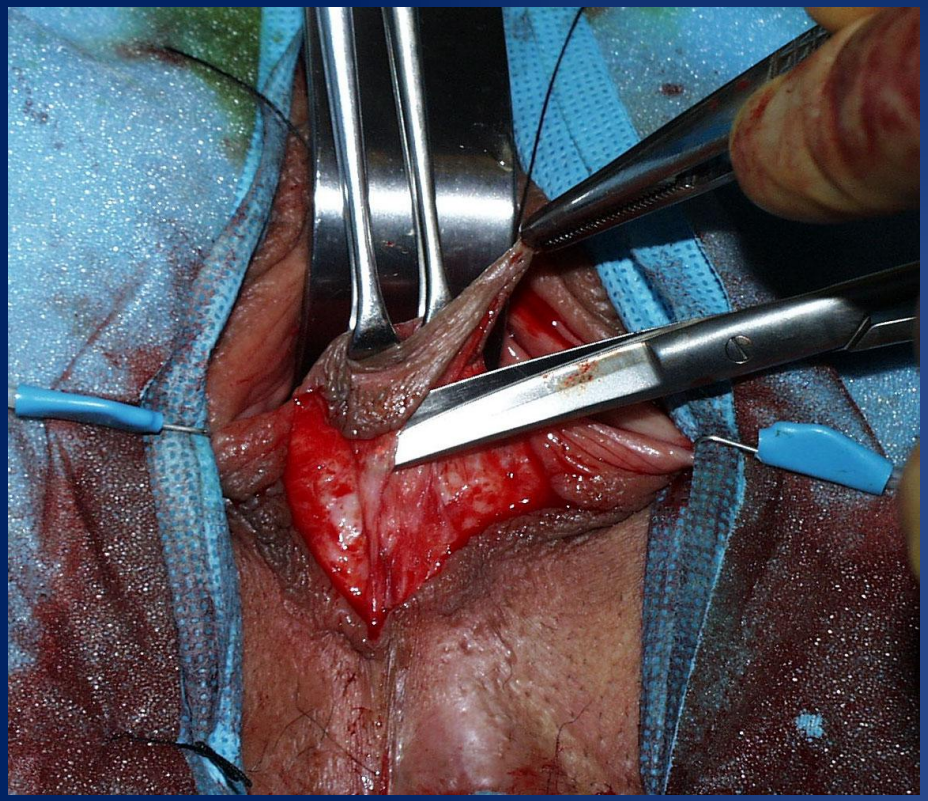
2) Vaginal triangle

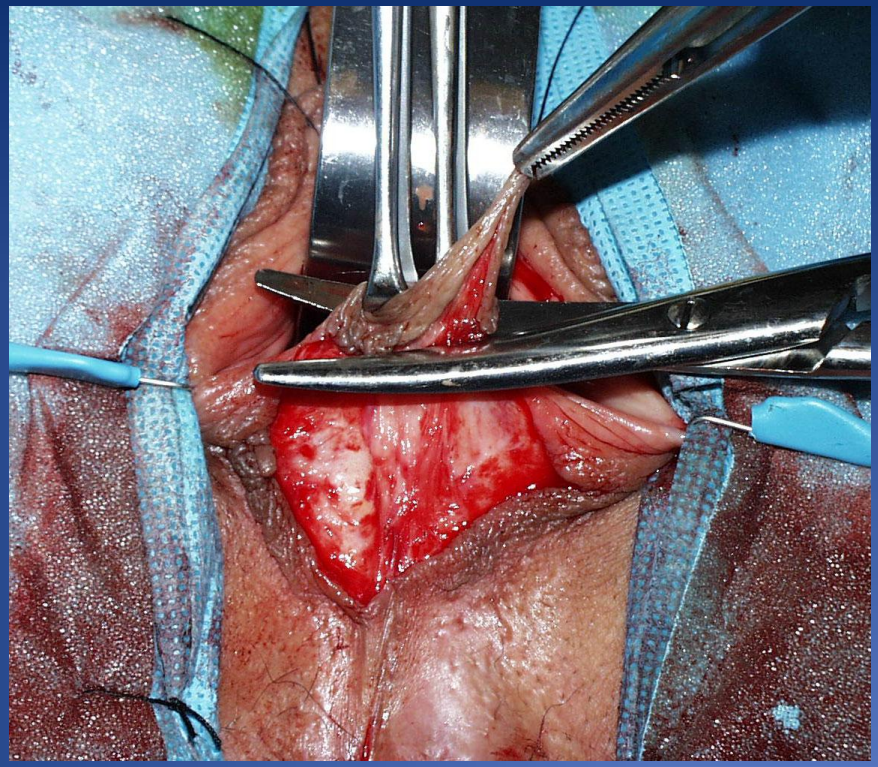
1) Perineal triangle

Perineal incision

