

2013

C A R O L I N A S

Hernia Handbook

(CHAPTER 2)

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hernia

CHAPTER 2
Umbilical Hernias

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WHAT IS AN UMBILICAL HERNIA?

An umbilical hernia is caused by a weakness of the connective tissue and abdominal muscles around the belly button (also known as the “umbilicus”). This weakness creates an opening, known as a defect, which allows for underlying fat or intestine to protrude through the abdominal wall and form a bulge under the skin in or around your belly button (Figure 1A). Umbilical hernias are frequently seen in children, but they are also common in adults. In children, the defects often close with age and may not require surgery. In adults, umbilical hernias do not heal themselves and can only be repaired with surgery.

Figure 1A. Anatomy



WHAT ARE THE SYMPTOMS OF AN UMBILICAL HERNIA?

Common signs and symptoms include:

- A bulge in or near the belly button
- Abdominal pain or pressure, which may worsen when coughing or straining

WHAT CAUSES AN UMBILICAL HERNIA?

There are two types of umbilical hernias: congenital and acquired. A congenital umbilical hernia is present at birth. The umbilical cord was attached at the belly button during development in the womb, and a natural opening in the muscles exists at this site because of the blood vessels entering the fetus while in the womb. When this area of muscle does not close completely after birth, a congenital umbilical hernia can form. Typically, children without symptoms of their hernia can be watched until they reach school age before considering repairing them.

Acquired umbilical hernias develop over time in adults from age or injury that lead to an opening in the muscle under or adjacent to the belly button. Conditions that increase pressure in the abdomen contribute to the development of the hernia because the pressure stretches this area of natural weakness. Continued exertion or weight gain increases the size of the defect and can push intestines or other organs through the opening. Many of these conditions are listed below.

WHAT ARE THE RISK FACTORS FOR DEVELOPING AN UMBILICAL HERNIA?

Risk factors for developing an umbilical hernia include:

- Chronic cough
- Smoking
- Obesity
- Straining while lifting heavy objects
- Straining during bowel movements
- Pregnancy
- Certain medications, such as steroids
- Born prematurely

WHAT ARE THE TREATMENT OPTIONS?

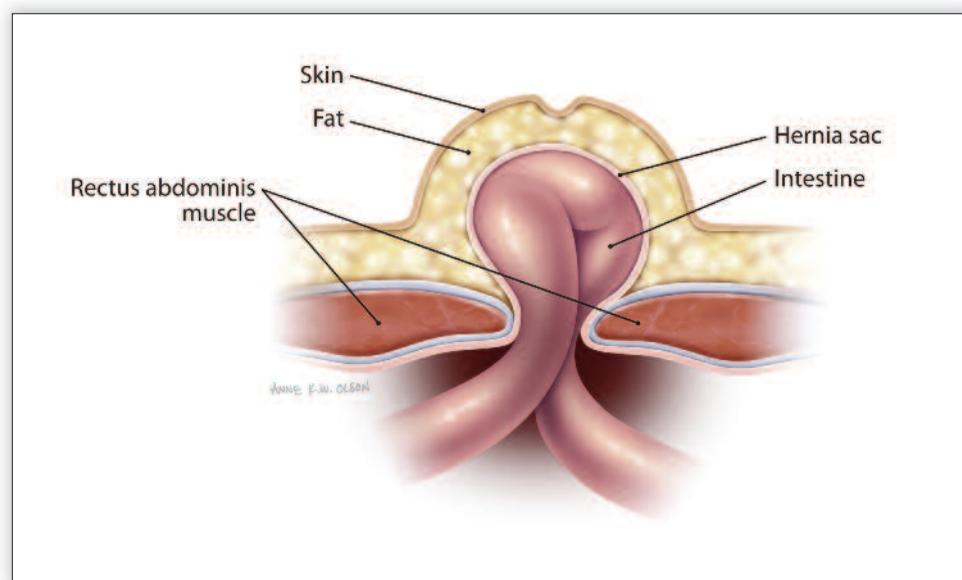
The treatment for adults with umbilical hernias is surgery. Congenital umbilical hernias in children usually heal as they grow older, without surgery. Generally, children

younger than 5 years old do not require surgery. Children born with umbilical hernia defects larger than 1 cm in diameter are less likely to close on their own and may require surgery².

