Approach to Uncommon Primary Hernias

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Uncommon Primary Hernias

• Lumbar hernia
• Sports hernia
• Suprapubic hernia
• Femoral hernia
• Obturator hernia
• Spigelian hernia
Lumbar Hernia

Laparoscopic Inferior Lumbar (Petit) Hernia Repair

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Sports Hernia

‘Sports hernia’ is a condition of chronic groin pain in sport which is associated with an incipient direct inguinal hernia.

**Synonyms**
Sportsman’s hernia
Athletic hernia
Gilmore’s groin
Groin strain
**Physical findings**

- Commonly male
- Physical examination findings typically sparse
  - A palpable cough impulse is either weak or absent
  - A subtle bulge in skin
  - Mild tenderness may be elicited most commonly over the **conjoint tendon insertion** or a dilated superficial inguinal ring
  - Mild tenderness over the **adductor longus** origin and/or have a positive adductor ‘squeeze’ test (pain and inhibition when asked to squeeze the legs together against resistance).

**Anatomy**

The **conjoint tendon** (solid black arrow) is a fusion of the tendons of internal oblique and transversus abdominis muscles (M) as they pass inferiorly to the pubic crest.

Tendon segment colored red indicates the site of conjoint tendon thickening and tenderness often seen on ultrasound in cases of symptomatic Sports hernia.

Tendon segment colored blue indicates the ‘junctional’ zone in which the superficial fibers of **adductor longus** tendon intermesh with those of conjoint tendon and may be involved in some cases of Sports hernia.

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*Location of sports hernia pain*

R = rectus abdominis muscle, T = transversalis fascia at the posterior wall of inguinal canal, A = Adductor longus muscle and tendon, Arrowhead = inguinal ligament, Dotted arrow indicates deep inguinal ring.
**Ultrasound of conjoint ‘tendonitis’**

A short segment of tender hypoechoic conjoint tendon thickening could be seen on the symptomatic right side (arrows) in this patient with an accompanying ipsilateral Sports hernia.

Arrowheads indicate normal left conjoint tendon; P = pubic crest.

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**Sports hernia pattern of adductor longus ‘tendonitis’**

The RIGHT adductor origin was mildly tender to probing over a localized zone of hypoechoic thickening that involved the more superficial fibers of the upper tendon midline (arrows).

Comparison views of the normal LEFT adductor origin demonstrate normal tendon surface contour and underlying echotexture at the corresponding location.

On the long-axis images (bottom), the patient’s head is to the viewer’s left.

P = pubic bone. White dots indicate surface contours of adductor longus tendon distal to the origin.
Normal inguinal wall motion

Sports hernia
CT of bilateral incipient direct inguinal hernia

Non-contrast axial CT images show normal posterior inguinal wall contours at rest (arrowheads) but abnormal anterior bulge of both posterior inguinal walls on straining (arrows)

Arrowheads = posterior inguinal walls at rest; Arrows point to wall bulge on straining

Diagnosis

Clinical diagnosis of Sports hernia is difficult and requires

(a) a thorough work-up to determine the relative contribution of any coexistent groin pathology
(b) a confirmatory dynamic ultrasound or other functional examination, such as MRI
(c) judgment of an experienced surgeon and sports physician with correlation of symptoms and imaging
Treatment

• Initial management is often conservative

• 3 – 6 months trial of physical therapy targeted to core strength and core stability. If there is no improvement, a surgical repair of the conjoint tendon and posterior inguinal wall

• If the pre-operative assessment suggests an accompanying component of Groin disruption injury, the surgical procedure is extended to include adductor tendon release and obturator nerve release
Suprapubic Hernia

Key steps

• Three-way Foley catheter
• Mesh fixation
• Type of mesh
Three-way Foley catheter

