Hernias

Transcript

This video presents hernias with a focus on inguinal hernias.

Mr. Ernie Yah, a 55 year-old male construction worker, is referred to the surgery outpatient clinic by his family physician. He originally presented to the family medicine clinic with a palpable mass in his groin area on the right side that started 5 months ago. Originally, the lump was described as quite small and wasn't very bothersome. He didn’t think much of it but over the past few months the mass has increasingly become more tender and sore, especially after a long day of work. The mass has also grown in size over the past few months. The pain is usually a resting, dull pain but can become more intense with heavy lifting and straining. He has tried taking acetaminophen for the pain, which occasionally provides relief but nothing else really helps except lying down. He has noticed that the lump becomes more apparent when he is sitting on the toilet or having a coughing fit. Mr. Yah has a 50 pack-year smoking history and is otherwise healthy. Mr. Yah “Googled” what the mass could be and concluded that it was a “groin hernia”. From this conclusion, he has tried pushing or “reducing” the hernia, which has worked on occasion, but the hernia always seems to return. The referring family physician confirmed that Mr. Yah likely has a hernia and has sent Mr. Yah to you for a surgical consult…

In order to understand the pathophysiology of hernias, we must first address the anatomy of the abdominal wall, the inguinal canal and the femoral canal, three anatomical locations that are prone to herniation.

In the abdominal wall, the relevant anatomical structures that can be identified from superficial to deep are the rectus abdominis, external oblique, the internal oblique and the transversus abdominis muscle, followed by the transversalis fascia.

The anterior wall of the inguinal canal is composed of the external oblique aponeuroses. The posterior wall consists of the transversus abdominis and transversalis fascia. The superior boundary of the canal is the internal oblique muscle, and the inferior boundary is the inguinal ligament.

Hasselbach’s triangle is delineated by the inferior epigastric artery at the superolateral border, the lateral margin of the rectus sheath at the medial border, and by the inguinal ligament at the inferior border. This is the site of direct inguinal hernias.

The femoral canal’s anterior wall is formed by the iliopubic tract and inguinal ligament. Its posterior wall is formed by Cooper’s ligament, its medial wall is the lacunar ligament and its lateral wall is the femoral vein. This is the site of femoral hernias.

A hernia is a protrusion of an organ or tissue through the cavity of which it is normally contained. In general surgery, most hernias involve the abdominal contents protruding through a defect in the abdominal wall or groin.

An incomplete herniation is a partial protrusion of viscus through abdominal wall and a complete herniation is the complete protrusion of viscus through abdominal wall.

Two types of hernia that are a cause for concern are incarcerated hernias and strangulated hernias. An incarcerated hernia is an irreducible hernia that generally requires urgent elective repair. A strangulated hernia is an irreducible hernia where the hernia contents become ischemic due to restricted blood flow. A strangulated hernia is a surgical emergency and requires immediate attention. Incarcerated hernias can quickly become strangulated, especially femoral hernias, and it is hard to distinguish incarceration from early strangulation solely on a clinical basis. Therefore, all incarcerated hernias require urgent surgical repair. We will address strangulation in more detail later in this video.

Hernias can be classified in different ways. When classifying hernias according to anatomical location, they are separated into groin hernias, anterior abdominal wall hernias, lumbar or dorsal fascia hernias, pelvic hernias and diaphragmatic hernias.

Groin hernias, which account for 75% of abdominal hernias, can be inguinal or femoral. Inguinal hernias are either indirect or direct. Herniation originating through the deep inguinal ring and protruding through the inguinal canal and external inguinal ring are called indirect groin hernias. This type of inguinal hernia may descend into the scrotal sac or labia majora. It is the most common type of hernia in both males and females, but it is more common among males. Herniation through Hasselbach’s triangle is the direct form of inguinal hernia. Therefore, indirect hernias are lateral to the inferior epigastric vessels, while direct hernias will be medial to them.

A femoral hernia is a herniation of abdominal contents through the femoral canal. It is more common in females, especially women who have had multiple pregnancies. Femoral hernias are more likely to be incarcerated hernias and are more susceptible to strangulation. Hence, femoral hernias are more likely to present as an emergency.

