

# An Octagon of Hernias: Atypical Presentation of Bilateral Inguinal (Pantaloon), Femoral, and Obturator Hernias in an Active Geriatric Patient

**AUTHORS:**Khan IA<sup>a</sup>; Ceballos N<sup>b</sup>; Seaver C<sup>b</sup>**CORRESPONDING AUTHOR:**

Christopher Seaver, MD  
 Division of General Surgery  
 Memorial Healthcare System  
 601 N. Flamingo Road, Ste. 409  
 Pembroke Pines, FL 33028  
 Email: cseaver@mhs.net

**AUTHOR AFFILIATION:**

a. Florida International University Herbert  
 Wertheim College of Medicine  
 Miami, FL 33199

b. Division of General Surgery  
 Memorial Healthcare System  
 Hollywood, FL 33026

<b>Background</b>	A 69-year-old male with bilateral inguinal, femoral, and obturator hernias was treated with a da Vinci robotic hernia mesh-based repair.
<b>Summary</b>	A 69-year-old physically active male with a history of abdominal liposuction was referred to our clinic with a several-month history of bilateral bulging groin masses with associated weight loss and constipation. Physical examination revealed two reducible inguinal hernias bilaterally. During an elective da Vinci Xi™ robotic bilateral inguinal herniorrhaphy, it was discovered the patient also had concurrent bilateral obturator and femoral hernias. The four bilateral defects were repaired with a 3D Max mesh placed in the preperitoneal space and sutured with 2-0 Vicryl. Hernias occur due to a weakening of the body wall resulting in protrusion of the tissue normally found within it. Hernias commonly present as a bulging mass, which can be associated with pain or discomfort. The presence of multiple hernias simultaneously occurring is rare—there are no reports of one patient having eight hernias. Herein, we add to the literature a case of a patient with eight hernias repaired using the da Vinci Xi robotic system. This case highlights the value of performing robotic herniorrhaphy, which allows surgeons to directly inspect the anatomic locations where indirect inguinal, direct inguinal, femoral, and obturator hernias occur, especially in patients with risk factors such as an underweight BMI so that occult hernias can be detected and repaired intraoperatively.
<b>Conclusion</b>	A patient with a multitude of concurrent hernias has yet to be recorded in the literature. This report describes a case in which many occult hernias were identified intraoperatively and subsequently repaired. The hernias included bilateral direct inguinal hernias, indirect inguinal hernias, femoral hernias, and obturator hernias, totaling eight hernias. The objective of this case report is to underscore the importance of thorough detection of occult hernias intraoperatively that were not identified preoperatively in order to provide the utmost level of care with herniorrhaphy. Furthermore, in addition to novelty, this is important in preventing re-operation if not initially detected and repaired.
<b>Key Words</b>	robotic-assisted herniorrhaphy; bilateral pantaloon hernias; femoral hernia; obturator hernia
<b>Abbreviations</b>	BMI: body mass index TAPP: transabdominal preperitoneal approach TAP: transverse abdominis plane block TEP: total extraperitoneal approach

**DISCLOSURE STATEMENT:**

The authors have no conflicts of interest to disclose.

**FUNDING/SUPPORT:**

The authors have no relevant financial relationships or in-kind support to disclose.

**RECEIVED:** May 1, 2021

**REVISION REVISED:** July 15, 2021

**ACCEPTED FOR PUBLICATION:** JULY 27, 2021

**To Cite:** Khan IA, Ceballos N, Seaver C. An Octagon of Hernias: Atypical Presentation of Bilateral Inguinal (Pantaloon), Femoral, and Obturator Hernias in an Active Geriatric Patient. *ACS Case Reviews in Surgery*. 2024;4(4):78-83.