Table 1. Types of mesh: Multi, multifilament and monofilament, foil

<table>
<thead>
<tr>
<th>Type of mesh</th>
<th>Pore size</th>
<th>Absorbable</th>
<th>Weight</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vicryl (Ethicon)</td>
<td>Polyglactin</td>
<td>Small 0.4 mm</td>
<td>Yes, fully (60-90 days)</td>
<td>Medium weight 56 g/m²</td>
</tr>
<tr>
<td>Dexon (SpiraTape)</td>
<td>Poliglycolic</td>
<td>Medium 0.7 mm</td>
<td>Yes, fully (60-90 days)</td>
<td></td>
</tr>
<tr>
<td><strong>Multifilament and monofilament</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Marlex (BARD) 3D Max (BARD)</td>
<td>Polypropylene</td>
<td>Small to medium 0.8 mm</td>
<td>No</td>
<td>Heavy-weight average 80-100 g/m²</td>
</tr>
<tr>
<td>Polynet (BARD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Protex (Ethicon)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Surgipro (Autostitch)</td>
<td></td>
<td></td>
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<tr>
<td>Proline (Armed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teflon (Medicaid)</td>
<td></td>
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<tr>
<td>Atrium (Atrium)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Promitec (B. Braun)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seranene (smooth)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parfene (Conviron)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Polyester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyblend (Ethicon)</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Optifine (B. Braun)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Mono</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mersilene (Ethicon)</td>
<td>Polyester</td>
<td>Large 1-2 mm</td>
<td>No</td>
<td>Medium weight 40 g/m²</td>
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<tr>
<td>Gore-Tex (Gore)</td>
<td>ePTFE</td>
<td>Very small 3 μm</td>
<td>No</td>
<td>Heavyweight</td>
</tr>
<tr>
<td><strong>Foil</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Results of the postretrieval study including 347 explanted mesh specimens
The total number of each mesh was set at 100%

<table>
<thead>
<tr>
<th>Mesh</th>
<th>No.</th>
<th>Months</th>
<th>Recurrence (%)</th>
<th>Chronic pain (%)</th>
<th>Infection (%)</th>
<th>Fistula (%)</th>
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<tbody>
<tr>
<td>Mersilene</td>
<td>31</td>
<td>28</td>
<td>65</td>
<td>13</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Marlex</td>
<td>90</td>
<td>26</td>
<td>57</td>
<td>34</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Prolene</td>
<td>90</td>
<td>26</td>
<td>57</td>
<td>40</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Atrium</td>
<td>64</td>
<td>20</td>
<td>67</td>
<td>33</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Surgipro</td>
<td>17</td>
<td>24</td>
<td>70</td>
<td>35</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Vypro</td>
<td>34</td>
<td>15</td>
<td>82</td>
<td>6</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>GoreTex</td>
<td>21</td>
<td>33</td>
<td>57</td>
<td>19</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>347</td>
<td>24</td>
<td>63</td>
<td>30</td>
<td>21</td>
<td>7</td>
</tr>
</tbody>
</table>

Femoral Hernia
Femoral Hernia

Right Side (Indirect and Femoral)
de Garengeot hernia

- The presence of the appendix within a femoral hernia (very rare)
- First described by the French surgeon Jacques Croissant de Garengeot in 1731.
- This phenomenon accounts for 0.8–1% of all femoral hernias

D Halpenny et al The MRI findings of a de Garengeot hernia
The British Journal of Radiology, March 2012:e59-e61
Femoral Hernia and Appendix

Femoral Hernia

- Femoral hernia treatment is same as other inguinal hernia
- Treat with either open or laparoscopic approach
- Understand the anatomy, in particular the vasculature, and avoid injury
Obturator Hernia

Obturator Hernia

Superior ramus of pubis
Pectineus (retracted)
Hernia
Obturator canal
Obturator membrane
Hernia
Inferior ramus of pubis
Adductor longus m.
Axial and coronal CT images of a 71-year-old female with right obturator hernia (arrow).

