Laparoscopy – Laparotomy

Dr. Pravin Mhatre
Prof. Emeritus
Laparoscopy Vs Laparotomy

- Better visualization by
  - magnification
  - $30^\circ$ optic
- shorter hospital stay
- less damage to healthy tissue
- better end result
- less pop pain
- less adhesions
- Risk for complications and their delayed diagnosis (blind entry)

- Less operation time
- Longer hospital stay
- More pop pain
- More damage to healthy tissue
- Overall more complications than laparoscopy!
“Doing least, and that too only if and when MUST”

Larger wound – more damage to fascia, muscle and nerves
- loss of water and heat, drying out of tissues,
- more handling causes trauma
- Leading to adhesions and impaired healing.

Open surgery through small incisions – more retraction leading to parietal hematoma, neuropraxia.
Magnification and good illumination gives much better view than open surgery, specifically in pelvic surgery.

Endoscopic surgery is safer for the surgeon as there is reduced chance of contact between patient’s body fluids and viscera.

The biggest input is from other surgeons and not solely by operating one.
“It’s keyhole surgery. I’ll be operating on you from behind that locked door.”
Anatomic evaluation
Teaching
Diagnosis
Treatment
Adhesions
Second look
Ureter

- All abdominal surgeons are encouraged to study and become familiar with retroperitoneal anatomy and dissection techniques.

- With advanced video laparoscopic technology, pelvic structures can be **magnified** onto the TV monitor in minute detail.

- The positive intra-abdominal pressure of the pneumoperitoneum exerted against covering peritoneum **highlights the underlying ureter in remarkable detail**.
Pouch of Douglas

Uterosacral lig.

Ureter
Ureter

External iliac artery

Internal iliac artery
utero-sacral ligament
Learning physiology /anatomy
SUI-Diagnosis and Treatment
Ureteric implantation - physio/antomic

The anti-reflux mechanism

- intramural ureter
- bladder muscle
- ureter
- urine

The trigone

- inter-ureteric ridge
- ureter orifice
- Bell's muscle

D

- bladder
- urothelium
- detrusor
- ureter

E

- ureter orifice
- trigone

F

- ureter orifice
- rugae
Ureteral repair
Ureter at laparotomy
Laparoscopic ureteral reimplant for ureteral stricture

- International braz j urology
- Int. braz j urol. vol.36 no.1 Rio de Janeiro Jan./Feb. 2010
- Rodrigo S. Q. Soares; Rubens A. de Abreu Jr; Jose E. F. Tavora
Vascular anatomy

- Personal experience in Ovarian transplant research
Arterial Anastomosis

- Ovarian Artery: 1-1.2 mm
- Uterine Artery: 4-5 mm
- Internal Iliac Artery: 10 mm
- Inferior Epigastric Artery: 1.2 mm
Venous Anastomosis

- Ovarian Vein: 4-5 mm
- Uterine Vein
- Inferior Epigastric Vein
- Internal Iliac Vein: 10-15 mm
Teaching vascular Anatomy
Teaching Neural Anatomy
Diagnosis and Treatment

- Endometriosis
- Tuberculosis
- Cancer staging – Ovarian / Cervical / Endometrial
- Tubal block
- PID
Tubal convolutions
Spigelian hernia
Treatment

- Tubal ligation / Tubal recanalisation
- Lost IUCD
- Ectopic pregnancy
- Endometriosis
- Pelvic Inflammatory disease
- Hysterectomy ?
- Myomectomy
- Radical hysterectomy
Tubal ligation & Reversal
A comparative case-controlled study of laparoscopic vs. laparotomy management of ectopic pregnancy: an evaluation of reproductive performance after radical vs. conservative treatment of tubal ectopic pregnancy

Samina Tahseen & M. Wyldes
Pages 189-190 | Published online: 02 Jul 2009
Ovarian drilling PCOD
uterine perforation

