Pelvic Organ Prolapse Repairs With or without mesh -
Choices and Outcomes
Workshop 48
Tuesday 24 August 2010, 14:00 – 18:00

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<th>Speaker</th>
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<td>Firouz Daneshgari</td>
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<td>Evolution of replacement material</td>
<td>Mauro Cervigini</td>
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<td>14:30</td>
<td>Concomitant Procedures: Hysterectomy</td>
<td>Adonis Hijaz</td>
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<td>14:45</td>
<td>Concomitant Procedures: Anti-incontinence Procedures</td>
<td>Firouz Daneshgari</td>
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<td>15:00</td>
<td>Cochrane Review of Prolapse Repairs</td>
<td>Chris Maher</td>
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<td>Break</td>
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<td>16:00</td>
<td>Surgical Procedures for Apical/Advanced Prolapse and their Complications</td>
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<td>Abdominal Sacrocolpopex</td>
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<td>Sacrospinous Suspension without mesh</td>
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<td>Robotic Abdominal Sacrocolpopex</td>
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<td>Sacrocolpopex</td>
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<td>17:30</td>
<td>Q&amp;A</td>
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Aims of course/workshop
Successful repair of various compartments of pelvic organ prolapse (POP) remains a challenge for the clinicians. Over the past few years a number of surgical procedures using abdominal, vaginal approaches, laparoscopic, robotic, with or without use of mesh have been proposed with mixed reports on their outcomes. An international panel of experts from urogynecology and female urology will discuss the available choices for repair of POP, pros and cons of currently available meshes; the levels of evidence related to each choice, and the results of recently completed clinical trials.

Educational Objectives
To discuss the available surgical options for repair of POP.
To discuss the different views on use of mesh in POP repair
To discuss the surgical pearls used by the faculty for the POP repairs
To discuss the emerging new technology such as laparascopy and robotic assistance in repair of POP
To discuss the International Consultation on Incontinence levels of evidence on outcomes of various techniques of POP repairs and results of recently completed clinical trials.
SURGICAL MANAGEMENT OF PELVIC ORGAN PROLAPSE IN WOMEN: A META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS

Christopher Maher1, Kaven Baessler1, Cathryn MA Glazener3, Benjamin Feiner3

1RBWH, Mater & Wesley Urogynaecology, Brisbane, Australia
2Pelvic Floor Centre Charité, Berlin, Germany
3University of Aberdeen, Aberdeen, UK

- Aim
  - To determine the effects of the different surgeries in the management of pelvic organ prolapse
  - A Major update of 2 previous reviews

- Methodology
  - Search strategy:
    - The Cochrane Incontinence Review Group
    - RCT's and quasi-randomised controlled clinical trials (QCT)
    - At least one arm is a surgical intervention for pelvic organ prolapse
    - Published or presented between January 2007 and January 2009
  - Trials were assessed by two reviewers independently for their methodological quality and relevance to review objectives
  - Data extracted by two independent reviewers using a pre-determined form with > 400 variables
  - Meta-analysis performed using RevMan 5 (The Cochrane Collaboration, 2008) on a variety of parameters

- Results
  - 38 RCT's totaling 3773 women included
  - 17 new trials (1586 women)
  - 3 major updates of prior work (680 women)

- Main Topics
  - Upper vaginal prolapse (cervix, uterus and vault)
    - Open Vs. lap sacral-colpophagy (SC)
    - Abd. SC + TAH Vs. Mayo McCall + Vaginal Hysterectomy (VH)
    - Abd. SC Vs. VH + repair
    - Posterior VS Vs. Vaginal sacrospinous colpopexy
    - High Levator Myorrhaphy Vs. uterosacral suspension
  - Anterior vaginal prolapse
    - Anterior Colporrhaphy (AC) Vs. AC + porcine dermis (Pelvicol)
    - AC Vs. AC + Bovine pericardium collagen
    - Anterior repair using different types of mesh
    - AC Vs. Anterior repair using synthetic mesh
  - Urinary incontinence following prolapse surgery

Anterior Compartment

- 19 trials overall, 8 new
- Meta analysis 6 trials, 612 women:
  - Anterior repair with synthetic mesh