Anterior abdominal wall hernias are less common and include umbilical, epigastric, spigelian and incisional hernias. Umbilical hernias are congenital and often occur during the first year of life due to incomplete closure of umbilicus. Epigastric hernias are due to an anatomical defect in the linea alba above the umbilicus. A Spigelian hernia is a herniation of the abdominal contents through the Spigelian fascia, just lateral to the rectus abdominus. Spigelian herniation is almost always above the arcuate line and has a high risk of strangulation. Incisional hernias are usually due to a defect in wound healing after abdominal surgery, leading to herniation of abdominal contents through the defective surgical incision site.

Other sites of herniation include the posterior abdominal wall, pelvic wall, and diaphragm.

Approximately a quarter of males will develop an inguinal hernia during their lifetime, while approximately 3% of females will develop an inguinal hernia. This prevalence is in a bi-modal distribution, peaking in the 1st year of life and again, over the age of 40. Although 90% of inguinal hernia surgeries are performed in men, 70% of femoral hernia repairs are performed in women.

Let us address inguinal hernias in more detail for the remainder of the video.

Let’s begin with pathophysiology.

Hernias can either stem from a congenital defect or be acquired. In general, most adult forms of hernias are acquired whereas most pediatric forms of hernias are congenital.

In indirect inguinal hernias it is believed that the presence of a patent processus vaginalis, a defect occurring during development, may predispose individuals to the development of an inguinal hernia.

In direct inguinal hernias and larger indirect inguinal hernias, there is almost always a defect in the transversalis fascia.

However there may be other contributors to the pathology of inguinal hernias including weakening of the abdominal wall and collagen disorders.

A number of established risk factors have been associated with inguinal hernia formation. In general, any strain or stress on the intraabdominal cavity over a long period of time increases the risk of developing a hernia later in life. Defects in connective tissue formation and function also predispose individuals to hernias.

Inguinal hernias can present in a variety of ways, which includes incidental finding on physical examination, or being a primary complaint. Symptomatic presentation will include symptoms related to groin discomfort, often described as a pressure or heaviness in the groin region, or groin pain. High levels of activity or heavy lifting exacerbate groin discomfort and pain and symptoms become worse at end of the day. Sometimes there may be referred or radiating pain, or paresthesias due to adjacent nerve impingement. This nerve impingement is described as a sharp or shooting pain. The patient may also experience “tingling sensations”. Rarely, urination and defecation may be affected. Such symptoms should always be investigated.

Other things to ask about include changes in the size of the hernia. Hernias will increase in size over time if unmanaged. Can the hernia be reduced? If so, this will commonly provide relief to patients. If not, then the hernia may be incarcerated. You should also ask the patient about any fevers, abdominal distension, nausea and vomiting or obstipation, which are all signs of an incarcerated or strangulated hernia.

Ask a resident.

Are you more worried about a smaller hernia or a larger hernia?

I’m most concerned about a small hernia neck. A large hernia with a small neck is unlikely to be reducible, and more likely to strangulate.

Most hernias are diagnosed via physical exam.

To begin, observe the patient’s vitals, they are usually normal.

Have the patient standing, as inguinal hernias are more apparent in this position due to increased intra-abdominal pressure. Ensure that the abdomen, scrotum (labia for females), and upper thigh are exposed for visual inspection and palpation.

Remember that the inguinal canal travels from the anterior superior iliac spine (ASIS) to the pubic tubercle. The first step is a visual inspection of the anterior abdominal wall, groin, scrotum, and thigh. Look for any obvious bulges. Asking the patient to cough or bear down may help make the mass more obvious.

Next, proceed to palpation. Palpation may reveal tenderness and warmth. Warm skin may indicate early signs of inflammation and possible strangulation. Explore the inguinal canal by inserting the index finger through the external inguinal ring, which is approximately 1cm above the pubic tubercle. Advance the index finger up the inguinal canal to palpate and confirm the extent of protrusion. Again, ask the patient to cough or bear down to intensify the herniation and help determine the extent of protrusion. Attempt to reduce the hernia by applying gentle pressure over it. If the hernia recedes back into its cavity, then it is reducible. Palpate the contralateral side to compare the protrusion and to see if there may be a contralateral herniation as well. In male patients it is necessary to examine the scrotum as the hernia may have protruded into the scrotal sac.