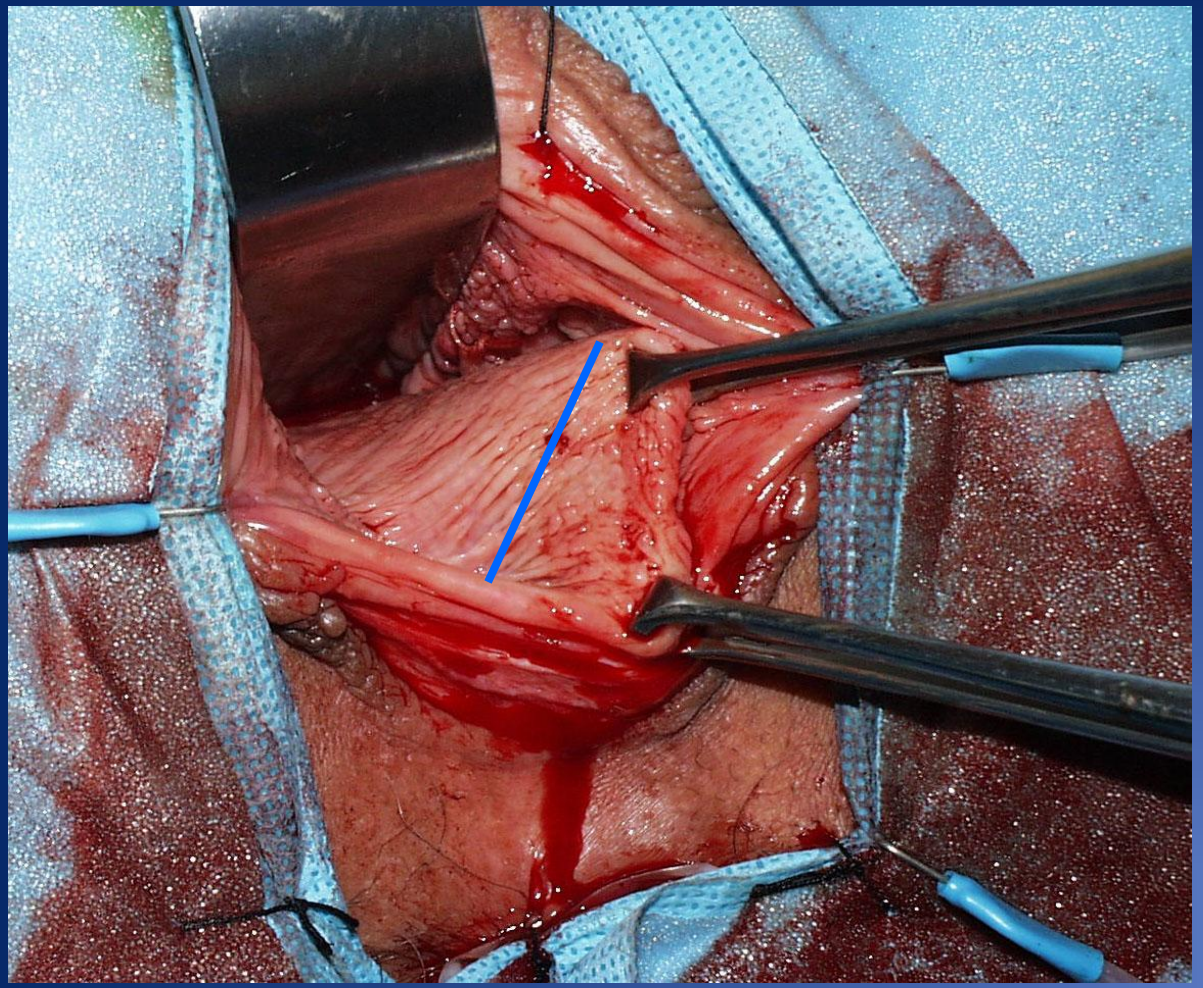


Dissection and excision

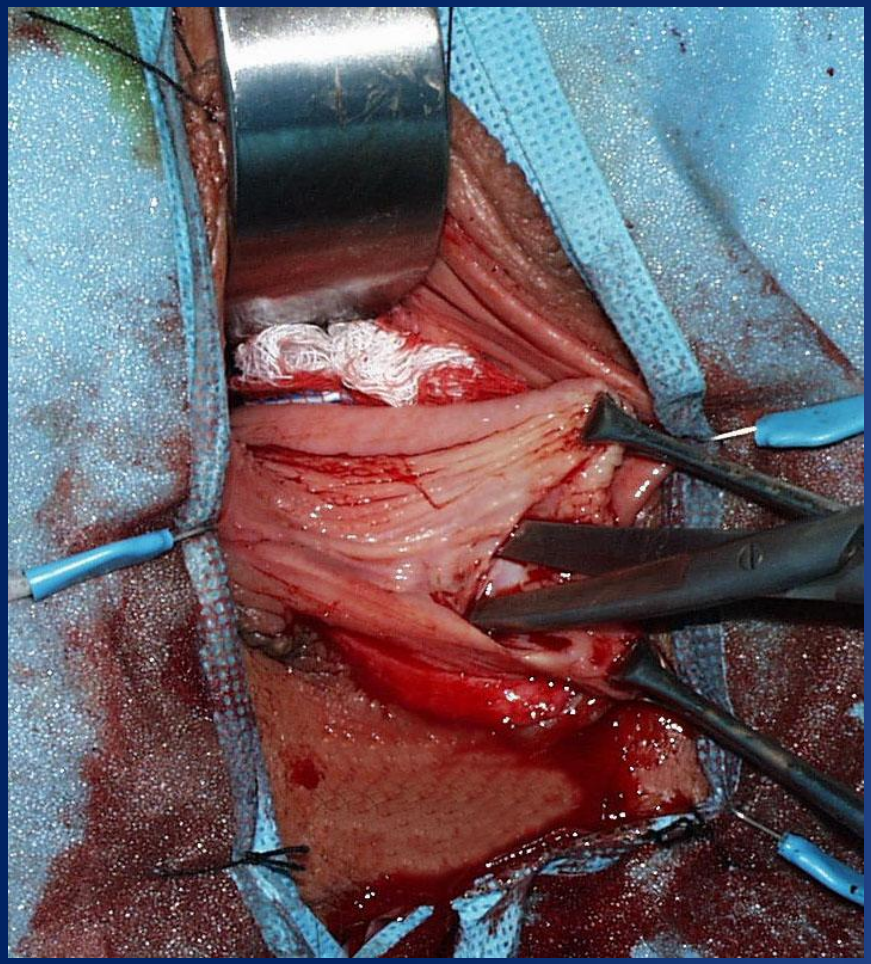


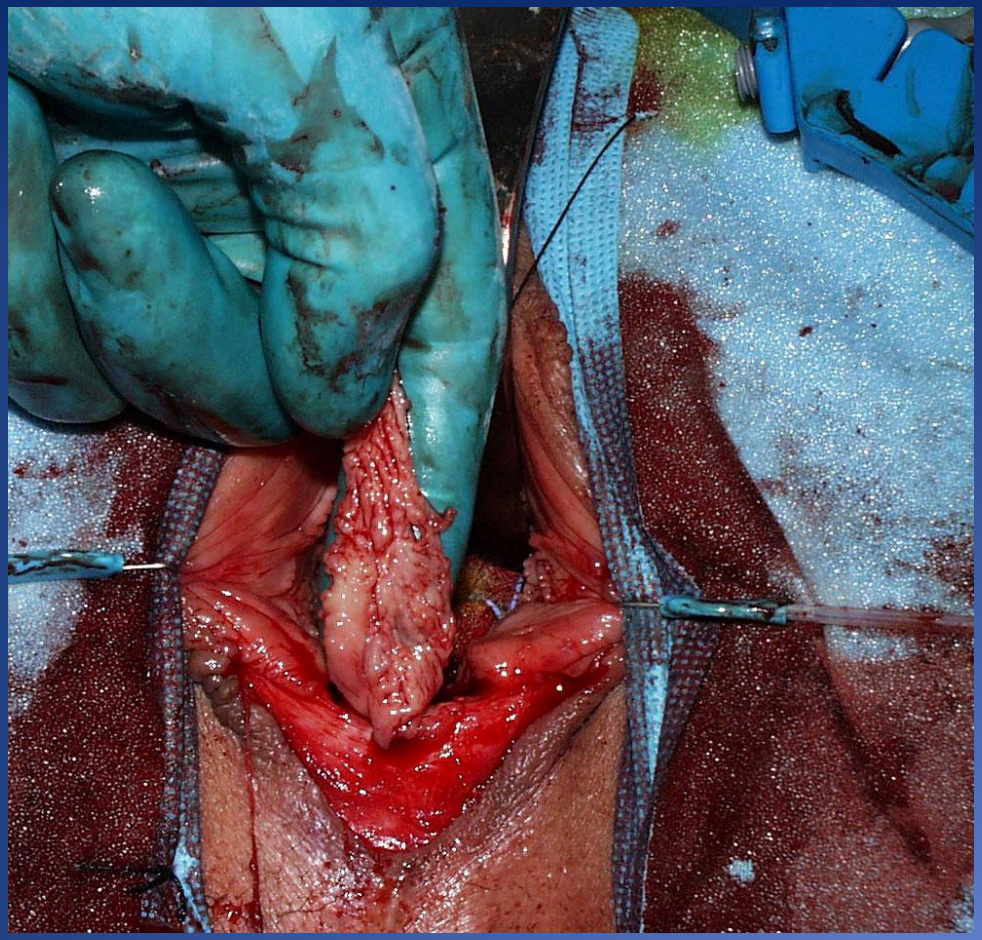


