Complex Inguinal Hernia

Keri Seymour, DO
July 15, 2019
Sea Pines, SC
Complex Inguinal Hernias

- Recurrent inguinal
- Large scrotal hernia
- Incarcerated femoral
How do we approach these cases?

• Requires combination of techniques

• Can we use mesh?

• What tissue repair do we use?
<table>
<thead>
<tr>
<th>Inguinal Hernia Repair Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-mesh</td>
</tr>
<tr>
<td>Shouldice</td>
</tr>
<tr>
<td>Bassini</td>
</tr>
<tr>
<td>McVay</td>
</tr>
<tr>
<td>Open Mesh</td>
</tr>
<tr>
<td>Lichtenstein</td>
</tr>
<tr>
<td>Plug and Patch</td>
</tr>
<tr>
<td>Transinguinal preperitoneal</td>
</tr>
<tr>
<td>Lap-endoscopic</td>
</tr>
<tr>
<td>Totally extra-peritoneal (TEP)</td>
</tr>
<tr>
<td>Trans abdominal pre-peritoneal repair (TAPP)</td>
</tr>
<tr>
<td>Single Incision laparoscopic repair (SILS)</td>
</tr>
<tr>
<td>Robotic repair</td>
</tr>
</tbody>
</table>
Mesh vs Non-mesh for inguinal and femoral hernia repair

• Recurrence
  — **Mesh** < Non-mesh (RR 0.46)
  — 1 Non-mesh recurrence prevented for 46 mesh repairs

• Seroma
  — **Mesh** > Non-mesh (RR 1.63)

• Wound infection
  — **Mesh** > Non-mesh (RR 1.29)

• Return to activities
  — **Mesh** < Non-mesh by 2.87 days earlier

• Recurrence
  — Shouldice 3.6% vs Mesh 0.8% (OR 3.80)
  — Shouldice 4.4% vs Non-mesh 6.9% (OR 0.62)

• No differences in chronic pain, complications and post-operative stay.
Shouldice Repair

• Complex multi-layer technique

• Not easy to learn

• At the Shouldice Hospital, surgeons are qualified after 300 cases

• Recurrence rate as low as 1.9% at 3 years
Other tissue repairs

**Bassini**
Conjoint tendon to shelving edge

**McVay**
Relaxing incision
Conjoint tendon to pectineal ligament
Lap - Endoscopic

D

TAPP

TEP
Advantages to Laparoscopic repair

• Diagnostic laparoscopy
  – Evaluate sources of abdominal pain
  – Adhesiolysis
  – Visualize additional hernias (umbilical, obturator, etc)
  – Reduction of bowel

• Evaluation of bilateral groins
  – Recurrence after inguinal hernia repair more common in women
  – Recurrence was 10x more likely to be a femoral hernia in women
Triangle of Doom and Pain

- Inferior epigastric vessels
- Internal inguinal ring
- Lateral femoral cutaneous nerve
- Electrical hazard zone
- Genitofemoral nerve
- Spermatic vessels
- Musculoaponeurotic arch of transverse abdominus
- Lateral border of rectus abdominus
- Iliopubic tract
- Pubis
- Cooper’s ligament
- Vas deferens

“Triangle of doom”
• Operative time
  — Laparoscopy > Open by 15 minutes longer

• Visceral (e.g., bladder) and vascular injuries
  — Laparoscopy > Open

• Pain and numbness
  — Laparoscopy < Open surgery

• Return to activities
  — Laparoscopy > Open by 7 days earlier

• Mesh reduced recurrence
  — Laparoscopy or Open

Cochrane review Cochrane Database Syst Review. 2003
Open Mesh versus Laparoscopic Mesh Repair of Inguinal Hernia

Leigh Neumayer, M.D., Anita Giobbie-Hurder, M.S., Olga Jonasson, M.D., Robert Fitzgibbons, Jr., M.D., Dorothy Dunlop, Ph.D., James Gibbs, Ph.D., Domenic Reda, Ph.D., and William Henderson, Ph.D., for the Veterans Affairs Cooperative Studies Program 456 Investigators

• Randomized Trial
• 14 VA Medical centers
• 994 Laparoscopic vs 989 Open

• Recurrence at 2 years
  • 10% Laparoscopic > 5% Open

• Recurrence experienced surgeon (>250 cases)
  • 5% Laparoscopic > 4% Open

• Recurrence less experienced surgeon (<250 cases)
  • 12% Laparoscopic > 4% Open
Surgeons should offer anterior and posterior repair

Mesh repair is first choice

No standard repair exists

Shouldice is preferred non-mesh technique

Complex Inguinal Hernias
Individualized care

• Surgeon:
  — experience, local resources

• Patient risk:
  — pain, age, obesity, COPD, ascites, pelvic surgery, previous repair, physical activity

• Hernia characteristics:
  — size, recurrent, bilateral, incarceration, strangulation, perforation

