



## Risk Factors of Umbilical Hernia in Patients

1. Oun Hani Swadi AL-maLiki

Received 2<sup>nd</sup> May 2023,  
Accepted 3<sup>rd</sup> Jun 2023,  
Online 29<sup>th</sup> Jul 2023

<sup>1</sup> Al Muthanna health directorate,  
M.B.CH.B., DGS

**Abstract:** Abdominal wall hernias are a very common surgical condition affecting all ages and both sexes. The main risk factors of hernias include pregnancy, weight lifting, constipation, and weight gain. An umbilical hernia is an abnormal bulge that can be seen or felt at the umbilicus (belly button). This hernia develops when a portion of the lining of the abdomen, part of the intestine, and / or fluid from the abdomen, comes through the muscle of the abdominal wall. Umbilical hernias are common, occurring in 10 percent to 20 percent of all children. They are more common in African-Americans. Low birth weight and premature infants are also more likely to have an umbilical hernia. Boys and girls are equally affected.

**Key words:** Umbilical Hernia, Abdominal wall, belly button.

### Introduction

An umbilical hernia is a ventral hernia located at or near the umbilicus. The European Hernia Society classification for abdominal wall hernias defines the umbilical hernia as a hernia located from 3 cm above to 3 cm below the umbilicus[1]. It is the second most common type of hernia in an adult following inguinal hernia[2]. It accounts for 6%-14% of all abdominal wall hernias in adults[3][4].

An umbilical hernia is a weakness that develops in the abdominal wall through and around the belly button, called the umbilicus. A bulge or sac containing fat or intestine pushes out through that weakness, sometimes causing an "outie" belly button. Most patients with umbilical hernias first notice a belly button bulge or discomfort. Over time these hernias can get larger and more uncomfortable as the hernia sac gets pushed out from inside the abdomen. Like other hernias, an umbilical hernia in an adult will not go away or get better without treatment. [5]

Umbilical hernias carry the risk of becoming stuck or "incarcerated," which could cause strong pain, nausea, vomiting, or the inability to pass gas from the rectum. This is an emergency, and if this happens, you should contact your doctor immediately or go to the emergency room.

Umbilical hernias can be diagnosed by your doctor by listening to your history and performing a thorough physical examination. [6]

A hernia is when part of the intestine bulges through the muscle wall that's supposed to hold it in place. With an umbilical hernia, the opening is in the middle of the belly button, at a part of the abdominal wall called the umbilical ring.

The umbilical ring is a muscle that surrounds the belly button. During pregnancy, the umbilical cord flows through the umbilical ring to bring blood and nutrients to the developing baby. The umbilical ring should close shortly after birth. If it doesn't close correctly, the intestines can poke through. This can cause a bulge near the belly button, especially when the baby cries, coughs, or strains. [7]

### **Etiology**

Umbilical hernias in adults are acquired in 90% [8]. Only 10% of adult umbilical hernia report having had hernia in childhood. It more common in women or individuals with increased intra-abdominal pressure as in pregnancy, obesity, ascites, or chronic abdominal distention. Stretching of the abdominal musculature and the presence of adipose tissue acts to separate muscle bundles and layers, weakens aponeuroses and favors the appearance of umbilical hernias [9].

### **Epidemiology**

The Incidence of Umbilical hernia in the general adult population is 2% while it is much more common in obese multiparous women and cirrhotic patients. Up to 20% of cirrhotic patients with ascites develop umbilical hernia[10]. It is more common in females with a ratio of 3:1. In general, umbilical hernias in males most often present incarcerated, whereas females are more likely to have an asymptomatic reducible hernia. 70% of umbilical hernia repairs are carried out in male[11]. Approximately 175,000 umbilical hernia repairs are annually performed in the United States [12].

### **Pathophysiology**

Anatomically, the umbilical hernia could occur either through a potential weakness present at the exit site of involuted umbilical vessels, most importantly the umbilical vein or through weakened umbilical fascia (Richet's fascia)[13]. Therefore, umbilical hernia covering consist of skin, subcutaneous tissue, weakened superficial fascia, weakened umbilical fascia and peritoneum, practically all these layers are greatly attenuated and fused together[14]. It has been noted that patients with Umbilical hernia often lack the umbilical fascia, and the round hepatic ligament is not attached to the inferior border of the umbilical ring[15].

Chronic abdominal wall distension with increased intra-abdominal pressure like in pregnancy, patient with ascites or peritoneal dialysis, stretching of the abdominal muscles fibers, and the weakness of connective tissue may be responsible for the occurrence of umbilical hernia[16]. About 20% of cirrhotic patients will develop umbilical hernia due to increase in the abdominal pressure from ascites, dilation of umbilical veins, and muscular or connective tissue weakness due to poor nutritional status contribute to herniation[10].