Note that the accuracy of determining whether an inguinal hernia is direct or indirect purely from the physical exam is not necessarily reliable and is usually confirmed during surgery.

Remember: An inguinal hernia will likely be found above the inguinal ligament. A femoral hernia will likely be found below the inguinal ligament.

The differential diagnosis for a groin lump is long. With a proper history and physical exam, you should be able to distinguish a hernia from most of the differential diagnoses on this list. If the case remains ambiguous, consider ordering imaging.

Ask a resident

The other day, my attending told me that I should be wary of something called “diastasis recti” and that it could fool me in the diagnosis of hernias. What exactly is “diastasis recti”?

Rectus abdominis diastasis (also known as diastasis recti) can mimic the appearance of an anterior abdominal wall hernia. It is due to the separation of rectus abdominis muscle bundles, which leads to a gap in the anterior abdomen. However, the midline aponeurosis remains intact. It is not considered to be a hernia.

Diastasis recti may be congenital but more often it is acquired. The risk factors are similar to hernias, which include obesity, increased age, and pregnancy. Increasing intra-abdominal pressure also exacerbates the appearance of diastasis recti. It is diagnosed on physical exam by palpating the medial edges of the voluntarily contracted rectus abdominis. These defects are often benign so treatment is unnecessary in most cases.

A majority of inguinal hernias should be diagnosed with a thorough history and physical exam. Imaging is unnecessary in most cases and should be reserved for ambiguous or complex cases, for example in an obese patient where the anatomy cannot be well localized on physical examination. Ultrasonography is usually the investigation of choice, with CT scans being employed in ambiguous situations.

Ultrasound is less invasive, and does not use ionizing radiation. By increasing the intra-abdominal pressure during the ultrasound, you can provoke the herniation. This manoeuvre is required to make the diagnosis. A lack of movement during this test may lead to a false negative result.

CT scan is not routinely used as it exposes patients to ionizing radiation, but it is used to exclude other potential diagnoses.

In patients with little to no symptoms, a watch and wait approach is an acceptable strategy for the management of inguinal hernias. Reliable studies have demonstrated that there is no improvement in outcomes, quality of life, or cost-benefit when comparing surgical treatment to expectant management in healthy, asymptomatic patients.

Surgical treatment of hernias, also known as herniorrhaphy, is the only definitive treatment for symptomatic and complex inguinal hernias. Elective surgical management is highly recommended for symptomatic inguinal hernias and femoral hernias due to higher complication rates. Remember that incarcerated hernias need immediate surgical repair due to the risk of strangulation.

Surgical repair of hernias can be done open or laparoscopically. Techniques are surgeon dependent without strong evidence to support any particular approach. In any case, most approaches involve reduction of the hernia followed by tension-free patching of the anatomical defect with synthetic mesh patch to prevent recurrence. More traditional techniques used permanent sutures to approximate native tissue and close the defect. These approaches are slowly falling out of favour due to less desirable outcomes compared to tension-free mesh repairs.

There are several uncommon complications to surgery including wound infection, bruising, prosthesis issues, hernia recurrence, chronic pain, and spermatic cord and testicular complications. Some complications specific to the laparoscopic approach include ileus, bowel obstruction, and injury to the bladder or bowel.

Ask a resident

How long should a patient wait after a hernia repair to resume normal activity and heavy lifting?

Patients should initially take it easy regarding heavy lifting for a few weeks. Traditional wisdom says 4-6 weeks. However, they can resume normal day-to-day activity almost immediately based on their own rate of recovery, preference, and pain tolerance.

The most deadly complication of a hernia is strangulation.

Strangulation leads to ischemia of the entrapped bowel and subsequent inflammation and necrosis. Sequelae include bowel obstruction, bowel perforation, peritonitis, and sepsis. This video was an introduction to hernias, with a focus on inguinal hernias, the most common type.