Objective Failure

Native Tissue Vs. Polypropylene Mesh
Objective Failure

Anterior Colporrhaphy Vs. Polypropylene Mesh Overlay

Anterior Colporrhaphy Vs. Armed Transobturator Polypropylene Mesh

Further Prolapse Surgery

Anterior colporrhaphy Vs. Armed Transobturator Mesh

Further Continence Surgery

Anterior colporrhaphy Vs. Armed Transobturator Mesh

Post-op quality of life

Anterior colporrhaphy Vs. Armed Transobturator Mesh

Mesh Erosion

Mean = 10.2% (30/293)
Native Tissue Repair Vs Mesh Repair

Anterior colporrhaphy Vs Armed Transobturator Mesh

De-novo Dyspareunia

De-novo Stress Urinary Incontinence

One study reported a subjective success rate which was similar in both groups. Blood loss at transobturator meshes was significantly higher compared to anterior colporrhaphy, reported as blood loss in ml or Hb change

Stress Urinary Incontinence (SUI) Following Prolapse Surgery

Meta-analysis 8 trials, 630 women

Continent procedures employed:
- Pubourethral ligament plication
- Needle suspension
- Colposuspension
- Suburethral tapes

Post-operative Objective SUI

Sacral-colpopexy Without Vs With Colposuspension

Post-operative Objective SUI

Sacral-colpopexy Without Vs With Colposuspension
De-novo Stress Urinary Incontinence

Prolapse Surgery Without Vs. With Continence Surgery

De-novo SUI in Women With Pre-operative Occult Stress Incontinence

Prolapse Surgery Without Vs. With TVT

De-novo SUI in Women Without Symptomatic or Occult SUI

Sacral-colpopexy Without Vs. With Colposuspension

Overall Bladder Dysfunction After Prolapse Surgery

Conclusions

- Synthetic mesh at anterior repair:
  - recurrent cystocele on examination

- This benefit was not translated to a significant difference in patient determined outcomes or re-operation rates for prolapse or incontinence
Conclusions

- POP + continence Sx:
  - ↓ overall post-op SUI (8 trials)
  - ↓ post-op De-novo SUI (5 trials)
  - ↓ post-op De-novo SUI in women with pre-op occult SUI (4 trials)
  - ↓ post-op De-novo SUI in women without pre-op symptomatic or occult SUI (1 trial)

- Adequately powered RCT’s are urgently needed on a wide variety of topics

Disclosures

- None of the authors possesses any conflict of interest
Apical/Vault Prolapse
Surgical Mesh Kits

Pr M. COSSON
Lille Medical University
Hospital Jeanne de Flandres,
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

Why prolapse Kits?

- Standardization of the technique.
- Simplification of the technique.
- Reduced incisions and dissections
- Less peroperative complications?
- Less operating time
- Less morbidity and hospitalization

Support Level I
- Apex

Support Level II
- Support Level III

Mesh Kits for Apical/Vault Prolapse

- Polypropylene Monofilament Knitted Mesh
- Sacrospinous suspension « tension free » TVM
- Ethicon, Women’s Health & Urology
  - Prolift Post et Prolift Total
- Bard
- Avaulta Post
- Cousin Biotech
- Biomesh Soft
- AMS
  - Elevate : direct suspension anchor
  - Prolift : Arcus Tendineous, Muscle, SSL

Prolift: Implantation device

PROLIFT Guide
PROLIFT Canula
PROLIFT™ retrieval device
Passage of the needle

Remove the needle and leave the canula

Passage of the retrieval device

Placement of the mesh

Posterior Prolift

Total Prolift

Apogee™/Perigee™

- With synthetic mesh: IntePro™
- With biologic mesh: InteXen LP™

Apogee™

APOGEE ™

APOGEE ™ - PERIGEE ™
Dissection of the sacrospinous ligament

**Costs in France**

- Gynemesh Soft®: 15x10 cm = 220 €
- Intexen LP™: 6x8 cm = 385 €, 8x12 cm = 725 €
- Avaulta™ ant or post = 250 €
- Biomesh®: 317 € (without needles)
- Prolift™
  - Isolated Ant or Post: 520 €
  - Total: 755 €
- Apogee IntePro™: 600 €
- Perigee IntePro™: 800 € (add: 1000 €)