- Computed tomography demonstrating a right obturator hernia with small bowel obstruction secondary to incarcerated ileum (arrow).
Right Sided Obstructed Obturator Hernia with Bowel Obstruction

Repair of the Rt. Sided Obturator Hernia
Table 1: General and postoperative morbidity and mortality with methods of repair

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year–country</th>
<th>No. of cases</th>
<th>Method of repair</th>
<th>Comorbidity</th>
<th>Postoperative complications</th>
<th>Morbidity (%)</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yokoyama et al.</td>
<td>1999–Japan</td>
<td>36</td>
<td>Simple suture, 16 patched with omentum/ovary</td>
<td>–</td>
<td>3 Sepsis, 2 pneumonia, 1 heart failure, 1 intestinal obstruction, 1 anastomotic failure</td>
<td>(22)</td>
<td>(11)</td>
</tr>
<tr>
<td>Nakayama et al.</td>
<td>2002–Japan</td>
<td>12</td>
<td>With omentum, 5 with patch, 1 simple suture</td>
<td>Hypertension, hydropscoliosis, lung disease, BFD, cardiac arrhythmia, arthritis, cerebral vascular disease, duodenal ulcer</td>
<td>2 Wound infection, 1 pneumonia</td>
<td>(25)</td>
<td>(8.3)</td>
</tr>
<tr>
<td>Kammuri et al.</td>
<td>2003–Japan</td>
<td>43</td>
<td>Simple suture, 20 with omentum, 3 mesh</td>
<td>Enuric, COPD</td>
<td>4 CHF, 4 cardiac arrhythmia, 14 pneumonia, 5 wound infection, 5 sepsis</td>
<td>(37)</td>
<td>(18.6)</td>
</tr>
<tr>
<td>Chang et al.</td>
<td>2005–Taiwan</td>
<td>6</td>
<td>Suture, 6 mesh</td>
<td>COPD, LSH, AAA, RBD, kyphoscoliosis, RT hip OA</td>
<td>1 Bronchopneumonia</td>
<td>(16.7)</td>
<td>(16.7)</td>
</tr>
<tr>
<td>Thompson et al.</td>
<td>2006–Thailand</td>
<td>61</td>
<td>Simple suture, 3 with adventitious, 1 mesh</td>
<td>COPD, CHF, BFD, renal stones, lung cancer, prostatic hypertrophy, neurogenic bladder</td>
<td>3 Wound evisceration, 2 pneumonia, 1 anastomotic leakage, 1 wound infection, 1 UTI</td>
<td>(13.1)</td>
<td>(11.48)</td>
</tr>
<tr>
<td>Huang et al.</td>
<td>2007–Singapore</td>
<td>22</td>
<td>Simple suture, 1 with omentum, 1 with sigmoid colon</td>
<td>–</td>
<td>1 Intrabdominal abscess, 1 major leakage, 3 AFE, 1 wound infection, 1 pneumonia</td>
<td>(22.7)</td>
<td>(4.5)</td>
</tr>
<tr>
<td>Rodriguez-Farinas et al.</td>
<td>2008–Spain</td>
<td>16</td>
<td>Simple suture, 11 mesh</td>
<td>Cardiopathy, vascular disease, hypertension, COPD, DM, nephropathy, degenerative arthritis</td>
<td>8 Surgical, 11 medical complications</td>
<td>(12)</td>
<td>(18.3)</td>
</tr>
<tr>
<td>Marty et al.</td>
<td>2009–Singapore</td>
<td>6</td>
<td>Simple suture, 4 mesh</td>
<td>COPD, BFD, DM, OA</td>
<td>1 Pneumonia, 2 wound infection</td>
<td>(3)</td>
<td>(30)</td>
</tr>
<tr>
<td>Igar et al.</td>
<td>2010–Japan</td>
<td>10</td>
<td>Simple suture, 5 mesh</td>
<td>LFI, COPD, AF, AP</td>
<td>1 Pneumonia, 2 wound infection</td>
<td>(3)</td>
<td>(30)</td>
</tr>
</tbody>
</table>

Spigelian Hernia

- The semilunar line was first described by the Belgian anatomist Adriaan van der Spieghal in 1645.
- Almost a century later, a Flemish anatomist, Josef Klinkosch, coined the term “spigelian hernia” to describe a defect in the semilunar line.
- 1% to 2% of all abdominal wall hernias.
Left Spigelian hernia

Right sided Spigelian hernia
Minimally Invasive Spigelian Hernia Repair


Summary of Uncommon Hernias

- Understand the anatomy
- Imaging is very helpful and often allows the best approach
- Fixation methods may be a challenge
- Perform your most comfortable technique

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