Umbilical hernia may contain preperitoneal fat tissue, omentum, and small intestine or a combination of those can take part[17]. The transverse colon is very rarely involved[18]. The neck of the hernia sac is usually narrow compared with the size of the herniated sac, hence, incarceration and strangulation are common[11].

Therefore, an elective repair after diagnosis is advised.

### **Causes & Risk Factors**

The causes of an umbilical hernia are different in infants and adults. In adults, women are more likely to get umbilical hernias than men — especially if they are pregnant or have had multiple pregnancies. But men are more likely to have a strangulated umbilical hernia.

Most umbilical hernias occur in infants. This happens because the muscle around the umbilical cord hasn't completely closed yet. In babies, these hernias usually close up on their own.

Ninety percent of umbilical hernias in adults are acquired. Weakened abdominal muscles and excessive abdominal pressure cause them.

**Risk factors for adult umbilical hernias include:**

- Being overweight or obese
- Having several pregnancies
- Buildup of fluid in the abdominal cavity (ascites)
- Previous surgery in the abdominal area
- Receiving long-term dialysis through the abdomen (peritoneal dialysis)

**Diagnosis**

Hernias are usually diagnosed during a physical examination by a health care provider. The provider will look and feel for a bulge or swelling in the belly button area. The swelling may be more noticeable when a baby cries and may get smaller or go away when a baby relaxes or rests on its back. During the examination, the provider will determine if the hernia is reducible—if it can be pushed back into the abdominal cavity. [19]

The provider will also look for and complete a medical history to determine if the umbilical hernia has become incarcerated (trapped within the abdominal opening), a serious medical condition in which the protruding intestine becomes trapped and deprived of blood supply. The intestine can quickly become necrotic if not repaired, which requires surgical removal of the affected intestine. Symptoms of a strangulated umbilical hernia include:

- Abdominal pain and tenderness
- Constipation
- Fever
- Full, round abdomen
- Red, purple, dark or discolored bulge
- Vomiting[20,21]

The provider may order blood tests to look for signs of infection resulting from the strangulated intestine. They may also order a barium X-ray, ultrasound, MRI or CT to examine the intestine more closely, especially if the hernia is no longer reducible.

**Management**

If necessary, umbilical hernias can be treated with surgery to push the bulge back into place and strengthen the weakness in the abdominal wall.

This operation may be recommended for your child if the hernia is large or hasn't disappeared by the time they reach 4 or 5 years old. [22]

You'll usually be advised to wait for your child to reach this age because the operation isn't essential unless there are complications. The risk of your child developing complications is very low. [23]

Surgery is recommended for most adults with an umbilical hernia because the hernia is unlikely to get better by itself when you're older and the risk of complications is higher.

Complications that can develop as a result of an umbilical hernia include:

- **obstruction** – where a section of the bowel becomes stuck outside the abdomen, causing nausea, vomiting and pain
- **strangulation** – where a section of bowel becomes trapped and its blood supply is cut off; this requires emergency surgery within hours to release the trapped tissue and restore its blood supply so it doesn't die

Surgery will get rid of the hernia and prevent any serious complications, although there's a chance of it returning after the operation.

Repairing an umbilical hernia

An umbilical hernia repair is a relatively simple procedure that normally takes about 20 to 30 minutes. General anaesthetic is usually used so there's no pain while the operation is carried out.

In children, the weak spot in the abdominal wall is usually closed with stitches. If the hernia is large or in adults, a special mesh may be used to strengthen the area instead.

You or your child should be able to go home on the same day as the operation. You may feel a bit sore and uncomfortable while you recover.

You may need to limit strenuous activities for a few weeks after the operation, and taking some time off school or work is often recommended. Most people are able to return to all their normal activities within 2 weeks of surgery.

Complications of umbilical hernia surgery

Complications from an umbilical hernia repair are uncommon, but can include:

- infection of the wound – it may appear red, have a yellow discharge and be painful or swollen[25]
- bleeding
- rupture of the wound
- the hernia returning.

### Conclusion:

Abdominal wall hernias are a very common surgical condition affecting all ages and both sexes. It is an abnormal protrusion of a peritoneal lined sac through the muscular covering of the abdomen. The most common symptoms of a hernia include a swelling in the groin, heavy feeling in the abdomen, and discomfort in the abdomen regions, especially when coughing, lifting or bending over. However, symptoms may not appear in some people and they will only realize that they have this condition during medical checkups

### References:

1. Rains AJH, Capper WM. *Bailey & Love's Short Practice of Surgery*. 15th ed. London: Lewis; 1971.
2. Kingnorth A, LeBlanc KA. *Management of abdominal hernias*. 3rd Edition. London: Edward Arnold; 2003.
3. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. *Lancet*. 2003;362:1561–71. doi: 10.1016/S0140-6736(03)14746-0.
4. Townsend C, Beauchamp D, Evers M, Mattox KL, Sabiston DC. *Sabiston Textbook of Surgery: The biological basis of modern surgical practice*. Philadelphia, PA: WB Saunders; 2001.