**Elevate**

- Suspension to the sacrospinous ligament
- Direct suspension

**Elevate after implantation**
Anterior suspension to the SSL

Apex Cochrane 2010– RCT’s -

Apex Cochrane review– RCT
lap sacroscopy versus Prolift(Prolift, Gynecare): 2 years analysis

| Complications of 1882 Prolift from published series :
<table>
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<tr>
<td>Complications</td>
</tr>
<tr>
<td>bladder injury</td>
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<tr>
<td>Rectum injury</td>
</tr>
<tr>
<td>Hameorrhage 500 ml</td>
</tr>
<tr>
<td>Vesi-vaginal fistula</td>
</tr>
<tr>
<td>Deep hematomata</td>
</tr>
<tr>
<td>mesh exposure</td>
</tr>
<tr>
<td>Urinary tract infections</td>
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</tbody>
</table>

| Complications | Rate |
| --- |
| Micturition disorders | 0 – 18% |
| De novo urinary incontinence | 0 – 11% |
| Vesi-vaginal fistula | 0 – 7.8% |
| Transient retention | 0 – 11% |
| Mesh contraction | 0 – 17% |
| dyspareunia | 0 – 8% |
| Inguinal pain | 0 – 3% |
Patients characteristics (n=475)

- Age (years) 64 (26-90)
- Vaginal deliveries (n) 3 (0-11)
- Follow up duration (months) 37 months (14-62)

Previous Surgery
- Previous hysterectomy 93 (19.6%)
- Previous prolapse surgery 82 (17.3%)
- Previous continence surgery 61 (12.9%)

Type of prolift

<table>
<thead>
<tr>
<th>Type of prolift</th>
<th>n (%)</th>
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<tbody>
<tr>
<td>Isolated posterior mesh</td>
<td>103 (21.7%)</td>
</tr>
<tr>
<td>Anterior and posterior (with uterine conservation)</td>
<td>286 (60.2%)</td>
</tr>
<tr>
<td>Anterior and posterior (without uterine conservation)</td>
<td>22 (4.6%)</td>
</tr>
<tr>
<td>Total mesh</td>
<td>64 (13.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>n=475</td>
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Post Op Reinterventions: Specific complications 3 years FU

<table>
<thead>
<tr>
<th>Indication Re-intervention</th>
<th>Total Complications</th>
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<tbody>
<tr>
<td>Prolift Complication</td>
<td></td>
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<tr>
<td>- Mesh exposure</td>
<td>7 (1.5%)</td>
</tr>
<tr>
<td>- Mesh retraction : pain</td>
<td>2 (0.4%)</td>
</tr>
<tr>
<td>- Mesh infection</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>- Vaginal synechia</td>
<td>2 (0.4%)</td>
</tr>
<tr>
<td>- Rectal compression</td>
<td>2 (0.4%)</td>
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</tbody>
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Reintervention rate: Prolapse recurrences Post Prolift

<table>
<thead>
<tr>
<th>3 years Follow Up</th>
<th>Total Complications</th>
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<tbody>
<tr>
<td>Prolapse recurrence</td>
<td></td>
</tr>
<tr>
<td>- Direct</td>
<td>9 (1.9%)</td>
</tr>
<tr>
<td>- Indirect</td>
<td>2 (0.4%)</td>
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<tr>
<td>Total</td>
<td>n=11 (2.3%)</td>
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Conclusion

Comparison of kits with synthetic meshes

- Surgical principles are very close
- Same dissection
- Small difference of sizes and shape of meshes
- Very close anatomical suspensions
- No evidence of clinical consequences for patients / single mesh: simplification ++
- No differences between kits
- Therefore no recommendations
Conclusion: mesh kits

- Operative adverse events
  - Safe procedures
  - Low perioperative complications rate
  - Decreasing with experience

- Immediate postoperative adverse events
  - Painless procedure
  - Short hospital stay
  - Low rate of serious adverse events

- Better evaluation of adverse events +++

Conclusion

- No benefit / non mesh SSL suspension?
  - Safety
  - Postoperative results
  - Morbidity, reproducibility?

- Same postoperative adverse events
  - Painless procedure
  - Short hospital stay
  - Low rate of serious adverse events

- Need for long term randomized studies / classical techniques - laparoscopic suspensions +++
Pelvic Organ Prolapse Repairs
With or without mesh- Choices and Outcomes

Chair: Firouz Daneshgari, M.D. (U.S.A.)

Faculty:
Mauro Cervigni, M.D. (Italy)
Michel Cosson, M.D. (France)
Adonis Hijaz, M.D. (U.S.A.)
Christopher Maher, M.D. (Australia)

Background- Successful repair of various compartments of pelvic organ prolapse (POP) remains a challenge for the clinicians. Over the past few years a number of surgical procedures using abdominal, vaginal approaches, laparoscopic, robotic, with or without use of mesh have been proposed with mixed reports on their outcomes.