## Case Description

Derived from the Greek word “hernios” meaning bud or offshoot, the Ancient Egyptians initially described hernias in the 15<sup>th</sup> century,<sup>1</sup> and now result in more than 800,000 hernia surgeries annually in the United States.<sup>2</sup> Hernias occur due to a weakening of the body wall, resulting in protrusion of the tissue normally found within it.<sup>3</sup> The pathogenesis of hernias is multifactorial due to alterations in collagen metabolism of supporting structures, such as increased turnover of type IV collagen and reduced degradation of immature type III collagen<sup>4</sup> as well as performing activities that increase intraabdominal pressure such as lifting heavy objects, constipation, and chronic coughing.<sup>5</sup> Hernias are one of the most common abdominal pathologies, with indirect inguinal hernias being the most commonly encountered type of abdominal hernia, followed by direct inguinal hernias, femoral hernias, and obturator hernias.<sup>4,6,7</sup> Inguinal herniorrhaphy is the most common surgery performed by general surgeons,<sup>4</sup> and during minimally invasive approaches such as laparoscopic and robotic inguinal herniorrhaphy, occult hernias are often found intraoperatively, which were not diagnosed preoperatively through physical examination.<sup>8-10</sup> Detection of occult hernias is crucial since failure to detect and surgically repair them can lead to persistent groin or pelvic pain postoperatively and subsequent herniorrhaphies. We discuss the surgical intervention of an exceedingly rare case of a patient undergoing robotic inguinal herniorrhaphy in which several hernias were identified intraoperatively and subsequently repaired.

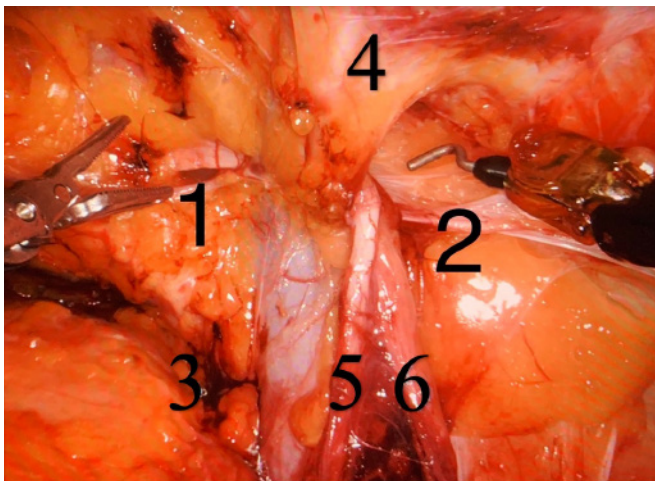
A 69-year-old physically active male presented to the clinic due to a several-month history of bilateral groin bulging, worse on the right side, which increased in size with lifting and straining. There was associated significant weight loss, discomfort, and constipation. Workup included laboratory studies, imaging, upper endoscopy, and colonoscopy, which were unremarkable. He denied fevers, chills, nausea, vomiting, and changes in bladder or bowel habits. Relevant surgical history included abdominal liposuction surgery. There was no pertinent past medical history, family history, or social history. Physical examination revealed vital signs within normal limits and an underweight body mass index (BMI) of 17.9 kg/m<sup>2</sup>. Abdominal exam revealed two spontaneously reducing groin bulges bilaterally, consistent with bilateral symptomatic reducible inguinal hernias. The patient was scheduled for an elective robotic bilateral inguinal herniorrhaphy with mesh placement.

The patient was taken to the operating room for a da Vinci Xi robotic bilateral inguinal herniorrhaphy. The patient was placed under general endotracheal anesthesia, underwent transverse abdominis plane (TAP) blocks, and a robotic-assisted transabdominal preperitoneal (TAPP) approach was utilized. After docking the robot, invaginations of the peritoneum in the bilateral inguinal region representing bilateral inguinal hernias were noted as well as by the femoral and obturator orifices bilaterally. Beginning on the right, the peritoneum was opened from the anterior superior iliac spine to the medial umbilical ligament directly above the aforementioned invagination of the peritoneum. Superior and inferior peritoneal flaps were dissected, and the bladder was bluntly taken down to the midline, providing excellent visualization of the critical view of the myopectineal orifice (Figure 1) and the space of Retzius (Figure 2). In accordance with the European Hernia Society groin hernia classification,<sup>11</sup> upon taking down the bladder, an incarcerated size 2 obturator hernia, a size 2 femoral hernia, a size 3 direct inguinal hernia, and a size 1 indirect inguinal defect containing hernia sac and lipomatous tissues were identified and reduced while avoiding any contact with the spermatic cord structures (Figures 3). A 3D Max Mesh was placed in the right preperitoneal space and, using 2-0 Vicryl, was secured to Cooper's ligament in the midline, superior medially to the rectus, directly above the defect by about 1 cm, and superior laterally to the body wall (Figure 4). This secured the mesh in four locations, covering all four defects with coverage in all directions. The peritoneal flaps were closed with a running 3-0 absorbable V-Loc suture, and a primary peritoneal defect was repaired with a single interrupted suture (Figure 5). In the same fashion, the left-sided peritoneum was opened from lateral to medial above the defects, peritoneal flaps were created, and the bladder was taken down to the midline. After this, a size 2 obturator hernia, a size 2 femoral hernia, a size 3 direct inguinal hernia, and a size 1 indirect inguinal defect containing the hernia sac and lipomatous tissues were identified, which were reduced. A 3D Max mesh was placed in the preperitoneal space and fixated in the same fashion as the right. Peritoneal flaps were covered with a running 3-0 absorbable V-Loc suture. The robot was undocked, ports were removed under direct vision, and the incised tissue was closed with absorbable sutures.