- 90% of perforations are managed conservatively
Hysterectomy

- GOG trial 2010-11
- Multiple randomized trials
Fertility and obstetric outcome after laparoscopic myomectomy of large myomata: a randomized comparison with abdominal myomectomy

R. Seracchioli


- pregnancy rate (55.9% after laparotomy, 53.6% after laparoscopy),
- abortion rate (12.1 versus 20%),
- preterm delivery (7.4 versus 5%)
- Caesarean section (77.8 versus 65%).
- No case of uterine rupture during pregnancy or labour was observed.
81 Enrolled for reversal of sterilisation
76 analysed for fertility outcome
  Laparoscopic – 37 patients
  Laparotomy – 44

Anastomosis was performed in two layers with four stitches using microsurgical technique

Pregnancy rate 80%

Laparoscopy- more operating time but less hosp. stay
Randomized Trial of Laparoscopically Assisted Versus Open Colorectal Resection for Endometriosis: Morbidity, Symptoms, Quality of Life, and Fertility
Daraï, Emile MD, PhD; Dubernard, Gil MD, PhD; Coutant, Charles MD; Frey, Catherine MD; Rouzier, Roman MD, PhD; Ballester, Marcos MD
Annals of Surgery:
June 2010 - Volume 251 - Issue 6 - pp 1018-1023
Comparison of laparoscopic versus conventional open surgical staging procedure for endometrial cancer

**Tae Wook Kong,**

**Conclusion**

Laparoscopic surgical staging operation is a safe and effective therapeutic procedure for management of endometrial cancer with an acceptable morbidity compared to the laparotomic approach, and is characterized by far less blood loss and shorter postoperative hospitalization.
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Laparoscopy</th>
<th>Laparotomy</th>
<th>PValue</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>37</td>
<td>33</td>
<td>–</td>
</tr>
<tr>
<td>Mean age</td>
<td>68.3</td>
<td>67.7</td>
<td>NS</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>29.17</td>
<td>29.7</td>
<td>NS</td>
</tr>
<tr>
<td>Pelvic lymphadenectomy</td>
<td>25</td>
<td>24</td>
<td>NS</td>
</tr>
<tr>
<td>Pelvic lymph nodes (mean)</td>
<td>16.1±7.6</td>
<td>15.4±7.6</td>
<td>NS</td>
</tr>
<tr>
<td>Paraaortic lymph nodes (mean, 20 patients)</td>
<td>9.6±4.7</td>
<td>8.4±6.4</td>
<td>NS</td>
</tr>
<tr>
<td>Operative time</td>
<td>176.4±85.4</td>
<td>166.1±61</td>
<td>NS</td>
</tr>
<tr>
<td>Estimated blood lost</td>
<td>229.2±190.2</td>
<td>594.2±629.9</td>
<td>0.003</td>
</tr>
<tr>
<td>Transfusion</td>
<td>1</td>
<td>11</td>
<td>0.005</td>
</tr>
<tr>
<td>Length of stay</td>
<td>8.6±2.7</td>
<td>11.7±3.8</td>
<td>&lt;0.001</td>
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<tr>
<td>Complications</td>
<td>11 (29.7%)</td>
<td>13 (39.3%)</td>
<td>NS</td>
</tr>
<tr>
<td>Follow up (months)</td>
<td>16.5 (2–43)</td>
<td>21.6 (2–48)</td>
<td>–</td>
</tr>
<tr>
<td>Recurrences</td>
<td>1</td>
<td>2</td>
<td>NS</td>
</tr>
<tr>
<td>Recurrence related death</td>
<td>1</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Recurrence-free survival</td>
<td>97.3%</td>
<td>93.3%</td>
<td>NS</td>
</tr>
<tr>
<td>Overall survival</td>
<td>83.9%</td>
<td>90.9%</td>
<td>NS</td>
</tr>
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</table>

Table 4. Results of the First Randomized Prospective Study Evaluating Laparoscopy Versus Laparotomy for the Staging and Treatment of Endometrial Cancer Adapted From Malur et al. 54
GOG trial: laparotomy vs. laparoscopy

- Laparoscopic surgical staging for uterine cancer is feasible and safe in terms of short-term outcomes (2010)
- Fewer complications and shorter hospital stays
- Potential for a small increased risk of cancer recurrence with laparoscopy versus laparotomy
- 5-year overall survival being almost identical in both arms at 89.8% (2012)

Incisional hernias after major laparoscopic gynecologic procedures

- American Journal of Obstetrics and Gynecology
- Volume 168, Issue 5, May 1993, Pages 1493-1495
- Nicholas Kadar
Compare the Wounds
(Smaller Wounds, Fewer Problems, Same Results)

Open Surgery

Laparoscopic Surgery
Vaginoplasty
Mullerian Anomalies

Double ureter and Fused pelvic kidney
Colon vaginoplasty

Vaginoplasty Research
Skin
Amnion
Vaginoplasty
New Vaginoplasty Technique Laparoscopic peritoneoplasty
The only technique creating normal Vagina
Adhesion formation

Figure 1. Schematic illustrating adhesion formation to the anterior abdominal wall.
Peritoneum damage EM

The organization of actin filaments and focal adhesions

fibroblasts showing microtubule and actin cytoskeleton
Prevalence of Adhesions Following Surgical Procedures

- >90% of laparotomies result in adhesion formation\(^a\)
- Gastrointestinal: 60%-70%\(^b\)
- Urologic: 22%\(^c\)
- Gynecologic: 51%\(^c\)
  - Especially myomectomy
  - Intra-uterine adhesions are also common (up to 95%)
- Cesarean delivery: 90%\(^d\)

Image courtesy of G. Wright Bates Jr, MD

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Adhesion Prevention Strategies

- Surgical technique
  - Limiting tissue injury and ischemia
  - Gentle tissue handling
- Meticulous hemostasis
  - Lacks randomized trials
- Reperitonealization?
- Laparoscopy vs laparotomy
- Poor results with lysis of adhesions
  - Especially to restore fertility

Anterior abdominal wall adhesion
Image courtesy of G. Wright Bates Jr, MD
Prevalence of Adhesions Following Laparoscopic Procedures

- More than half of operative gynecologic laparoscopies develop\(^a\)
  - De novo adhesions: 82% at second look
  - 43% of adhesions reformed
- Laparoscopic transperitoneal urologic surgery
  - 22% developed intraabdominal adhesions\(^b\)

Etiology of Adhesion Formation

- Ischemia
- Tissue manipulation
- Abrasion
- Suturing
- Infection
- Peritoneal closure

Image courtesy of G. Wright Bates Jr, MD

Surgery always has the potential to cause adhesions.

Healing of peritoneum
Future

- Simulators
- Tactile sensors on instruments,
- MR guided surgery,
- Endoscopic image + MR image (4th dimension)
- MR guided thermotherapy ablators,
- Glues and biologically active agents and specific site.
Tactile and Thermal sensors
Combining MRI imaging
Every “Useful innovation” goes through or should go through a ‘shakedown’ process where it is evaluated objectively with rigor.

I think laparoscopy has already been shaken down.
Vaginal surgery should not be replaced

- Laparolft
- LAM
- LAVH
- LA-SUI
HE LIKES TO DO EVERYTHING LIKE IN THE OPERATING THEATRE...
• Laparoscopic circumcision

• Laparoscopic Episiotomy

• Laparoscopic vaginal delivery

Laparoscopic vaginal delivery: report of a case, literature review, and discussion.

Barham M¹.

Author information

Abstract

I review the literature on laparoscopically assisted vaginal delivery, present and discuss a case, and describe the technique. Laparoscopically assisted vaginal delivery will emerge as a triumphant obstetric innovation that will radically transform operative obstetrics in the 21st century.

Comment in

Is this what we want?
Surely NOT
Thank You