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Pelvic Organ Prolapse Repairs
With or without mesh - Choices and Outcomes

0:00-0:10: Introduction: Firouz Daneshgari
0:10-0:30: Evolution of replacement material: Mauro Cervigini
0:30-0:45 Concomitant Procedures: Adonis Hijaz
Hysterectomy
Anti-incontinence Procedures
0:45:01 Cochrane Review Chris Maher
01:00-01:15- Break
01:15-02:45 Management of Apical/Advanced Prolapse and Complications
Abdominal Sacrocolpopexy Chris Maher
Sacrosinuous Suspension without mesh Mauro Cervigini
Vaginal Approach with mesh Michel Cosson
Uterosacral Ligament Fixation
Robotic Abdominal Sacrocolpopexy Firouz Daneshgari
02:40- 03:00 Q&A
Female Pelvic Organ Prolapse (FPOP) leads to more than 300,000 surgeries in the United States (Subak 2001). Up to 11% of women have surgery for POP or related conditions by age 80 years. More than half of the women with urinary incontinence have associated POP (Olson 1997). With the expanding portion of population at risk for urinary incontinence or FPOP, an increasing number of urologists are involved in diagnosis and treatment of FPOP. Training for management of FPOP is missing from a large portion of urology residency training programs (Daneshgari 2005).

An international panel of experts from urogynecology and female urology will discuss the available choices for repair of POP, pros and cons of currently available meshes; the levels of evidence related to each choice, and the results of recently completed clinical trials.

Please note:
1. a bullet type text has been prepared for hand out for a more efficient reading
2. Please send us your comments in how to enhance the course handout, method of presentation and additional topics to be covered in the future courses.
3. Copies of the demonstrated video and movies will be available by sending a written request to Dr. Daneshgari.

For Research, Clinical Fellowships or Preceptorship for practicing clinicians (available from 1-3 months), please contact:
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Professor and Chairman
Urology Institute
Case Western Reserve University
University Hospitals of Case Medical Center
11100 Euclid Avenue
Cleveland, Ohio 44195
216-844-5504
firouz.daneshgari@uhhospitals.org
Introduction

Female Pelvic Organ Prolapse

Prevalence and Risk Factors for POP

1. Prevalence:
   a. How common is POP
      i. According to some studies 75% of women over the age of 18 have some element of POP
         1. Majority are asymptomatic
         2. Only 5% beyond introitus
   b. Frequency of types of POP
      i. With uterus: uterine prolapse – 14%, cystocele – 34%, rectocele – 19%
      ii. Without uterus: cystocele – 33%, rectocele – 18%
   c. Distribution of stages of POP
      i. According to one multicenter study 24% stage 1, 38% stage 2, 35% stage 3, 2% stage 3
   d. Risk of need for POP or POP related surgery
      i. 11% lifetime risk by age 80
      ii. 300,000-400,000 American women per year
         1. 30% of these are reoperations
   e. Dollar cost to society
      i. in 1997 the cost of POP procedures was $1.012 billion in the USA

2. Risk factors
   a. Childbirth
      i. Vaginal deliveries
      ii. Larger babies
      iii. Higher parity
         1. 8x risk with 2 deliveries
         2. 12x risk with 4 or more deliveries
         3. Only 4% of women with POP have not had a pregnancy or delivery
   b. Pelvic surgery
      i. Hysterectomy
   c. Other
      i. Race
         1. More common in white and Hispanic women
         2. Rare in Asian women
      ii. Increasing age
      iii. Collagen disorders
      iv. Neurologic disorders – MS, muscular dystrophy
      v. Conditions that increase intra-abdominal pressure
         1. Increased BMI
         2. Chronic cough/Smoking;
         3. Chronic constipation - straining

Classification:
The following terminology describes the various components of the FPOP:
   Anterior Vagial Wall or Cystocele
Pelvic Organ Prolapse Quantification (POP-Q) has been adopted by major professional organizations and is currently considered as the gold standard for quantification of POP\cite{Bump,R.C. 1996;}. POP-Q scale has replaced the former methods of FPOP classifications (see figure). Several studies have confirmed the inter and intra stability of the POPQ scale\cite{Hall,A.F. 1996;}. POP Q Scale involves localization of 9 positions within the female genitalia as followings:

<table>
<thead>
<tr>
<th>Point Aa</th>
<th>Point Ba</th>
<th>Point C</th>
</tr>
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<tbody>
<tr>
<td>anterior wall</td>
<td>anterior wall</td>
<td>cervix or cuff</td>
</tr>
<tr>
<td>Genital hiatus</td>
<td>Perineal body</td>
<td>Total vaginal length (tvl)</td>
</tr>
<tr>
<td>Point Ap</td>
<td>Point Bp</td>
<td>Point D</td>
</tr>
<tr>
<td>posterior wall</td>
<td>posterior wall</td>
<td>posterior fornix</td>
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Evolution of Replacement Material

Mesh Incorporation Process

• Inflammation
• Fibroblast proliferation (Fibroplasia)
• Blood vessel proliferation (Angiogenesis)
• Collagen synthesis
• Collagen maturation (Cross Linking)

Graft selection criteria

Tissue under strain permanence strength
- Sacrocolpopexy
- Sling procedures

Tissue reinforcement may reabsorb enhancement
- Anterior repair
- Posterior repair

Synthetics

Characteristics of Mesh

ADVANTAGES
• Strong
• Tensile Strength
• Durable, Flexible
• inert
• Knit Patterns, Porosity
• Intense Inflammatory Response

DISADVANTAGES
• Infection
• Rejection
• Fistula
• Erosion
• Encapsulation
• Poor Tissue Function

What happens when a mesh is implanted in the body?

• Foreign body reaction (Antibody Mediated)
• Blood flow increase
• Temperature rise
• Macrophages Migration
• Macrophages attempt to eat the foreign body
Diapositiva 6

**Classification of Mesh**

- Artificial meshes
- Absorbable
- Non-absorbable
- Mixed
- Monofilament
- Multifilament

Diapositiva 7

**mesh: in-growth tissue**

Diapositiva 8

**Evolution of Synthetic Mesh**

- PTFE – polytetrafluoroethylene 1830 i u
- Meristene™ Mesh – polyethylene
- Marlex® Mesh – polypropylene
- Goretex® Mesh – expanded PTFE, 800 i u
- Prolene® Mesh (Ethicon) – polypropylene 1500 i u
- Prolene® Mesh (American) – polypropylene thin 800 i u
- Parietene® Mesh – polypropylene 1440 i u
- GlynMesh™ Mesh – polypropylene 1500 i u
- Vitras™ Mesh – polyethylene
- Avaulta / Pelvicon™ Mesh – collagen coated polypropylene, 1440 i u

Diapositiva 9

**New Bio-Synthetic meshes**

*Porcine Collagen coated monofilament Polypropylene*

- Coating composition:
  - Collagen: bovine collagen type 1
  - Polypropylene: glass
  - Glycocalyx

- Physic properties of this coating:
  - Hydrophilic (86% H2O)
  - Elastic
  - Transparent

- Biological properties:
  - Reabsorbable
  - Resorbed in 30-60 days

Diapositiva 10

**Why a biologic Graft?**

Indications:
- Patients with a history of poor vaginal healing
- Pelvic radiation therapy or untreated reconstruction
- Surgeon’s preference*

Contraindications:
- Patients with known sensitivity to Porcine or Bovine products
- Patients with history of multiple or severe allergies
- Not for reconstruction of cardiovascular defects
- Not for reconstruction of central nervous system or peripheral nerves system defects

*Source: Abbott, Female reconstructive surgery of reconstructive and minimally invasive techniques
Uterine sparing in POP surgery: Is there an added value from performing hysterectomy?

Adonis Hijaz, M.D.
Associate Professor
Urology Institute
Case Western Reserve University
University Hospitals of Case Medical Center

“Hysterectomy at the time of POP repairs is the standard practice in most parts of the world despite the fact that descent of the uterus may be a consequence, not a cause of POP. Surprisingly, given its widespread use, concomitant hysterectomy is not an evidence-based practice.” International consultation on Incontinence 2008

Women may wish to avoid hysterectomy at the time of POP repairs because of factors such as desire for further childbearing, the belief that the uterus is important for sexual satisfaction, and the success of recent conservative procedures for uterine bleeding and fibroids

1- Epidemiology:
Each year in the United States, more than 600,000 women undergo a hysterectomy at cost in excess of US$5 billion.¹
By the age of 40, 20% of US women will have had a hysterectomy, with the incidence increasing to 33% by the age of 65 and 43% by the age of 85.²⁻⁴
13% of hysterectomy done in the US are performed for POP. (Nationwide Inpatient Sample (NIS) of the Healthcare Cost and Utilization Project (HCUP). Available at: www.hcupnet.ahrq.gov . December 28, 2007).
At least 20% of hysterectomies were performed for the primary indication of POP in Germany, France and England.⁵
80-90% of POP surgeries are done vaginally in the US (Boyles S 2003). National Hospital discharge Survey 1979-1997
30% re-operation rate for POP