• Anesthesia:
  — GETA, MAC, local

• Shared decision making
## Variability at National level

<table>
<thead>
<tr>
<th></th>
<th>Sweden National Registry 2015</th>
<th>Germany Hernia Med Registry 2009-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lichtenstein</td>
<td>Lichtenstein</td>
</tr>
<tr>
<td></td>
<td>64%</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>TEP</td>
<td>TEP</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>TAPP</td>
<td>TAPP</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>Open pre-peritoneal mesh</td>
<td>Plug</td>
</tr>
<tr>
<td></td>
<td>3.3%</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Combined open and preperitoneal</td>
<td>Shouldice</td>
</tr>
<tr>
<td></td>
<td>2.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td></td>
<td>Tissue repair</td>
<td>Bassini</td>
</tr>
<tr>
<td></td>
<td>0.8%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>
Laparoscopic Intraperitoneal Onlay Mesh (IPOM)

- 30 patients
- No conversion
- Mean hospital stay 36 hours
- Return to activity 8 days
- 3.3% (3) recurrences
- Safe, feasible, effective

Catani et al, Hepatogastroenterology 2004
Repeated laparoscopic treatment of recurrent inguinal hernias after previous posterior repair

Baukje van den Heuvel · Boudewijn J. Dwars

• 51 recurrent IH after posterior repair
  — 37 TAPP
  — 12 TEP
  — 4 Other

• Repeat TAPP performed
  — 2 converted to open for adhesions

Table 3 Complications

<table>
<thead>
<tr>
<th>Type of complication</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term and peroperative</td>
<td>9 (17)</td>
</tr>
<tr>
<td>Hematoma</td>
<td>2 (4)</td>
</tr>
<tr>
<td>Seroma</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Transient urination complaints</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Infection trocar side</td>
<td>2 (4)</td>
</tr>
<tr>
<td>Long-term</td>
<td>8 (15)</td>
</tr>
<tr>
<td>Persistent pain</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Portsite hernia</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Total</td>
<td>17 (32%)</td>
</tr>
</tbody>
</table>
Combined laparoscopic and open extraperitoneal approach to scrotal hernias

G. S. Ferzli - S. Rim - E. D. Edwards
Tension-free repair versus Bassini technique for strangulated inguinal hernia: A controlled randomized study

Magdy M.A. Elsebae*, Maged Nasr, Mohamed Said


Table 2 – Postoperative complications

<table>
<thead>
<tr>
<th></th>
<th>Lichtenstein herniorrhaphy (group A) n = 27</th>
<th>Bassini technique (group B) n = 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groin ecchymosis and seroma</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Wound sepsis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superficial</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Deep infection</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>2 (7.4%)</td>
<td>3 (11.1%)</td>
</tr>
</tbody>
</table>

Table 3 – Hospital stay and recurrence

<table>
<thead>
<tr>
<th></th>
<th>Lichtenstein herniorrhaphy (group A) n = 27</th>
<th>Bassini technique (group B) n = 27</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative hospital stays (mean days)</td>
<td>5 ± 3.4</td>
<td>3 ± 2.1</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Hernia recurrence. (no. and % of cases)</td>
<td>0 (0%)</td>
<td>3 (11.1%) 1</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
International Guidelines Groin Hernia Management

• Recurrent IH = opposite approach

• High-risk IH patients with extensive comorbidities = open mesh repair under local anesthesia

• Consider laparoendoscopic approach: active young patients, female, bilateral, femoral, chronic pain

• Large scrotal/irreducible hernia = an open mesh repair or a trans-abdominal laparoscopic repair (TAPP)

Recurrent, Recurrent

- 50 yo Female with SBO

- PSHx
  - Hysterectomy complicated by left iliac artery injury and iliofemoral graft
  - LIH meshoma resection
  - Redo lap LIH repair w mesh
How would you repair this recurrent inguinal hernia after anterior and posterior repair?

A. Repeat open LIH repair with mesh
B. Repeat open RIH tissue repair
C. Midline Incision
D. Repeat Laparoscopic inguinal hernia repair (IPOM, TEP, TAPP)
E. “Sandwich” technique (laparoscopic with mesh and open with mesh)
87 yo M presents with feculent emesis

PE: incarcerated RIH

Labs: AKI

PSX: RIH 8 yrs prior
VP shunt
Midline laparotomy
How would you repair this large scrotal hernia?

A. Open RIH repair with mesh
B. Open RIH tissue repair
C. Midline Incision
D. Laparoscopic inguinal hernia repair  
   (IPOM, TEP, TAPP)
E. “Sandwich” technique  
   (laparoscopic with mesh and open with mesh)
Incarcerated Femoral Hernia

• 89yo M
• Left groin pain x 8 days
• Loose stool 3 weeks
• PSHx shouldice repair in 1996

• PE
  — Reducible large RIH
  — Erythema left groin
How would you repair this strangulated femoral hernia with perforated bowel?

A. SBR + Open RIH repair with mesh
B. SBR + Open RIH tissue repair
C. SBR via Midline Incision
D. Laparoscopic SBR + inguinal hernia repair (IPOM, TEP, TAPP)
E. SBR + “Sandwich” technique (laparoscopic with mesh and open with mesh)
Conclusions

• Offer the opposite repair for recurrent inguinals

• Combination of laparoscopic and open can be used for complex inguinal hernia repairs

• Have a tissue repair you are comfortable with

• Individualize care

• Best repair is the one you are comfortable performing
Thank You
Questions?