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

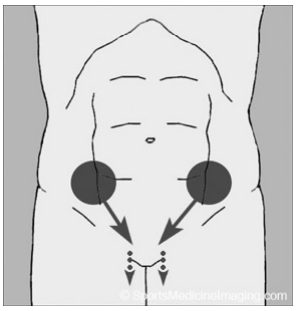
Sports Hernia

'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

Sports Hernia

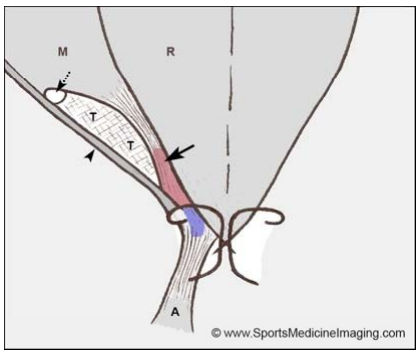


Location of sports hernia pain

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



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

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

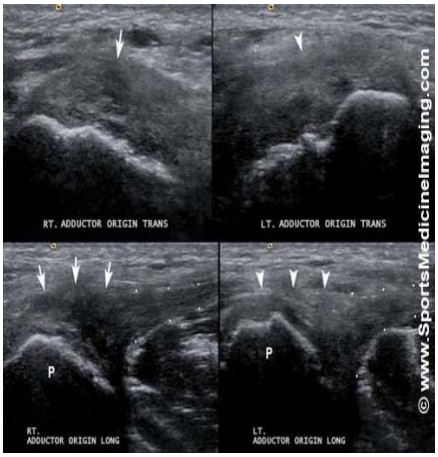
Tendon segment colored blue indicates the 'junctional' zone in which the superficial fibers of adductor longus tendon intermesh with those of conjoint tendon and may be involved in some cases of Sports hernia

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.

Sports hernia pattern of adductor longus 'tendonitis'



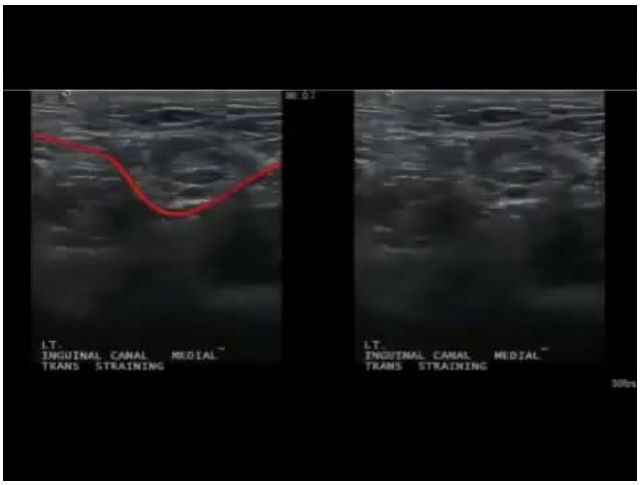
The RIGHT adductor origin was mildly tender to probing over a localized zone of hypoechoic thickening that involved the more superficial fibers of the upper tendon midline (arrows).

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

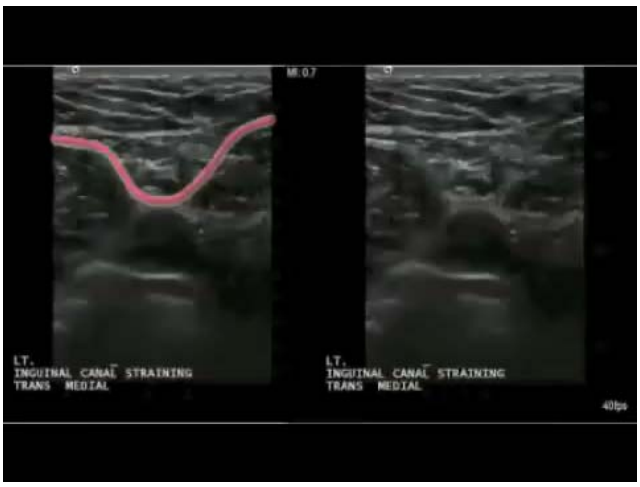
On the long-axis images (bottom), the patient's head is to the viewer's left.