2-Uterine preserving surgery
Rationale for uterine sparing
Uterine prolapse in young women
Uterus is important sexual organ
Removing uterus might affect bladder function
Removing uterus shortens vagina
Removing uterus changes the anatomical relationships in the pelvis
If using mesh reconstruction (Vaginal mesh or Abdominal sacrocolpopexy) hysterectomy increases the risk of mesh erosion (OR 4.9 in the CARE trial)
Contraindication of Uterine Preserving Surgery
post-menopausal bleeding,
previous cervical intraepithelial neoplasia (CIN)
abnormal cervical smears
uterine disease including uterine enlargement or cervical ulceration

3-Rationale for hysterectomy
Need for continuous surveillance
Risk for endometrial cancer
Risk for cervical cancer

13% of hysterectomy done in the US are performed for POP.
traction force !

4-Complication of hysterectomy: What are the drawbacks of removing the uterus?
(eVALuate Trial : Garry R et al: BMJ 2004;328:129-36)
Major hemorrhage requiring transfusion: 2.4-5.1%
- Bowel injury 0.2-1%
- Ureteral injury 0.3-0.9%
- Bladder injury 0.9-2.1%

5-Lifetime risks of uterine and cervical cancer development
Cervical Cancer: Nationally, the lifetime probability of developing cervical cancer is 1:128. Although screening programs in the United States are well established, it is estimated that 30% of cervical cancer cases will occur in women who have never had a Pap test. The mean age for cervical cancer in the United States is 47 years, and the distribution of cases is bimodal, with peaks at 35 to 39 years and 60 to 64 years of age.

Uterine Cancer: The median age for endometrial adenocarcinoma is 61 years, with most women diagnosed between the ages of 50 and 60 years. Ninety percent of cases occur in women over 50 years of age.

6-What are the uterine sparing procedures?
- Laparoscopic assisted high McCall for hysteropexy
- Abdominosacrohysteropexy (lap, robotic)
- Sacrospinous hysteropexy
- Mesh vaginal reconstruction

7-Uterine sparing POP repair clinical data
Maher used a laparoscopic suture hysteropexy where the pouch of Douglas was closed and the uterosacral ligaments were plicated and reattached to the cervix. Forty-three women with symptomatic uterine prolapse were prospectively evaluated at mean follow-up of 12 months (range 6-32). On review, 35 women (81%) had no symptoms of prolapse and 34 (79%) had no objective evidence of uterine prolapse.

Banu reported 100% success in a case series of 19 women aged 17-27 years following sacrohysteropexy using mersilene mesh at 3-5 year follow-up.

Leron reported 92% success with the sacrohysteropexy using teflon mesh in 13 patients aged 38 years (range 27-60) at a mean follow up of 16 months.

Jeon reported outcomes after a median follow-up of 36 months in their retrospective comparison of 168 patients in 3 groups: sacrocolpopexy with synthetic mesh and hysterectomy (N=63); abdominosacral uteropexy with mesh (N=35), and abdominal uterosacrocardinal colpopexy and hysterectomy (N=70). Recurrence in the latter group III was 6.2 times higher than in the sacrocolpopexy/hysterectomy group.

Dietz and co-workers observed 133 Dutch women undergoing a sacrospinous hysteropexy, and examined 60 of these women with mean follow up of 22.5 months. Eight-four percent of women were highly satisfied about the outcome of the procedure, and the rate of reoperation for uterine descent was 2.3%. The recurrence of anterior wall defects was 35%.
Maher et al reported a retrospective comparison of 34 sacrospinous hysteropexies and 36 vaginal hysterectomies with sacrospinous fixation. Uterine preservation was associated with significantly less blood loss (198 vs 402 ml) and decreased operating time (59 vs. 91 minutes). At a 36 month mean follow up in the hysterectomy group and 26 months in the hysteropexy group, there was no differences in subjective success (86% vs. 78%, p=0.70), objective success (72% vs. 74%, p=1.00) or patient-determined satisfaction (86% vs. 85%, p=0.10) respectively.  