The patient tolerated the procedure, and his postoperative course was unremarkable. He experienced minimal pain postoperative day one, was discharged with pain medication, and was instructed not to perform heavy lifting

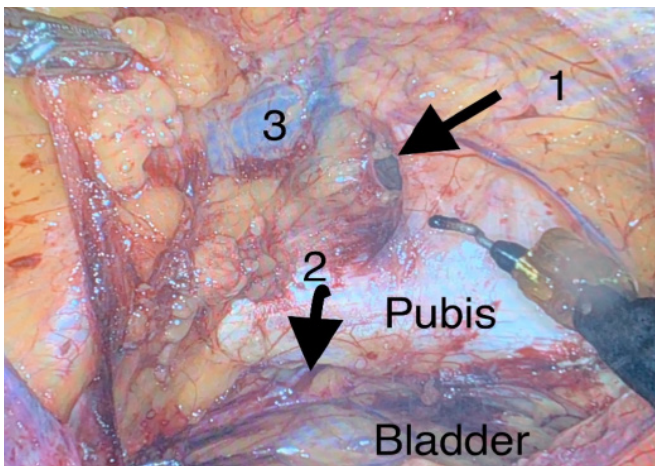
and to follow up for routine postoperative evaluation in two weeks. During the follow-up encounter, he endorsed mild fullness in his right groin. He noted the discomfort is improving over time. Additionally, he gained 1 kg in the two weeks following surgery. He denied groin pain or changes in bladder or bowel habits. On physical examination, he had mild right groin fullness, without tenderness to palpation, and without a palpable seroma, likely due to residual edema.

**Figure 1.** Right-Sided Dissection Revealing the Myopectineal Orifice with Pantaloon Hernias. Published with Permission



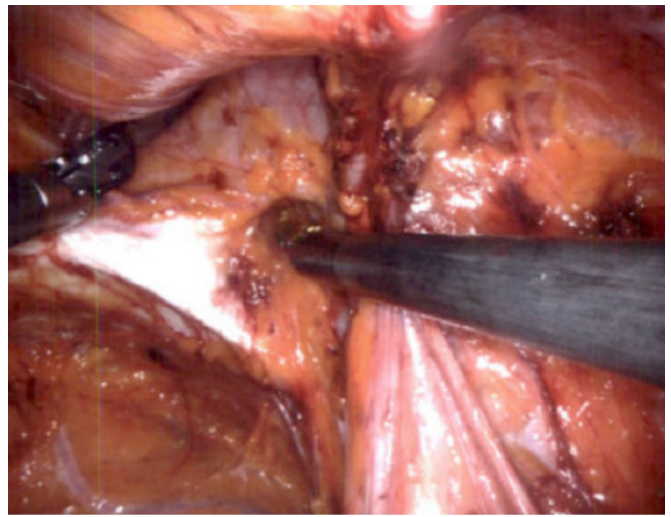
1) direct inguinal hernia; 2) indirect inguinal hernia; 3) femoral space; 4) inferior epigastric vessels; 5) vas deferens; 6) testicular sessel

**Figure 2.** Right-Sided Dissection Revealing the Space of Retzius. Published with Permission

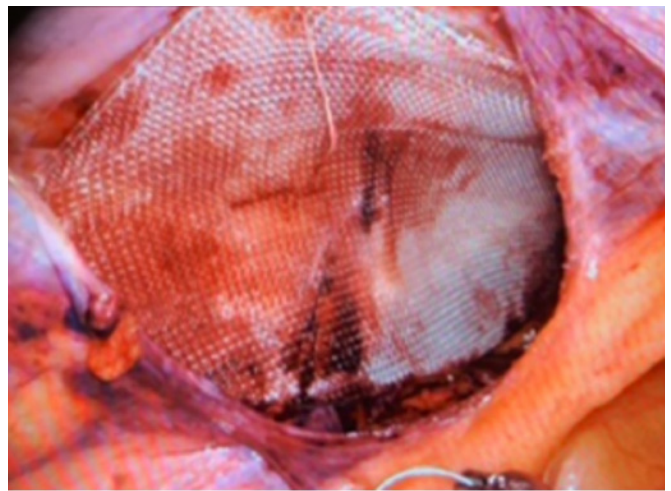


1) femoral hernia; 2) obturator hernia; 3) external iliac vein

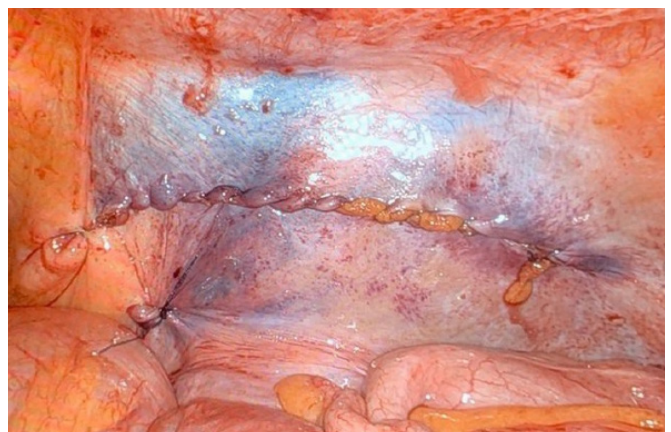
**Figure 3.** Right-Sided Four Unilateral Hernias Visualized during Robotic Repair View One. Published with Permission



**Figure 4.** 3D Max Mesh Placement. Published with Permission



**Figure 5.** Peritoneal Closure with V-Loc Suture. Published with Permission



## Discussion

This case report describes the presence of bilateral indirect inguinal, direct inguinal, femoral, and obturator hernias in one patient. Indirect and direct inguinal hernias occur superiorly to the inguinal ligament, with indirect inguinal hernias occurring lateral to the inferior epigastric vessels through the lateral inguinal fossa and direct inguinal hernias occurring medially to the inferior epigastric vessels through the medial inguinal fossa.<sup>8</sup> Direct and indirect inguinal hernias occurring ipsilaterally is known as a pantaloon hernia.<sup>12</sup> Femoral and obturator hernias occur inferior to the inguinal ligament, with femoral hernias occurring through the femoral canal and obturator hernias occurring in the obturator canal.<sup>8</sup> While the presence of multiple hernias in one patient has been described in the literature,<sup>13-17</sup> the maximum number of hernias described in one patient in the literature is six.<sup>8</sup> To our knowledge, this is the first reported case of eight hernias in one patient.

Hernias classically presents as a reducible groin bulge or mass that can cause patients discomfort when they perform activities that increase intra-abdominal pressure, such as straining while defecating or lifting heavy objects.<sup>5</sup> A patient with a hernia can be asymptomatic or symptomatic with tenderness and/or bulging at the hernia site, pain, chronic constipation, nausea, vomiting, bowel obstruction, or septic shock. Patients with reducible hernias typically have milder symptoms, but patients with irreducible (incarcerated) hernia or strangulated hernias can develop more severe symptoms, which are a surgical emergency. In our patient's case, he experienced chronically progressive discomfort caused by bilateral groin bulges, with significant weight loss and constipation prior to surgery. Hernias are primarily diagnosed clinically, with a thorough history and physical examination being sufficient to establish the diagnosis.<sup>18-20</sup> It is important to consider that patients with groin bulges or masses may have multiple hernias present in addition to the symptomatic hernias visible on physical exam. In our patient's case, a history and physical examination revealed bilateral reducing inguinal hernias, and intraoperative inspection also revealed bilateral femoral and obturator hernias.

While the European Hernia Society has published guidelines that it is acceptable to engage in watchful waiting in men with asymptomatic or mildly symptomatic inguinal hernias,<sup>21</sup> the definitive treatment of inguinal hernias and occult hernias is surgical mesh-based repair, which can be performed through an anterior open-approach, a pos-

terior open-approach, a posterior laparoscopic approach, or posterior robotic approach. Women should have hernias repaired without watchful waiting due to their risk of developing femoral hernias that can become incarcerated.<sup>21</sup> When performing the surgery laparoscopically or robotically, the TAPP or total extraperitoneal (TEP) approach can be utilized, with international guidelines advocating for surgeons to utilize the TAPP method to inspect bilaterally for occult hernias.<sup>9,10,22</sup> Recently, there has been increased utilization of robotic herniorrhaphy due to the enhanced 3-D visualization they provide, as well as improved dexterity and ergonomics.<sup>22,23</sup>

Performing herniorrhaphy with robotic assistance enables surgeons to perform meticulous dissections with wristed movements,<sup>24</sup> allowing them to gain superior access to the critical view of the myopectineal orifice and the space of Retzius,<sup>25,26</sup> thus providing direct visualization of the femoral and obturator canals. As a result, surgeons can precisely inspect for occult hernias intraoperatively, helping to address the various pathologies that may be causing a patient's groin pain as well as reduce intraoperative complications and improve outcomes.<sup>25</sup> While the literature lacks a reported case of a patient with eight hernias, it is likely that this has occurred previously in patients and has gone undetected; we may not have been able to identify it with the traditionally utilized open or laparoscopic techniques due to the lower quality of visualization provided by those techniques intraoperatively when compared with the visualization achieved with a robotic-assisted herniorrhaphy.<sup>24</sup> The incorporation of robotic assistance to perform herniorrhaphy may result in increased detection of occult hernias intraoperatively and therefore has the potential to improve postoperative outcomes in patients undergoing herniorrhaphy.

The novelty of our case reinforces the utility of robotic herniorrhaphy, which allows for careful inspection of all anatomic regions that may contain a hernia. The robotic-assisted approach provides increased visualization and dexterity, enhancing inspection for occult hernias and subsequent repair. This may improve detection rates of occult hernias and aid in the prevention of misdiagnosed "recurrences" due to missed occult hernias at the time of initial operation.<sup>12,13</sup> It becomes increasingly important to examine for occult hernias intraoperatively in patients with a higher propensity to develop hernias, such as patients with low BMI, as in our case.

## Conclusion

The majority of inguinal hernias can be diagnosed clinically with a history and physical examination. We recommend performing herniorrhaphy via a robotic method using the TAPP approach to enhance intraoperative visualization. Performing robotic herniorrhaphy may allow for superior visualization of anatomical structures, resulting in the identification of occult hernias, especially in patients with risk factors for multiple hernias, such as a low BMI. We recommend that all hernias identified intraoperatively be repaired with mesh covering all hernia defects to achieve optimal postoperative outcomes.

## Lessons Learned

Patients presenting with symptomatic inguinal hernias may have concurrent femoral and/or obturator hernias that can be visualized intraoperatively. Utilizing techniques such as the da Vinci Xi robotic with TAPP approach can enhance intraoperative detection and subsequent repair of occult hernias and may lead to improved postoperative outcomes.

## References

- Legutko J, Pach R, Solecki R, Matyja A, Kulig J. Rys historyczny leczenia chirurgicznego przepuklin [The history of treatment of groin hernia]. *Folia Med Cracov*. 2008;49(1-2):57-74.
- Rutkow IM. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. *Surg Clin North Am*. 2003;83(5):1045-vi. doi:10.1016/S0039-6109(03)00132-4
- Brooks DC, Hawn M. Classification, clinical features, and diagnosis of inguinal and femoral hernias in adults. UpToDate. <https://www.uptodate.com/contents/classification-clinical-features-and-diagnosis-of-inguinal-and-femoral-hernias-in-adults>. Published October 15, 2019.
- Berger D. Evidence-Based Hernia Treatment in Adults. *Dtsch Arztebl Int*. 2016;113(9):150-158. doi:10.3238/arztebl.2016.0150
- Hammoud M, Gerken J. Inguinal Hernia. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; August 15, 2022.
- Tsai MT, Wu JM, Lien WC. Obturator hernia: The little old lady's hernia. *J Med Ultrasound*. 2014;22:96-8.
- Kulkarni SR, Punamiya AR, Naniwadekar RG, et al. Obturator hernia: A diagnostic challenge. *Int J Surg Case Rep*. 2013;4(7):606-608. doi:10.1016/j.ijscr.2013.02.023
- Matsevych OY, Koto MZ, Becker JHR. Multiple concurrent bilateral groin hernias in a single patient; a case report and a review of uncommon groin hernias: A possible source of persistent pain after successful repair. *Int J Surg Case Rep*. 2016;29:204-207. doi:10.1016/j.ijscr.2016.11.019
- Jarrard JA, Arroyo MR, Moore BT. Occult contralateral inguinal hernias: what is their true incidence and should they be repaired?. *Surg Endosc*. 2019;33(8):2456-2458. doi:10.1007/s00464-018-6528-y
- Dickens EO, Kolachalam R, Gonzalez A, et al. Does robotic-assisted transabdominal preperitoneal (R-TAPP) hernia repair facilitate contralateral investigation and repair without compromising patient morbidity?. *J Robot Surg*. 2018;12(4):713-718. doi:10.1007/s11701-018-0815-4
- Miserez M, Alexandre JH, Campanelli G, et al. The European hernia society groin hernia classification: simple and easy to remember [published correction appears in *Hernia*. 2008 Jun;12(3):335]. *Hernia*. 2007;11(2):113-116. doi:10.1007/s10029-007-0198-3
- Wani I. Double direct hernia, triple indirect hernia, double Pantaloon hernia (Jammu, Kashmir and Ladakh Hernia) with anomalous inferior epigastric artery: Case report. *Int J Surg Case Rep*. 2019;60:42-45. doi:10.1016/j.ijscr.2019.05.035
- Ekberg O, Lasson A, Kesek P, van Westen D. Ipsilateral multiple groin hernias. *Surgery*. 1994;115(5):557-562.
- Srivastava V, Jha PK, Verma AK, Ansari MA. Triple inguinal hernia: rare clinical presentation. *BMJ Case Rep*. 2020;13(11):e238619. Published 2020 Nov 2. doi:10.1136/bcr-2020-238619
- Jiang LL, Chen CC, Yang K. Lessons learned from an unusual condition of incidental synchronous multiple hernias of indirect inguinal hernia, femoral hernia, and incarcerated obturator hernia. *Niger J Clin Pract*. 2019;22(2):281-284. doi:10.4103/njcp.njcp\_200\_18
- Tran HM, Tran K, Zajkowska M, Lam V, Hawthorne W. Single-incision laparoscopic intraperitoneal onlay mesh repair for the treatment of multiple recurrent inguinal hernias. *JLS*. 2014;18(3):e2014.00354. doi:10.4293/JLS.2014.00354
- Bunting DM, Finlay IG. Laparoscopic repair of coexisting prevascular and obturator hernias. *Surg Laparosc Endosc Percutan Tech*. 2012;22(5):e304-e306. doi:10.1097/SLE.0b013e3182632e50
- Vacca VM Jr. Inguinal hernia: A battle of the bulge. *Nursing*. 2017;47(8):28-35. doi:10.1097/01.NURSE.0000521020.84767.54
- Simons MP, Aufenacker T, Bay-Nielsen M, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia*. 2009;13(4):343-403. doi:10.1007/s10029-009-0529-7
- HerniaSurge Group. International guidelines for groin hernia management. *Hernia*. 2018;22(1):1-165. doi:10.1007/s10029-017-1668-x
- Miserez M, Peeters E, Aufenacker T, et al. Update with level 1 studies of the European Hernia Society guidelines on the treatment of inguinal hernia in adult patients [published correction appears in *Hernia*. 2014 Jun;18(3):443-4]. *Hernia*. 2014;18(2):151-163. doi:10.1007/s10029-014-1236-6

22. Janjua H, Cousin-Peterson E, Barry TM, Kuo MC, Baker MS, Kuo PC. The paradox of the robotic approach to inguinal hernia repair in the inpatient setting. *Am J Surg.* 2020;219(3):497-501. doi:10.1016/j.amjsurg.2019.09.012
23. Podolsky D, Novitsky Y. Robotic Inguinal Hernia Repair. *Surg Clin North Am.* 2020;100(2):409-415. doi:10.1016/j.suc.2019.12.010
24. Donkor C, Gonzalez A, Gallas MR, Helbig M, Weinstein C, Rodriguez J. Current perspectives in robotic hernia repair. *Robot Surg.* 2017;4:57-67. Published 2017 May 5. doi:10.2147/RSRR.S101809
25. Daes J, Felix E. Critical View of the Myopectineal Orifice. *Ann Surg.* 2017;266(1):e1-e2. doi:10.1097/SLA.0000000000002104
26. Vassallo BJ, Karram MM. Chapter 86: Abdominal Operations for Urinary Stress Incontinence. In: *Gynecology and Obstetrics.* Vol 1. Lippincott Williams & Wilkins; 2004