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

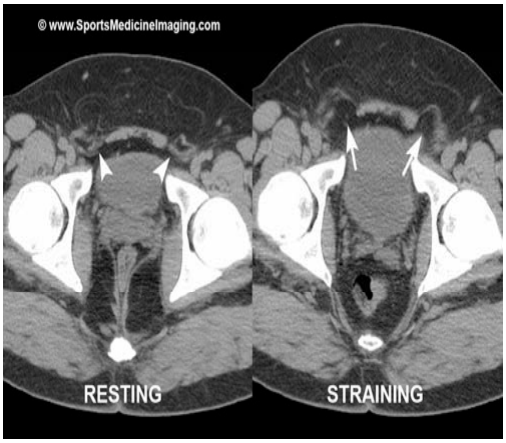
Normal inguinal wall motion



Sports hernia



CT of bilateral incipient direct inguinal hernia



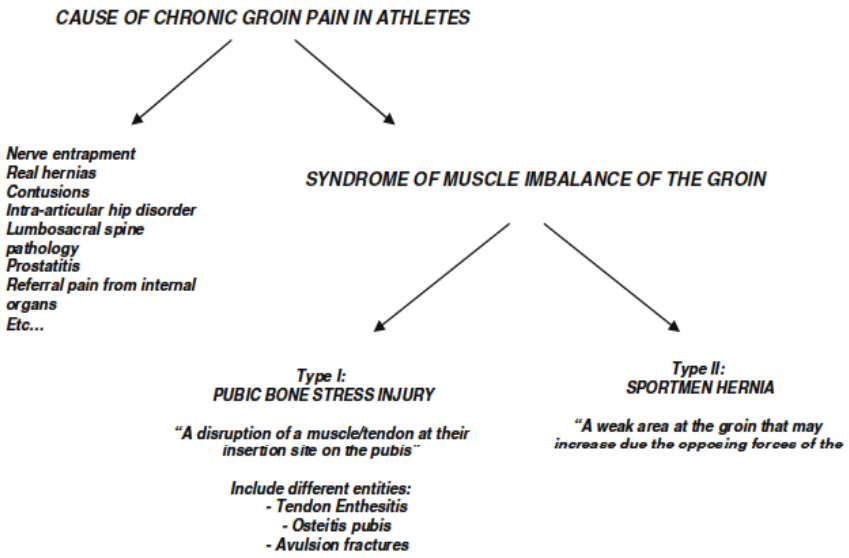
Non-contrast axial CT images show normal posterior inguinal wall contours at rest (arrowheads) but abnormal anterior bulge of both posterior inguinal walls on straining (arrows)

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



R. Bittner et al. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia [International Endohernia Society (IEHS)] Surg Endosc (2011) 25:2773–2843

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, mulifilament and monofilament, foil

Type of mesh		Pore size	Absorbable	Weight	Comments
Multi					
Vicryl (Ethicon)	Polyglactin	Small 0.4 mm	Yes, fully (60–90 days)	Medium weight 56 g/m²	Absorbable meshes primarily used in infected fields
Dexon (Syneture) Safil (B-Baun)	Polyglycolic	Medium 0.75mm	Yes, fully (60–90 days)		
Multifilament and monofilament					
Marlex (BARD) 3D Max (BARD) Polysoft (BARD) Prolene (Ethicon) Surgipro (Autosuture) Prolite (Atrium) Trelex (Meadox) Atrium (Atrium) Premilene (B-Braun) Serapren (smooth) Parietene (Covidien)	Polypropylene	Small to medium 0.8 mm	No	Heavy-weight average 80–100 g/m²	Traditional heavy meshes with small pores and little stretch. Not used in extraperitoneal spaces as they produce dense adhesions. Low infection risk
Parietene Light (Covidien) Optilene (B-Baun)		Large 1.0–3.6 mm		Light/medium weight 36–48g/m²	Traditional meshes but lighter, with larger pores
Multi					
Mersilene (Ethicon)	Polyester	Large 1–2 mm	No	Medium weight ~40 g/m²	Low infection risk and ?less inflammatory response than PP. Long-term degradation may be a problem[30]
Foil					
Goretex (Gore)	ePTFE	Very small 3 μm	No	Heavyweight	Smooth and strong. Not a true mesh but multilaminar patch. Microporous. High infection risk