Hefni et al reported a nonrandomized prospective controlled study of 109 women who underwent sacrospinous cervicocolpopexy with uterine preservation [61 (56%)] and sacrospinous colpopexy + vaginal hysterectomy [48 (44%)]. Uterine conservation was associated with significantly less blood loss, decreased operating time and complication rate. At approximately 34 months, anatomic success was similar for the upper vaginal support (93.5% vs. 95%), anterior wall (11.4% vs. 10.4%, p=0.9) and re-operation (5% vs. 4.2%) for the uterine conserving vs. hysterectomy groups respectively.  

Van Brummen performed a retrospective comparison of the same two procedures. One hundred and three women underwent sacrospinous hysteropexy (n=54) or vaginal hysterectomy with a vaginal vault suspension (n=49) for the management of uterine prolapse. The women recovered significantly more quickly after sacrospinous hysteropexy. There were no differences in anatomical outcome or recurrence rate. The adjusted odds ratios for urge incontinence was 3.4 and for overactive bladder 2.9 greater after vaginal hysterectomy.  

Rosen et al performed a prospective non-randomized comparison between laparoscopic pelvic floor repairs with or without hysterectomy in 64 patients with stage 2 to 4 uterine prolapse (32 patients in each treatment arm). Time of surgery was greater in hysterectomy group (+35 minutes), as was estimated blood loss and inpatient stay. No difference between groups was detected in the rate of de novo postoperative symptoms. At 12 months, 4 (12.9%) patients in hysterectomy group had recurrent prolapse as did 6 (21.4%) patients in group non-hysterectomy group. At 24 months these figures were 6 (22.2%) and 6 (21.4%), respectively. These differences were not statistically significant (p=.500 at 12 months and .746 at 24 months). In the group not having hysterectomy, 4 (14.3%) of 28 patients had cervical elongation or level-1 prolapse by the 12-month assessment.  

De Vita et al reported prospectively on a cohort of 80 patients with stage 3 and 4 uterine-vaginal prolapse who wished to conserve their uterus. Those patients underwent a sacrospinous colposuspension with polypropylene mesh. Severe pelvic prolapse, evaluated with the POP-Q System, was completely treated in all the patients and no recurrences were observed. Sexual activities improved in all patients. Three vaginal erosions were reported.
References:

16-van Brummen HJ, van de Pol G, Aalders CI, Heintz AP, van der Vaart CH. Sacrospinous hysteropexy compared to vaginal hysterectomy as primary surgical treatment for a descensus uteri: effects on urinary symptoms. Int Urogynecol J Pelvic Floor Dysfunct. 2003;14(5):350-5; discussion 5.
Surgical Repairs of Apical Compartment

Over 40 types of techniques have been described for repair of prolapsed apical portion of the vagina including the entrocele and uterus prolapse. The following table lists some of the more commonly performed procedures.

Abdominal Approach:
1. Abdominal Sacrocolpopexy
2. Pouch of Douglas Obliteration for Entrocele:
3. Moschkowitz
4. Mayo\McCall Culdoplasty
5. Halban Procedure
6. Concomitant procedures:
7. Paravaginal Repair
8. Burch Colposuspension
9. Abdominal and Vaginal Sacrospinous ligament fixation
10. Laparoscopic and Robotic Techniques:
11. Abdominal Sacrocolpopexy
12. Uteropexy
13. Parvaginal Repair

Vaginal Approaches

1. Sacrospinous ligament fixation (SSLF)
2. Without Mesh
3. With Mesh
4. Uterosacral Ligament Fixation (USLF);
5. Extraperitoneal
6. Intraperitoneal

Scrospinous ligament Fixation (above)

Uterosacral Ligament Fixation (right)
Surgical Steps:

SSLF (without mesh):
- Midline incision is made through the vaginal cuff
- Endopelvic fascia is dissected away from the SSL
- SSL position is confirmed by palpation between the boney landmarks (ischial spine and sacrum)
- One or more permanent stitches are put through the SSL at 1 cm medial to the ischial spine. Most surgeons use Mayo hook for placement of the stitches
- Bilateral SSLF can be done by repetition of the above steps on the contralateral side.
- The stitches are passed through full thickness of vaginal cuff.
- Upon tie of the sutures, the vaginal cuff is suspended to the SSL.