Posterior vaginal triangle

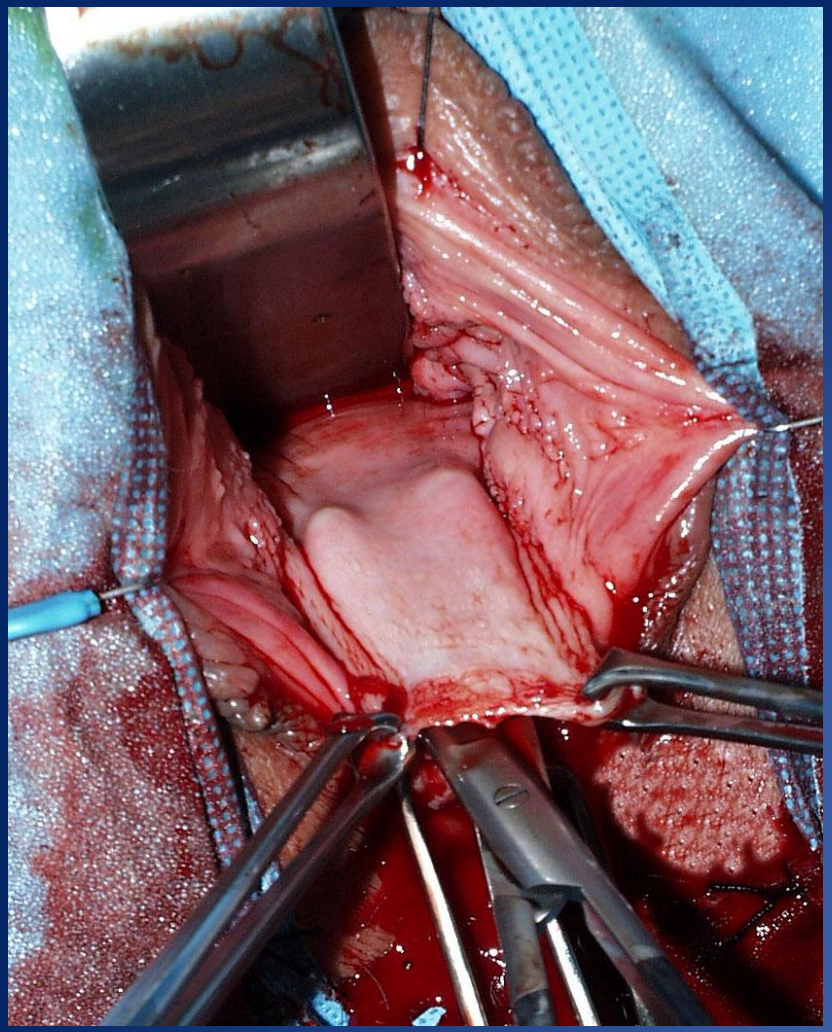


Dissect and excise posterior triangle





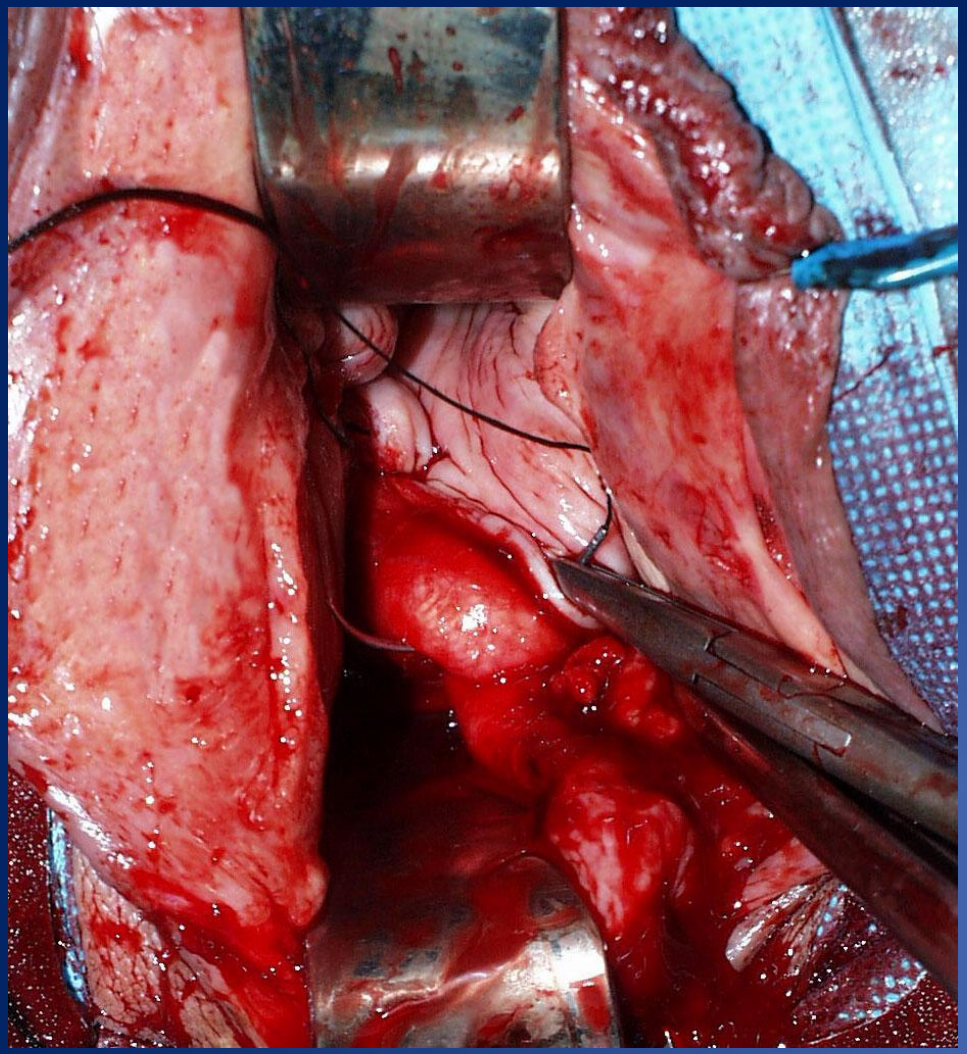
Dissection and excision posterior vaginal wall



PELVIC FLOOR REPAIR

- *Rectocele repair* by plication of prerectal and pararectal fascia
- *Narrowing the levator hiatus* by approximation of levator fascia
- *Perineal repair* by approximation of bulbocavernous, transverse perineum and anal sphincter

Inclusion of Pararectal and Prerectal fascia

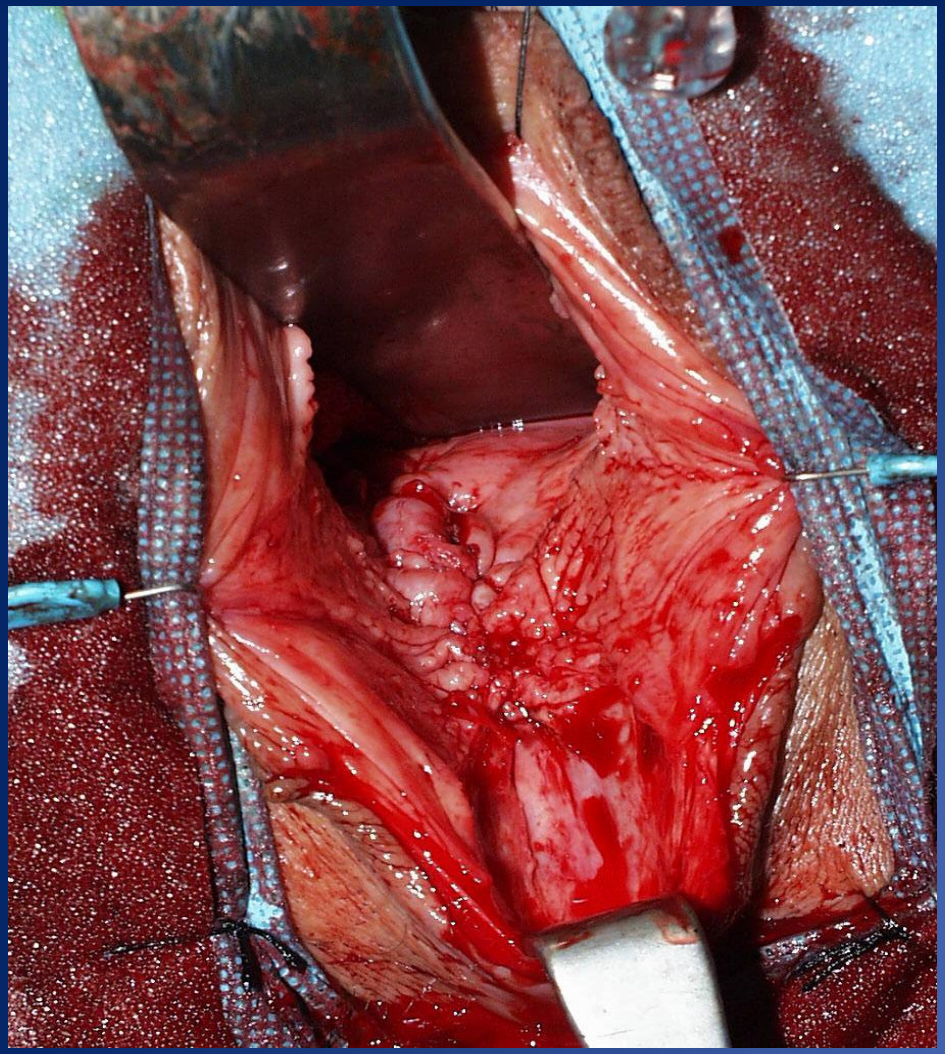


Pelvic Floor Repair

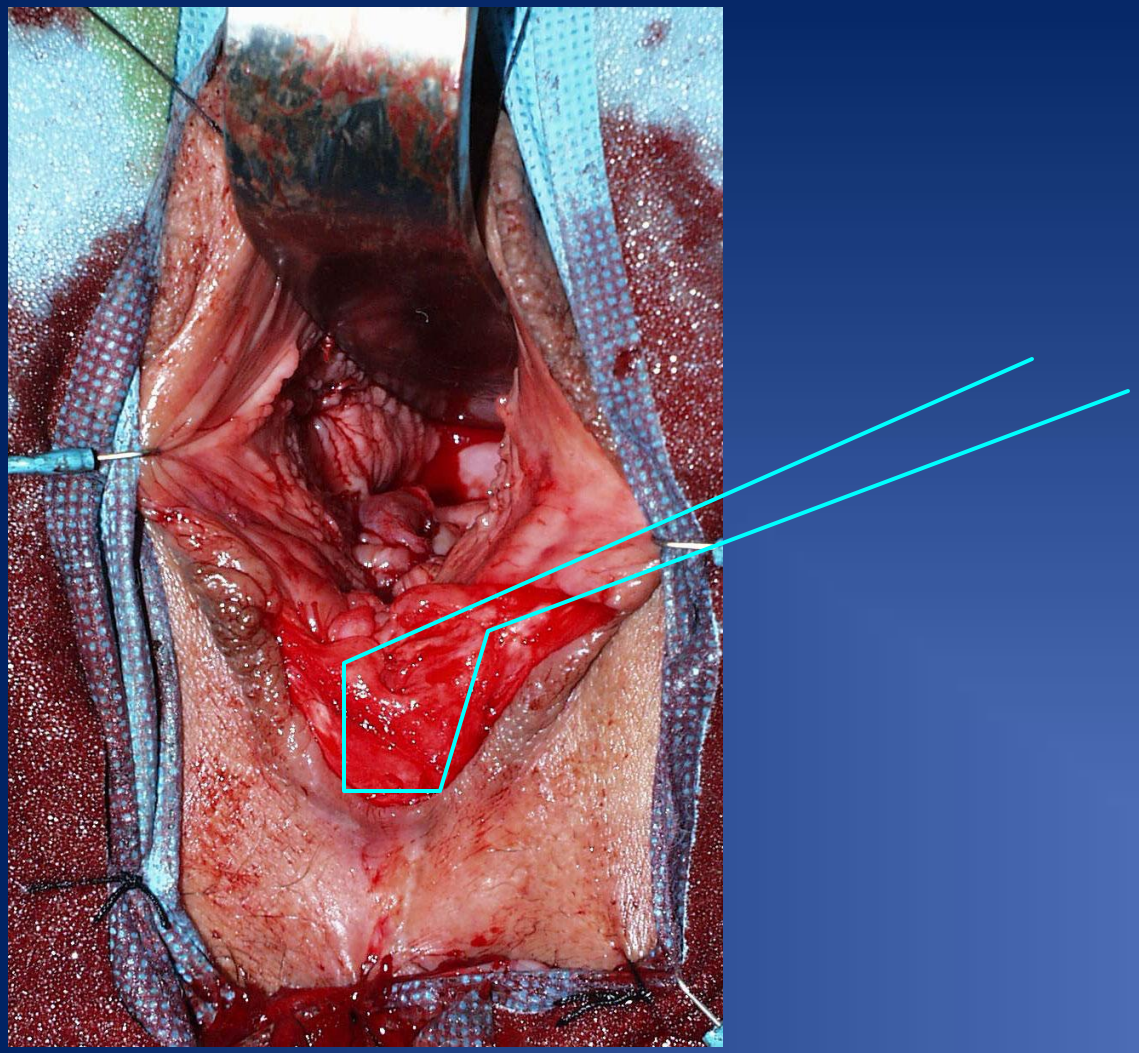
Steps as Necessary

- ***Rectocele repair*** by plication of prerectal and pararectal fascia
- ***Appropriately narrowing the levator hiatus*** by approximation of levator fascia
- ***Perineal repair*** by approximation of bulbocavernous, transverse perineum and anal sphincter

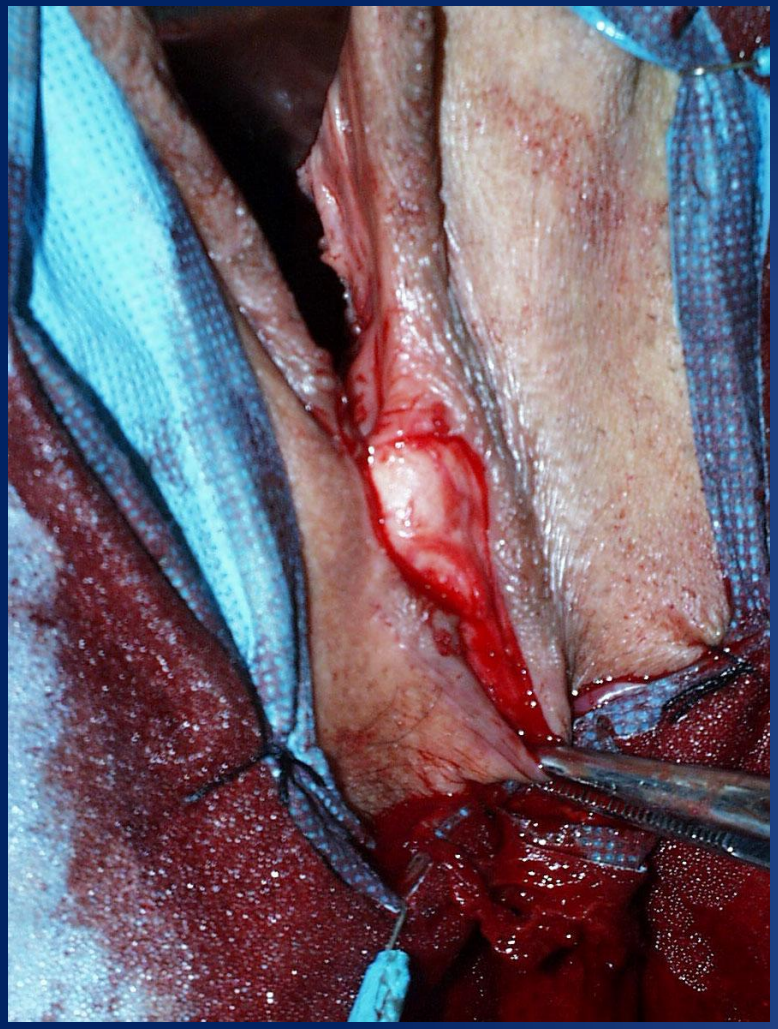
Re-approximation of levator hiatus



Perineal repair



Perineal repair



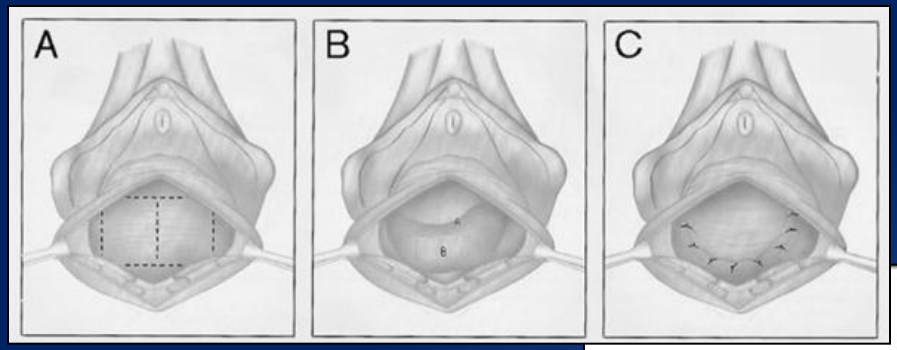
Standard Posterior Colporraphy

Study	N	Mean Follow-up (mo)	Anatomic Cure (%)	Vaginal Digitation (%)	Defecatory Dysfunction (%)	Fecal Incontinence (%)	Dyspareunia (%)	De novo Dyspareunia in Sexually Active Patients, n (%)
Mellgren et al								
Preoperative	25	12	96	50	100	8		2 (8)
Postoperative	25			0	88	8		
Weber et al								
Preoperative	53	12						14 (26)
Postoperative	53							
Sand et al†								
Preoperative	70	12	90					
Postoperative	67							
Maher et al								
Preoperative	38	12.5	89	100	100	3	37	1 (4)
Postoperative	38			16	13	0	5	
Paraiso et al†								
Preoperative	37	17.5	86	43	80		56	(20)
Postoperative	28			19	32		45	

* Prospective studies only.

† Two randomized controlled trials.

Site Specific Repairs



Study	N	Mean Follow-up (mo)	Anatomic Cure (%)	Vaginal Digitation (%)	Defecatory Dysfunction (%)	Fecal Incontinence (%)	Dyspareunia (%)	De novo Dyspareunia in Sexually Active Patients, n (%)
Cundiff et al*								
Preoperative	69	12	82	39	71	13	29	1 (2)
Postoperative	61			25	39	8	19	
Kenton et al*								
Preoperative	66	12	90	30	41	30	28	3 (7)
Postoperative	46			15	57		8	
Porter et al*								
Preoperative	125	6	82	24	60	24	67	3 (4)
Postoperative	72			21	50	21	46	
Abramov et al*								
Preoperative	124	12	56		33	15	8	12 (11)
Postoperative	124				37	19	16	
Singh et al								
Preoperative	42	18	92		57	9	31	
Postoperative	33				27	5	38	
Glavind and Madsen								
Preoperative	67	3	100		40		12	2 (3)
Postoperative	67				4		6	
Paraiso et al†								
Preoperative	37	17.5	78	58	85		48	(14)
Postoperative	27			21	35		28	

* Retrospective studies, the remainder are prospective.

† The only randomized controlled trial.

Graft Augmented Posterior Repairs

Study	N	Mean Follow-up (mo)	Anatomic Cure (%)	Graft Type	Defecatory Dysfunction (%)	Vaginal Digitation (%)	De novo Dyspareunia in Sexually Active Patients n (%)	Mesh Erosion (%)
Milani et al								
Preoperative	63		94	Prolene	45		4 (6)	13
Postoperative					30			
Altman et al								
Preoperative	32	38	62	Acellular porcine dermis	100			
Postoperative	23			(Pelvicol)	< 50			
Sand et al†								
Preoperative	73	12	92	Polyglactin				
Postoperative	65							
Paraiso et al†								
Preoperative	31	17.5	54	Acellular porcine small intestinal	97	51		
Postoperative	26			Submucosa (Fortagen)	21	7	(6)	

* Prospective studies only.

† Randomized controlled trial.

Conclusions

- Prolapse is an ever changing field
- Address apex if at all possible
- Mesh use data suggests better anatomic outcomes but are they using same “success criteria”?
- Traditional cystocele repairs probably “work” better than we give credit for
- Use rectocele repairs as necessary but maybe tide has changed in “prophylactic repairs”: use symptoms instead

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Notes