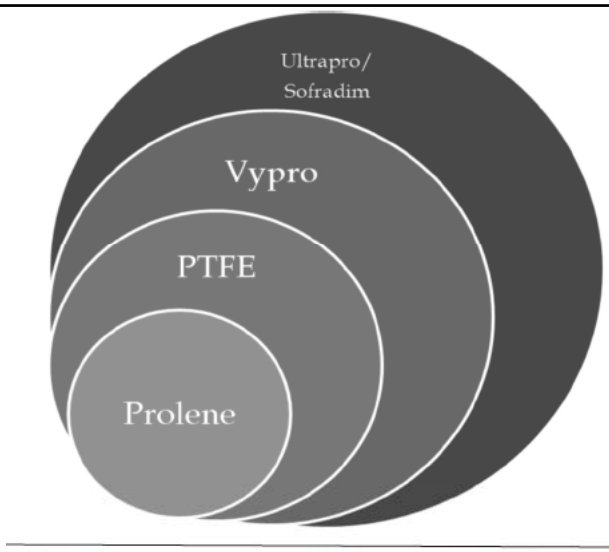


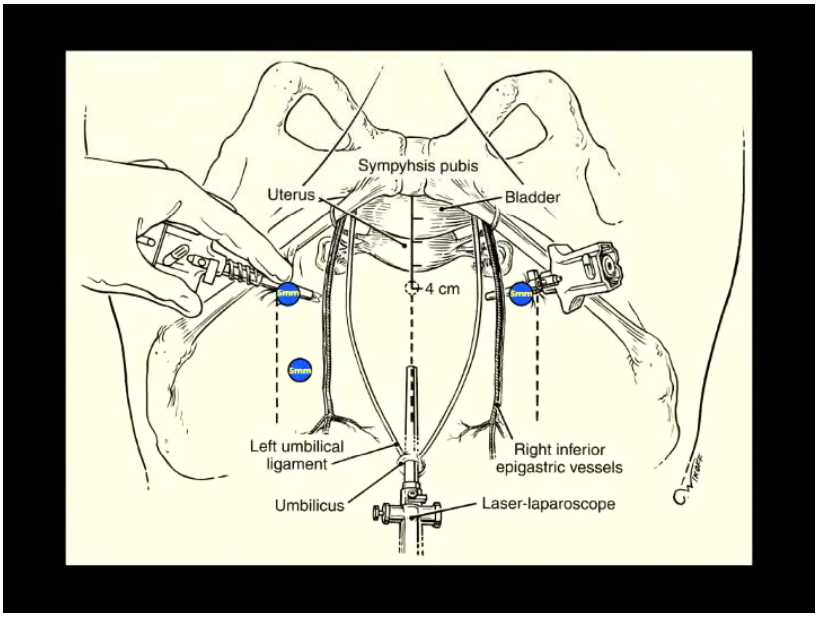
Figure 4 Shrinkage properties of different meshes. Prolene shrinks 75–94%, PTFE shrinks 40–50%, Vypro II shrinks 29%, Ultrapro shrinks < 5%, and Sofradim shrinks < 5%.

CN BROWN, JG FINCH. Which mesh for hernia repair? Ann R Coll Surg Engl 2010; 92: 272–278

Results of the postretrieval study including 347 explanted mesh specimens
The total number of each mesh was set at 100%

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

Klosterhalfen B et al. The lightweight and large porous mesh concept for hernia repair. Expert Rev.Med.Devices. 2005;2(1):1-15



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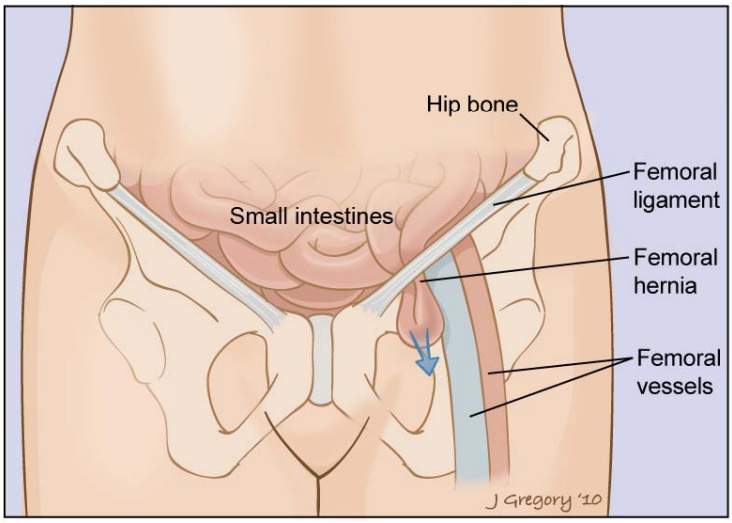
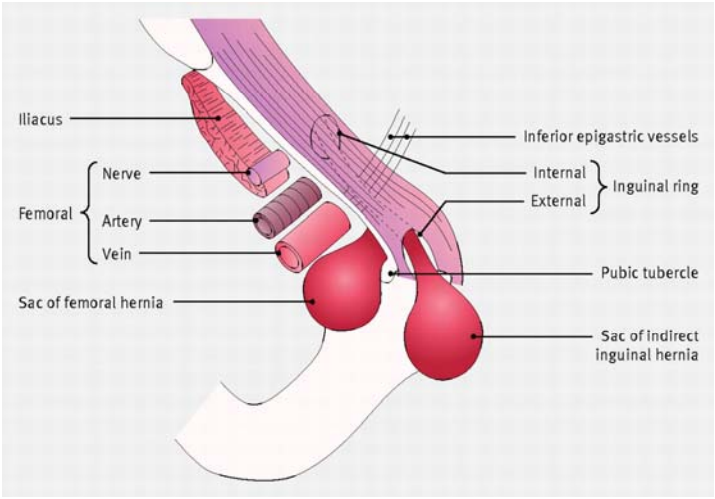
Femoral Hernia

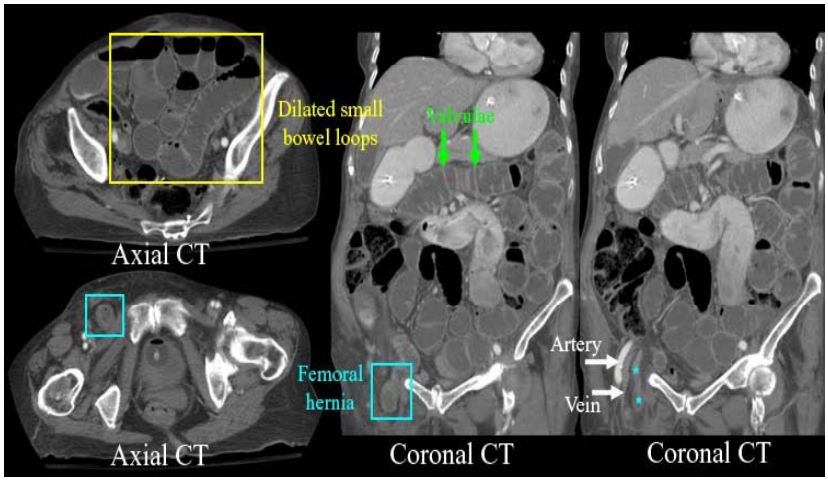
Femoral Hernia



Right Side (Indirect and Femoral)



CT (Femoral Hernia and Vessels)

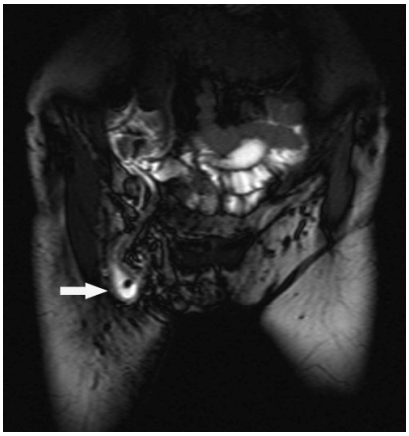


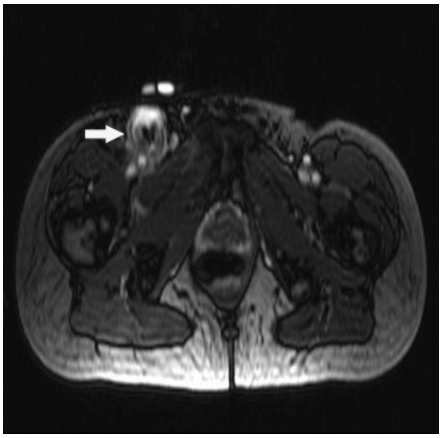
de Garengeot hernia

- 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



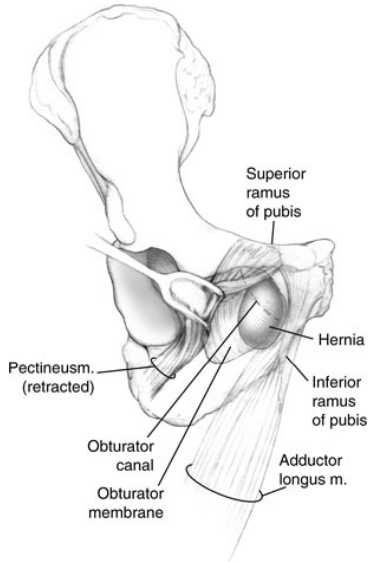


Femoral Hernia

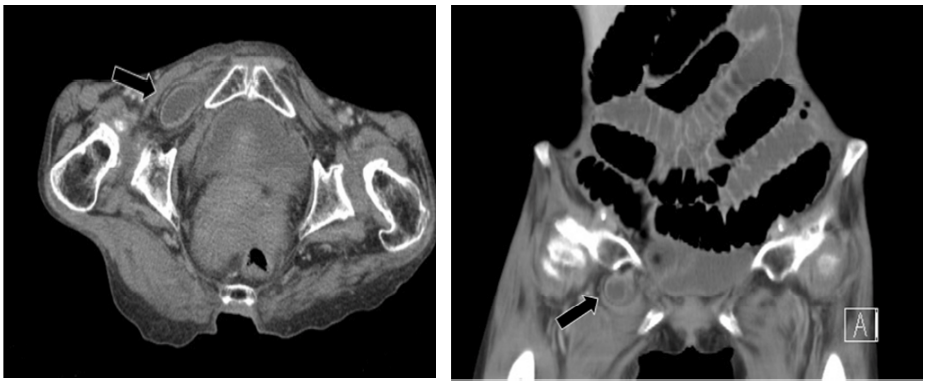
- Femoral hernia treatment is same as other inguinal hernia
- Treat with either open or laparoscopic approach
- Understand the anatomy, in particular the vasculature, and avoid injury

Obturator Hernia

Obturator Hernia

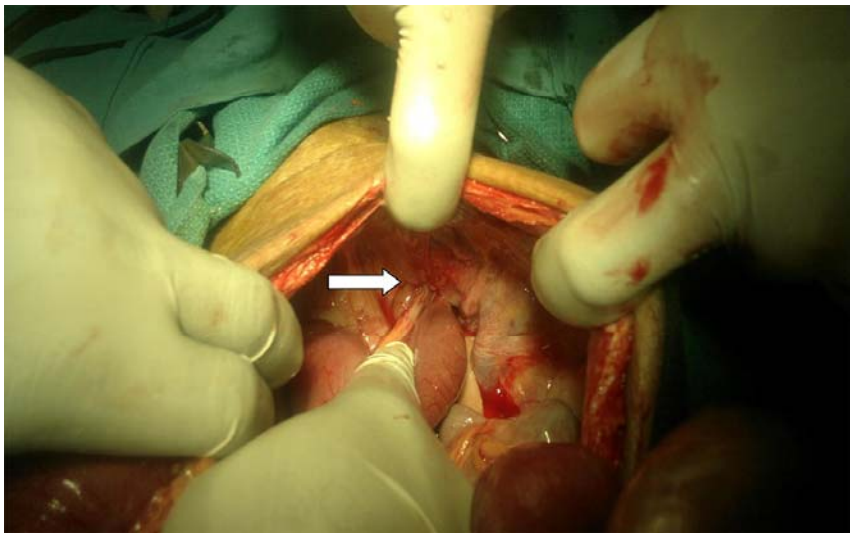


Axial and coronal CT images of a 71-year-old female with right obturator hernia (arrow).



- Computed tomography demonstrating a right obturator hernia with small bowel obstruction secondary to incarcerated ileum (arrow).

Right Sided Obstructed Obturator Hernia with Bowel Obstruction



S.R. Kulkarni et al. / International Journal of Surgery Case Reports *4 (2013) 606– 608*

Repair of the Rt. Sided Obturator Hernia

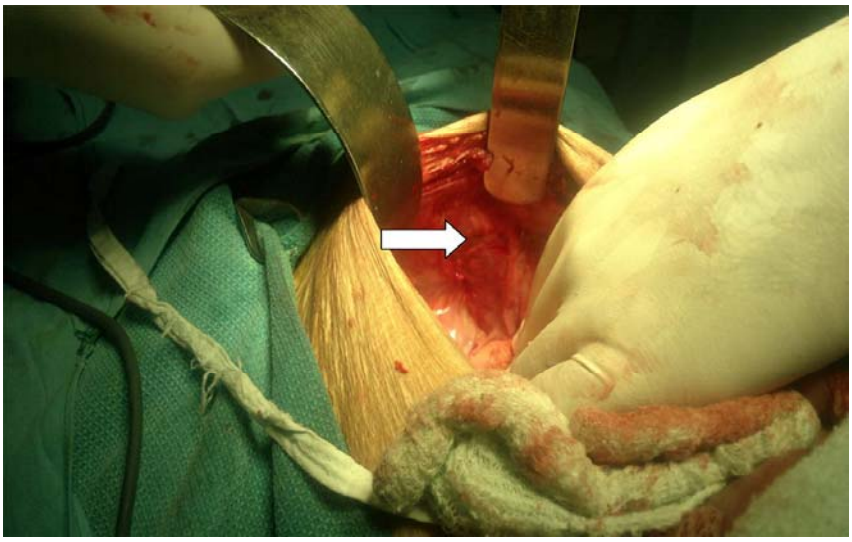


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Table 1 General and postoperative morbidity and mortality with methods of repair