USLF: This transvaginal approach was originally described by Dr. Bob Shull.
- An ellipsoidal of vaginal epithelium from the cuff is excised to facilitate transvaginal access to the peritoneal cavity
- The Uterosacral ligaments are identified by pulling on the remnants of cardinal ligaments transvaginally
- The vaginal cuff on each side is suspended to USL by helical sutures placed to the USL at high intraperitoneal position. We recommend 0 Vicryl on CT-1 needle
- Injuries to ureters are potential complication of this procedure and are avoided by identification of the ureters and use of blue dye with cystoscopy.
COCHRAN REVIEW

Christopher Maher
SacroSpinous Suspension without mesh

Mauro Cervigni
Professor and Chief
Obstetrics and Gynecology Dept.
B. Carlo-Blo Hoop.
Rome-Italy

Efficacy of Specific Procedures

- The apex is the keystone of Pelvic Organ Support
- Vaginal support in hysterectomy is recommended by most authorities
  (Level 4 evidence)

APICAL SUPPORT PROCEDURES
TRANSVAGINAL

Supportive

1. High Urethral Ligament Suspension
2. Ressecogyne Facial Fixation
3. Mayo Culdocetomy
4. Sacrospinous Ligament Suspension (SSLS)
   (Level 3 evidence - Michigan modification)
5. Laverke Myorrhaphy

Obliterative

1. Le Fort Colpectomy
2. Total Colpectomy

INDICATIONS
In post-hysterectomy Vaginal Vault Prolapse
- Symptomatic prolapse of the vaginal vault
- In pts. with uteros
- Adjunctive step: during a hysterectomy for procidentia
- Prophylactic step: against subsequent Vag. vault eversion
- In young pts. desiring to retain fertility
- In elderly pts. to reduce surgical time and morbidity

HISTORY

1. Zweifel in 1892
2. Richter in 1968
3. Randall & Nichols 1971
**Surgical Technique**

1. midline posterior vaginal wall incision
2. entry into the perirectal space
3. ischial spinae is identified
4. long Deschamps & nerve hook with Broaky-Nussehl retractors
5. two sutures are passed 2 fingerbreadth medially to the ischial spine

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**Diapositiva 8**

**ROUTE OF SURGERY**

ICI '05

- Level I evidence that abdominal route is more effective and durable in correcting anatomy and more effective in correcting or preserving vaginal and lower tract function.
- Level I evidence that vaginal route surgery has fewer serious complications.
- Level I evidence that vaginal route utilizing SSLS has a significant higher risk of recurrent anterior-apical prolapse than abdominal route

However the overall quality of life following either route of surgery appears similar

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**Diapositiva 10**

**a further step ? Minimally Invasive Surgical (MIS) kits**

**PROLIFT**

*Gynecare*

**PERIGEE/APOGEE®**

*AMS*

**AVAULTA®**

*Bard*
Transvaginal Repairs Using Kit Mesh

Michel Cosson, M.D.
Robotic & Laparoscopic Repairs

Robotic laparoscopic repair of POP with or without uteropexy provides a less invasive approach to the repair of pelvic organ prolapse. Lesser invasive nature of this approach also provides an opportunity for organ-preserving repair in the case of uterine prolapse.

- Robotic laparoscopic procedures can be performed in presence or absence of uterus. The use of robotic laparoscopic repair alleviates the need for an abdominal incision and accelerates the patient’s recovery.
- Surgical steps are similar to those of open abdominal sacrocolpopexy
- Exposure to the pelvis is accomplished using trendelenberg positioning and a laparoscopic retractor to reflect the colon to the left
- Incision of the posterior peritoneum is begun at the level of the sacral promontory and continued distally to the cul-de-sac.
- The posterior vaginal wall is incised to the level of the vaginal cuff
- In a sacrocolpouteropexy, the incision is carried to the level of the cervix.
- Two 3×15 cm pieces of polypropylene mesh are sutured to the vaginal vault— one anteriorly and one posteriorly— making a cup support of the prolapsed vault
- In a sacrocolpouteropexy, only one mesh is sutured to the exposed portion of the cervix at two proximal and two distal sites.
- The single mesh in the sacrocolpouteropexy and both meshes in the sacrocolpopexy are then sutured to the anterior spinous ligament. Non-absorbable sutures are used for suspension sutures. The peritoneum is closed using running or interrupted absorbable sutures.
- During Robotic and Laparoscopic approach, concomitant procedures such as paravaginal repair or Burch colposuspension can be performed.
In Robotic and Laparoscopic approach, five ports (12 mm x 3; 8 mm x 2) are placed. In Robotic cases, the three of the ports are attached to the robot arms with two free hand ports controlled by the surgeons’ assistant.

**Reported Outcomes:**

Summary of the reported outcomes in Robotic AS is presented in Table 1.
References:


