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Chapter

Rare Presentations of Hernia

Ashanga Yatawatta

Abstract

Rare types of hernias require the use of astute clinical judgment and high index of suspicion with supportive information obtained with cross sectional imaging. Having a clear understanding is important to the current surgeon as well as gynecologist. This chapter attempts to compile the common types of these rare hernias to discuss anatomical defects, imaging features and treatment options. Technical details of treatment are not offered for each type in detail due to limited scope of this text. The emphasis on clinical examination and judgment cannot be overstated and depending on cross sectional imaging alone for clinical diagnosis is discouraged. Introduction of minimally invasive surgery has changed the landscape for rare hernias with some new types being added—such as port site hernia—but mostly with less invasive treatment options being added to the armament. It is expected that laparoscopic hernia repair for these rare hernias will be soon the preferred modality of treatment.

Keywords: spigelian hernia, obturator hernia, Richter hernia, Amyand hernia, De Garengeot hernia, Littre hernia, reduction en-masse of hernia, interparietal hernia, sciatic hernia, perineal hernia, parastomal hernia

1. Introduction

Hernia surgery is one the commonest procedure performed today. Although the vast majority of hernias are typical on presentation, there are rare types, which can confuse even the most experienced surgeons [1]. Having an understanding behind the anatomy, appearance on imaging and treatment principles are important for the contemporary surgeon, as the likelihood of coming across one would be the limiting factor during an average career [2]. Clinical features of each type tend to be subtle and frequently overlapping, therefore a clear understanding of clinical features as well as supporting imaging information in critical for accurate diagnosis and treatment planning. Important surgical history is embedded with most of these rare hernias as all of these were recognized, treated, and taught clinically in an era with no supporting imaging facilities.

2. Spigelian hernia

Spigelian hernia occurs due to a weakness of the spigelian fascia, which is the layer between rectus muscle and semilunar line [3]. The absence of a posterior rectus sheath is a contributing factor at this location and therefore mostly occurs below the arcuate line. Most of these are smaller than 2 cm and clinical findings may be obscured by the intact anterior rectus sheath, giving rise to the

impression of no hernia being present [4]. Astute clinical judgment is needed with confirmation by CT or ultrasound on an elderly patient with atypical pain and tenderness on the typical location, as the presence of a lump may not always be associated [5].

The risk of incarceration and strangulation is high due to the small neck and lack of clinical features to suspect as such. Incidentally discovered spigelian hernia is treated aggressively to minimize this risk unlike most other inguinal hernia's, which can be observed. Traditional open anatomical repair consists of open reduction of hernia and closure of overlying muscles along the lines of least tension, but laparoscopic mesh repair offers a more simple and durable option [6]. Laparoscopic and Robotic surgery port placement of more than 10 mm size can also increase the risk of spigelian hernia, especially an angled trajectory in the subcutaneous tissues with fascial weakness not directly overlying the skin incision.

3. Obturator hernia

Obturator hernia occurs through the osseous defect bounded by pubic bone and ischium, usually covered by a membrane with fenestrations for the obturator neurovascular bundle. Weakening of the membrane leads to enlargement of this defect, leading to formation of a hernia [7]. Weight loss and pelvic side wall muscle wasting are associated, but lack of exam findings makes the diagnosis difficult. Howship-Romberg sign results from compression of the obturator nerve by hip flexion but current diagnosis is mostly aided by CT.

Open exploration is usually needed due to the partial of complete bowel obstruction usually associated with the presentation [8]. Complete reduction of the hernia sac and contents is performed and preperitoneal fat pad found within the obturator canal needs to be reduced, oftentimes requiring manipulation of the nerve with a nerve hook. The defined margin of the defect is covered with prosthetic mesh. The place of laparoscopy is usually limited to non-emergent situations and follows the same principles as open repair [9].