Authors	Year–country	Number of cases	Method of repair	Comorbidity	Postoperative complications	Morbidity (%)	Mortality (%)
Yokoyama et al	1999–Japan	36	15 Simple suture, 16 patched with uterus/ovary, 1 mesh	–	3 Sepsis, 2 pneumonia, 1 heart failure, 1 intestinal obstruction, 1 anastomotic failure	8 (22)	4 (11)
Nakayama et al.	2002–Japan	12	6 With uterus, 5 with patch, 1 simple suture	Hypertension, kyphoscoliosis, lung disease, IHD, cardiac arrythmia, arthritis, cerebral vascular disease, duodenal ulcer	2 Wound infection, 1 pneumonia	3 (25)	1 (8.3)
Kammori et al.	2003–Japan	43	20 Simple suture, 20 with uterus/ovary, 3 mesh	Emaciation, COPD	4 CHF, 4 cardiac arrythmia, 14 pneumonia, 7 wound infection, 5 sepsis	37 (86)	8 (18.6)
Chang et al	2005–Taiwan	6	6 Mesh	COPD, LIH, AAA, RIH, kyphoscoliosis, Rt hip OA	1 Bronchopneumonia	1 (16.7)	1 (16.7)
Thanapaisan et al.	2006–Thailand	61	57 Simple suture, 3 with adjacent tissues, 1 mesh	COPD, CRF, IHD, renal stones, lung cancer, prostatic hypertrophy, neurogenic bladder	3 Wound evisceration, 2 pneumonia, 1 anastomotic leakage, 1 wound infection, 1 UTI	8 (13.11)	7 (11.48)
Haraguchi et al.	2007–Singapore	22	19 Simple suture, 1 with ovary, 1 with sigmoid colon	–	1 Intraabdominal abscess, 1 major leakage, 1 ARF, 1 wound infection, 1 pneumonia	5 (22.7)	1 (4.5)
Rodriguez-Hermosa et al.	2008–Spain	16	5 Simple suture, 11 mesh	Cardiopathy, vascular disease, hypertension, COPD, DM, neoplasm, degenerative arthritis	8 Surgical, 11 medical complications	12 (75)	3 (18.8)
Mantoo et al.	2009–Singapore	6	2 Simple suture, 4 mesh	COPD, IHD, DM, OA	1 Pneumonia, 2 wound infection	3 (50)	–
Igari et al.	2010–Japan	10	5 Simple suture, 5 mesh	LFH, COPD, AF, AP, acute cholecystitis, myelofibrosis	1 Pneumonia, 2 wound infection	3 (30)	–

IHD ischemic heart disease, *COPD* chronic obstructive pulmonary disease, *CHF* congestive heart failure, *LIH* left inguinal hernia, *AAA* abdominal aortic aneurysm, *RIH* right inguinal hernia, *OA* osteoarthritis, *CRF* chronic renal failure, *UTI* urinary tract infection, *ARF* acute renal failure, *DM* diabetes mellitus, *LFH* left femoral hernia, *AF* atrial fibrillation, *AP* angina pectoris