5. Russell RCG, Williams NS, Bulstrode CJK. *Bailey & Love's Short Practice of Surgery*. 23rd Edition. London: Hodder Arnold; 2000.
6. Williams NS, Bulstrode CJK, O'Connell PR. *Bailey & Love's Short Practice of Surgery*. 25th ed. London: Hodder Arnold; 2008.
7. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in United States in 2003. *Surg Clin North Am*. 2003;83:1045–51. doi: 10.1016/S00396109(03)00132-4.
8. Dabbas N, Adams K, Pearson K, Royle G. Frequency of abdominal wall hernias: is classical teaching out of date? *JRSM Short Rep*. 2011;2(1):5. doi: 10.1258/shorts.2010.010071.
9. Geer EB, Shen W. Gender differences in insulin resistance, body composition, and energy balance. *Gend Med*. 2009;6(Suppl 1):60–75. doi: 10.1016/j.genm.2009.02.002.
10. Shi H, Clegg DJ. Sex differences in the regulation of body weight. *Physiol Behav*. 2009;97:199–204. doi: 10.1016/j.physbeh.2009.02.017.
11. Adesunkanmi AR, Faleyimu B. Incidence and aetiological factors of incisional hernia in postcaesarean operations in a Nigerian hospital. *J Obstet Gynaecol*. 2003;23(3):258–60. doi: 10.1080/01443610306063.
12. Matar Z. *Open Surgical Management of Incisional Hernia The Internet Journal of Surgery*. 2007;15(2)
13. Lau B, Kim H, Haigh PI, Tejirian T. Obesity increases the odds of acquiring and incarcerating non-inguinal abdominal wall hernias. *Am Surg*. 2012;78(10):1118–21.
14. Bedewi MA, El-Sharkawy MS, Al Boukai AA, Al-Nakshabandi N. Prevalence of adult paraumbilical hernia. Assessment by high-resolution sonography: a hospital-based study. *Hernia*. 2012;16(1):59–62. doi: 10.1007/s10029-011-0863-4.
15. Al-Khuwaiter S. Inguinal hernia in Saudi Arabia. A 10 year experience. *Am J Surg*. 1985;149(5):691–4. doi: 10.1016/S0002-9610(85)80157-4.
16. Henriksen NA, Montgomery A, Kaufmann R, Berrevoet F, East B, Fischer J, et al. Guidelines for treatment of umbilical and epigastric hernias from the European Hernia Society and Americas Hernia Society. *BJS Br J Surg*. 2020;107(3):171–90.
17. Jairam AP, Kaufmann R, Muysoms F, Jeekel J, Lange JF. The feasibility of local anesthesia for the surgical treatment of umbilical hernia: a systematic review of the literature. *Hernia*. 2017;21(2):223–231.
18. Menon VS, Brown TH. Umbilical hernia in adults: day case local anaesthetic repair. *J Postgrad Med*. 2003;49(2):132.
19. Leubner KD, Chop WM, Ewigman B, Loven B. What is the risk of bowel strangulation in an adult with an untreated inguinal hernia?. *Clinical Inquiries*.
20. Arroyo A, Garcia P, Perez F, Andreu J, Candela F, Calpena R. Randomized clinical trial comparing suture and mesh repair of umbilical hernia in adults. *Br J Surg*. 2001;88(10):1321–1323.
21. Sebastian AA, Perez F, Serrano P, Costa D, Oliver I, Ferrer R, et al. Is prosthetic umbilical hernia repair bound to replace primary herniorrhaphy in the adult patient? *Hernia*. 2002;6(4):175–177.
22. Kaufmann R, Halm JA, Eker HH, Klitsie PJ, Nieuwenhuizen J, van Geldere D, et al. Mesh versus suture repair of umbilical hernia in adults: a randomised, double blind, controlled, multicentre trial. *The Lancet*. 2018;391(10123):860–869.

23. Lau H, Patil NG. Umbilical hernia in adults. Surg Endosc Interv Tech. 2003;17(12):2016-2020.
24. Gonzalez AM, Romero RJ, Seetharamaiah R, Gallas M, Lamoureux J, Rabaza JR. Laparoscopic ventral hernia repair with primary closure versus no primary closure of the defect: potential benefits of the robotic technology. Int J Med Robot. 2015;11(2):120-5.
25. Chen YJ, Huynh D, Nguyen S, Chin E, Divino C, Zhang L. Outcomes of robot-assisted versus laparoscopic repair of small-sized ventral hernias. Surg Endosc. 2017;31(3):1275-9.
26. Guttadauro A. Introductory Chapter: State of the Art in Hernia Surgery. In Techniques and Innovation in Hernia Surgery 2020 May 27.