4. Lumbar hernia

Two different types are encountered according to the anatomy. Superior lumbar triangle is bounded by 12th rib, paraspinal muscles, and the internal oblique muscles (Grynfeltt's triangle) While the Inferior lumbar triangle, which is bounded by the Iliac crest, latissimus dorsi muscle, and external oblique muscle leads to Petit's triangle hernia [10, 11]. The overlapping nature of bulky muscles prevent the usual occurrence of hernias in these locations but acquired weakness after surgery, especially muscle cutting incisions or nerve damage leads to protrusion of lumbar fascia with extraperitoneal fat and an occasional hernial sac. The large defect makes incarceration difficult, but patient may complain of back pain, cosmesis, or weakness of activities associated with use of these muscles, in addition to the presence of a visible lump. CT is essential to diagnose especially with a prior incision to exclude incisional hernia [12].

Treatment is limited due to fixed bony landmarks anchoring muscle and large overlapping mesh repairs offers the best options. Both open and laparoscopic options are available but open repair adds the risk of further muscle weakness or nerve damage in addition to wound complications [13].

5. Richter's hernia

Richter's hernia occurs when part of the circumference of the intestinal wall is contained in a hernia sac, most commonly incarcerated. This can progress to strangulation but typically will not demonstrate obstructive features due to patency of part of the lumen [14]. This atypical feature leads to high rates of missing the diagnosis, even among experienced surgeons. Common anatomical sites include femoral and indirect inguinal hernias and of increasing frequency in the laparoscopic era, port site hernias.

Careful clinical examination might allow discovery of the tender lump at the common sites but mostly needs confirmation with CT.

Treatment depends on the degree of ischemic insult to the bowel wall. Laparoscopic assessment would be appropriate with viable bowel being reduced and mesh repair being optimal. However, any concerns for strangulation would need open exploration for bowel assessment, resection if necessary and anatomical repair of the hernia. An exception would be early port site hernia after laparoscopic surgery, where anatomical repair with non-absorbable sutures would be appropriate for a defect less than 2 cm [15].

6. Amyand's hernia

Amyand's hernia describes the presence of appendix within the hernia sac and typically found at surgery for inguinal hernia [16, 17]. The appendix may or may not be inflamed at time of surgery and treatment differs accordingly. Although typical Amyand's hernia are described for inguinal hernia, it is likely to be found in any viscera containing sac, but only femoral hernias are given a different name, as De Garengeot's hernia.

Treatment of non-inflamed appendix found at time of hernia surgery does not include appendectomy for two reasons. Appendectomy in not indicated and subsequent episodes of appendicitis can easily be confirmed by CT and laparoscopically treated, which is different when only open surgery was the surgical option. In addition, placing prosthetic mesh increases the risk of infection after breaching intestinal lumen. Therefore, incidentally found appendix could be left alone and hernia repair performed as indicated, mostly with mesh placement [18].

The presence of inflamed appendix changes this approach significantly. Appendectomy and source control of sepsis is paramount for a good outcome. If the incision for hernia is not appropriate, a suitable incision is beneficial for safe access. A midline incision will also allow closure of weakened area of the posterior wall with absorbable sutures from within and allow an interval hernia repair with mesh. Use of prosthetic mesh is discourage although some have shown acceptable results with absorbable or biological mesh placement.

In the modern era of high-quality cross-sectional imaging, surprises in the OR should be the exception rather than the rule. Therefore, proper planning and informed consent should be carried out before heading to the OR. This would still allow surgeons to offer treatment options from a laparoscopic approach, especially for bilateral hernia.

7. De Garengeot's hernia

The presence of appendix in the femoral hernia sac is rare and follows the same principles as for Amyand's hernia [19, 20]. Femoral hernia, having less content

compared with an inguinal hernia, makes finding an appendix even more remote. However, recurrences for femoral hernia are much less without use of prosthetic mesh and therefore, in the appropriate clinical setting, a combined appendectomy and femoral hernia repair would be having less long-term complications [21].

8. Littre's hernia

The unusual presence of a Meckel's diverticulum in a hernia sac is described as a Littre's hernia. This hernia is inguinal in half of cases and umbilical or femoral in the other half [22, 23]. The presence of ileum attached to the diverticulum is not unusual in addition to the persistent omphalo-mesenteric tract. Inflammation of the diverticulum at time of hernia surgery in highly unusual and according to current surgical principles, non-inflamed diverticula are not resected during incidental discovery, unless in a child. Diverticulitis and less frequent perforation need resection and source control and hernia repair has to be limited to anatomical repair or biological mesh placement, with resultant high recurrence rates. A safer alternative would be to defer the hernia repair with prosthetic mesh for a later date and treat the diverticulum alone. Depending on experience and technical expertise, an argument could be made for either of these procedures as laparoscopic procedures, in select cases [24].

9. Reduction en-masse

Attempts at aggressive reduction of incarcerated hernia can lead to false "reduction" at skin level but intestine loops being still trapped within a no yielding fascial "neck" and can lead to persistent incarceration and strangulation. Implications of these late complications are devastating due to failure to recognize early and uncontained leakage leading to widespread peritonitis, unlike local peritonitis within the hernia sac.

Inguinal hernia is the commonest type complicated by reduction en-masse, as the first treatment option at initial presentation with incarceration seems to be attempted reduction. Health economics have forced emergency room visits to be kept brief and this might have made this option more popular, as the expected enthusiasm for emergency surgery for incarceration is less than the eagerness of ER providers in testing "their method of reduction". A recent review suggests to observe the patient overnight in ER, following reduction for possible reduction en-masse and offer elective surgery within a reasonable time period afterward [25].

10. Interparietal hernia

This rare hernia type occurs due to a fascial defect leading to the hernia sac being positioned within the layers of the abdominal wall. It may be considered as a hernia in evolution but not showing protrusion through the skin. These hernias are mostly associated with incisions and port site hernias, are an example. Richter type hernia and spigelian hernia are strongly associated with interparietal hernia type [26].

Clinical features are not typical, and diagnosis is based off cross sectional imaging. Diagnostic laparoscopy in invasive for diagnosis but can be combined with treatment at same setting. Smaller fascial defects—typically less than 2 cm—may show good results with anatomical repair but larger hernias will need mesh placement. Laparoscopic mesh repair is mostly appropriate but in the presence of questionable bowel viability, an open repair and bowel resection might need to be combined with a component separation technique to bridge the defect [27].

11. Sciatic hernia

The greater sciatic foramen can accommodate a hernia sac for unclear reasons. These are extremely uncommon and frequently asymptomatic until obstruction becomes the first symptom. A tender lump may be felt on the gluteal region, but cross-sectional imaging is crucial for correct diagnosis. Sciatic nerve irritation by the pressure is an unusual presentation [28].

Treatment is exploration via laparotomy in the presence of questionable viability of bowel. Reduction can be achieved with gently traction but attention to sciatic nerve will be crucial to prevent complications. Prosthetic mesh placement is usually preferred. An unusual method of transgluteal approach has been described but this needs very clear diagnosis and positive information about the viability of bowel before commitment [29].

12. Perineal hernia

Loss of muscle tone of the pelvic diaphragm leads to weakness and descent of viscera through the perineum. This is rare and typically associated with acquired defects as well congenital abnormalities. Common surgeries associated include abdominoperineal resection, vaginal hysterectomy, and perineal prostatectomy. Multiple vaginal deliveries—especially with difficult, prolonged labor—can lead to primary perineal hernias in older women and these can be quite large in size. An important distinction from utero-vaginal prolapse or rectal prolapse needs clinical acumen and cross-sectional imaging [30].

Treatment approach is transabdominal with some cases needing additional trans-perineal approach as well. Principles remain the same with reduction of hernia sac, inspecting contents to confirm viable bowel and repair with mesh. The bony pelvis is used to anchor the mesh and similarities of treatment of diaphragmatic hernia are seen in treatment of perineal hernia with the types of mesh and anchoring methods. Anatomical repairs are suggested for small hernias but due to primary pathology remaining at large, recurrences are expected to be high [31].

13. Parastomal hernia

Parastomal hernias are part of the process in creating any stoma. The defect in the muscular layer is needed for the bowel to be positioned without undue tension or risk to blood supply but larger than necessary space or widening space with time, will allow the additional room to be used for visceral herniation. The principles of muscle splitting and cruciate incisions on the fascia can only minimize this risk [32].

A surprisingly 50% of colostomies will result in a parastomal hernia. However, due to the laxity at the neck, the vast majority remain asymptomatic and treatment is only recommended when ostomy function is impaired or due to cosmetic concerns. Part of this reluctance is due to same risk remaining with the treatment of the parastomal hernia.

The treatment options include primary fascial repair, prosthetic repair, and stoma relocation [33, 34]. The least complex of these options would be fascial repair with a peri-stomal incision, but this carries a high recurrence rate. The only advantage is avoidance of entering the peritoneal cavity. This surgery is recommended for patient at high risk for a laparotomy, but a better option would be nonintervention rather than increasing the risk of a procedure with a high recurrence rate.

Relocation may be an option but requires a laparotomy and carries hernia formation at previous site as well as new site. Use of mesh would be one way to minimize this risk, but other complications associated with erosion, infection, and obstruction are important to consider in the decision making. The least risk of recurrence is with use of prosthetic mesh but the complications of placing a permanent foreign body next to bowel carries significant risks by itself. The method of mesh placement can be laparoscopic or open and can be placed onlay, retro-rectus or intra-abdominally. The Sugarbaker method of placing the mesh against the wall, creating a long angulated tunnel for the bowel to exit, seems to be one of the simplest methods when done as a laparoscopic procedure. However, many methods have been described with excellent results and no method is inferior, as long as basic surgical principles are followed.

Author details

Ashanga Yatawatta[1,2]

1 Duke LifePoint Health System, Tennessee, United States

2 SurgTech Surgical Solutions LLC, Las Vegas, United States

*Address all correspondence to: ayatawatta@gmail.com

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References

[1] The HerniaSurger Group. International guidelines for groin hernia management. Hernia. 2018;**22**:1-165

[2] Simons MP, Aufenacker T, Bay-Nielsen M, et al. European hernia society guidelines on the treatment of intuinal hernia in adult patients. Hernia. 2009;**13**:343-403

[3] Rankin A, Kostusiak M, Sokker A. Spigelian hernia: Case series and review of the literature. Visceral Medicine. 2019;**35**(2):133-136

[4] Pinna A, Cossu ML, Paliogiannis P, et al. Spigelian hernia: A series of cases and literature review. Annali Italiani di Chirurgia. 2016;**87**:306-311

[5] Alfonzo M et al. Point of care ultrasound identification of an abdominal hernia. Pediatric Emergency Care. 2017;**33**(8):596-598

[6] Barnes TG, McWhinnie DL. Laparoscopic spigelian hernia repair: A systemic review. Surgical Laparoscopy, Endoscopy & Percutaneous Techniques. 2016;**26**(4):265-270

[7] Drokas DD et al. Radiographic and surgical findings of type 1 obturator hernias in patients with refractory groin pain. Clinical Imaging. 2019;**55**:35-40

[8] Sa NC, Silva VCM, et al. Rare case of incarcerated obturator hernia: Case report and review of literature. International Journal of Surgery Case Reports. 2017;**37**:157-160

[9] Caine EA, Newman TH, et al. Subacute bowel obstruction secondary to an obturator hernia: case report and a review of the literature. Journal of Surgical Case Reports. 2017;**2017**(4):rjx061

[10] Piozzi GN et al. Management criteria of Grynfeltt's lumbar hernia: A case report and review of literature. Cureus. 2019;**11**(1):e3865

[11] Graulas A, Lallemand B, Krick M. The retroperitoneoscopic repair of a lumbar hernia of petit. Case report and review of literature. Acta Chirurgica Belgica. 2004;**104**(3):330-334

[12] Martin J et al. MDCT of abdominal wall lumbar hernias: anatomical review, pathological findings and differential diagnosis. Surgical and Radiologic Anatomy. 2012;**34**(5):455-463

[13] Capasso L et al. Primary acquired Grynfeltt hernia: two new cases and literature review. Annali Italiani di Chirurgia. 2018;**89**:255-260

[14] Foster D, Nagarajan S, Panait L. Richter-type spigelian hernia: A case report and review of the literature. International Journal of Surgery Case Reports. 2015;**6C**:160-162

[15] Sahsamanis G, Samaras S, Gkouzis K, Dimitrakopoulos G. Strangulated Richter's incisional hernia presenting as an abdominal mass with necrosis of the overlapping skin. A case report and review of the literature. Clinical Case Reports. 30 Jan 2017;**5**(3):253-256. DOI: 10.1002/ccr3.776

[16] Kromka W, Rau AS, Fox CJ. Amyand's hernia with acute gangrenous appendicitis and cecal perforation. A case report and review of the literature. International Journal of Surgery Case Reports. 2018;**44**:8-10

[17] Shaban Y et al. Amyand's hernia: A case report and review of the literature. International Journal of Case Reports. 2018;**47**:92-96

[18] Holmes K, Guinn JE. Amyand hernia repair with mesh and

appendectomy. Surgical Case Reports. 2019;**5**(1):42

[19] O'Connor A, Asaad P. De Garengeot's hernia with appendicitis – a rare cause of acutely painful groin swelling. Journal of Surgical Case Reports. 2019;**2019**(5):rjz142

[20] Bidarmarghz B, Borrowdale RC, Raufian K. A rare presentation of appendicitis inside the femoral canal: Case report and literature review. Surgical Case Reports. 2018;**4**(1):143

[21] Linder S, Linder G, Mansson C. Treatment of de Garengeot's hernia. A meta analysis. Hernia. 2019;**23**(1):131-141

[22] Schizas D et al. Littre's hernia: A systemic review of the literature. Hernia. 2019;**23**(1):125-130

[23] Pampal A, Aksakal ED. Littre hernia in childhood: a case report with a brief review of the literature. African Journal of Paediatric Surgery. 2011;**8**(2):221-224

[24] Skandalakis PN, Zoras O, Skandalakis JE, Mirilas P. Littre hernia: surgical anatomy, embryology and technique of repair. The American Surgeon. 2006;**72**(3):238-243. Review

[25] Yatawatta A. Reduction en-masse of inguinal hernia: A review of a rare and potential fatal complication following reduction of inguinal hernia. Case Reports. 2017;**2017**:bcr-2017-220475

[26] Davis JR et al. Interparietal hernia complicating retromuscular ventral hernia repair. The American Surgeon. 2016;**82**(7):658-659

[27] Sakamoto T et al. Laparoscopic reduction and repair of a strangulated interparietal inguinal hernia. Asian Journal of Endoscopic Surgery. 2016;**9**(1):83-85

[28] Karasaki T, Nakagawa T, Tanaka N. Sciatic hernia: Is it really rare? Surgery Today. 2014;**44**(6):1079-1083

[29] Losanoff JE, Basson MD, Gruber SA, Weaver DW. Sciatic hernia: A comprehensive review of the world literature (1900-2008). American Journal of Surgery. 2010;**199**(1):52-59

[30] Balla A et al. Perineal hernia repair after abdominoperineal excision or extrelevator abdominoperineal excision. A systemic review of the literature. Techniques in Coloproctology. 2017;**21**(5):329-336

[31] Musters GD et al. Is there a place for a biological mesh in perineal hernia repair? Hernia. 2016;**20**(5):747-754

[32] Fox SS et al. An evaluation of parastomal hernia repair using the Americas hernia society quality collaborative. The American Surgeon. 2017;**83**(8):881-886

[33] Chapman SJ, Wood B, Drake TM, Young N, Jayne DG. Systemic review and meta-analysis of prophylactic mesh during primary stoma formation to prevent parastomal hernia. Diseases of the Colon and Rectum. 2017;**60**(1):107-115. review

[34] Antoniou SA et al. European hernia society guidelines on prevention and treatment of parastomal hernias. Hernia. 2018;**22**(1):183-198