LOYOLA MEDICINE

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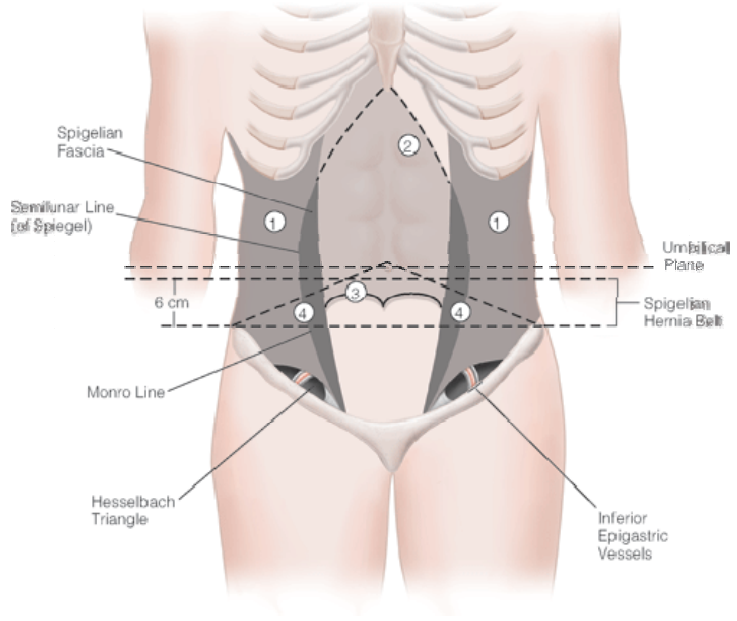
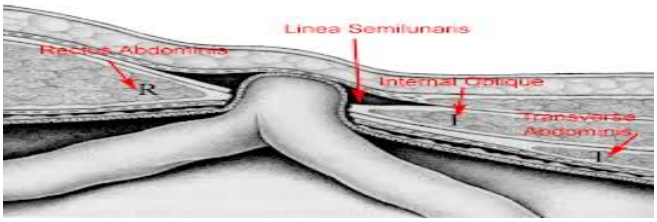
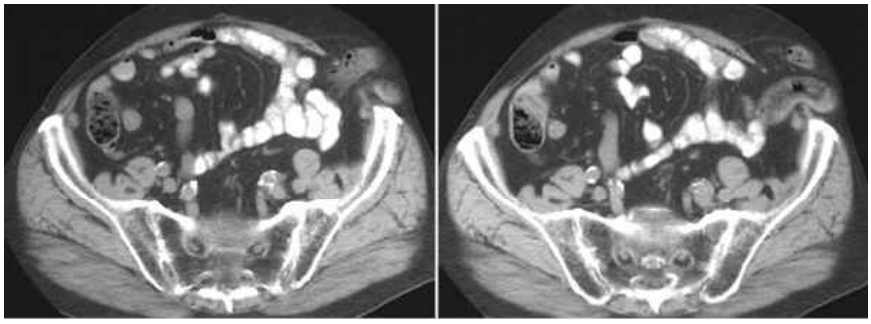
Spigelian Hernia

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

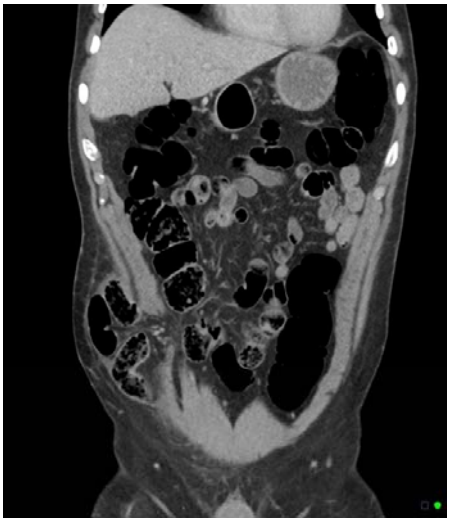






Left Spigelian hernia

Right sided Spigelian hernia



Minimally Invasive Spigelian Hernia Repair

Table 1.
List of the Recent Studies Regarding Laparoscopic Repair of Spigelian Hernias

Study Type*	Author	No. Patients*	Repair*	Mesh	Complication*
RCT	Moreno-Egea et al 2002	11 open	8 TEP	Prolene	None
		11 lap	3 IA	Parietex	
Case Series	Felix et al 1994	4	IA	Prolene	None
Case Series	Palanivelu et al 2006	8	IA	Prolene	None
Case Report	Amendolara et al 1998	2	IA	Prolene	None
Case Reports	Martell et al 2004	1	IA	Prolene	None
Case Reports	Fisher et al, 1994	1	IA	Prolene	Hematoma LIH
Case Reports	Lopez-Tomassetti et al, 2006	1	IA	PTFE Gortex Dual Mesh	None

*RCT=randomized controlled trial; open=open surgical repair, lap=laparoscopic repair; TEP=total extraperitoneal repair; IA=intraabdominal (intraperitoneal) repair, LIH=left inguinal hernia; PTFE=Polytetrafluoroethylene.

Baucom C et al. Minimally Invasive Spigelian Hernia Repair. JSLS (2009)13:263–268

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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