WHAT ARE THE RISKS OF NOT HAVING SURGERY?

Small, asymptomatic hernias can often be observed and surgery can be avoided, even in adults. But, as previously mentioned, these hernias do not heal themselves and all will slowly enlarge over time. The most serious risk of non-surgical management is that intestine or other organs can become stuck in the hernia. Usually, the hernia contents can be pushed back into the abdomen (“reducing” the hernia) (Figure 1B). When this cannot be done, the hernia is called “incarcerated”. Incarceration can lead to obstruction or blockage of the intestine in the hernia. This can result in nausea, vomiting, and abdominal pain. Incarceration can also cut off the blood supply to the intestines; this is called “strangulation”. Strangulation can lead to death of the effected section of intestines and is a surgical emergency. If this is not treated quickly, it can lead to serious complications for the patient or death.

Figure 1B. Internal Anatomy



Umbilical hernias may close without surgery in children up to the age of 14, but surgical repair must be strongly considered before starting school as children in this age group have a high risk of incarceration³.

WHAT ARE THE SURGICAL OPTIONS AND HOW ARE THEY PERFORMED?

There are two main approaches to umbilical hernia repair: “open” and “laparoscopic” techniques.

Open technique

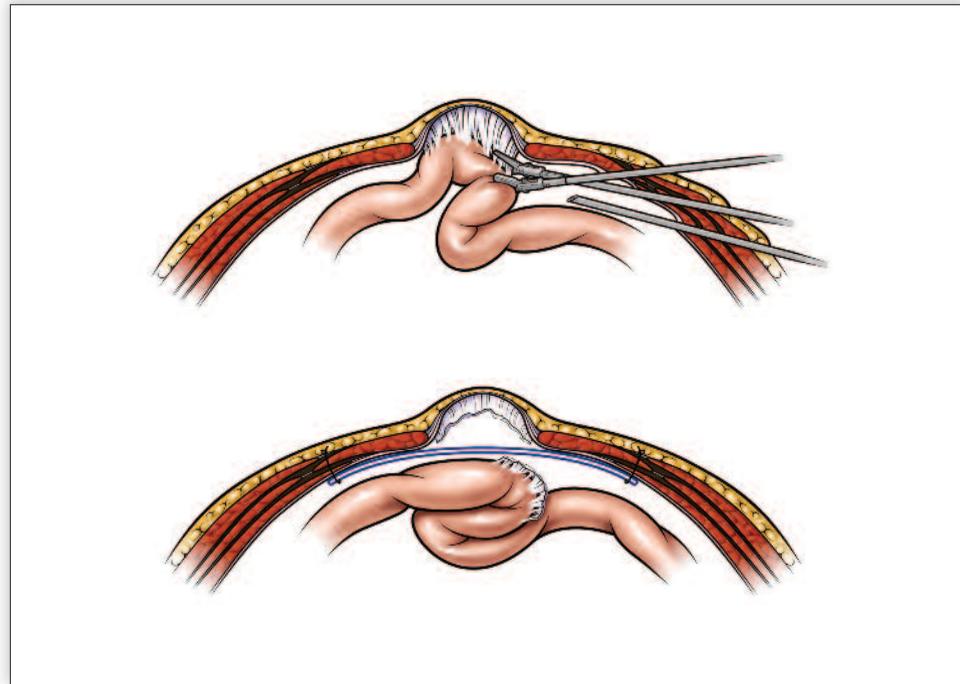
The open technique is the traditional approach that people think of when imagining surgery. An incision is made in the skin near the hernia, and the intestine or fat protruding through the muscle is reduced into the abdomen. The defect in the abdominal wall is then repaired through the incision, and the skin is closed over the repair.

There are two options for repairing the defect with the open technique. The first uses only sutures to bring the muscles and connective tissue back together. For larger hernias, this can create tension in the repairs, which contributes to a failed repair and return of the hernia, known as “recurrence”. Mesh is a soft and flexible, woven, plastic-like material that has been used to repair hernias since the 1950’s. The use of mesh has greatly reduced the rate of recurrence in all hernia repairs. Some surgeons recommend using mesh for all umbilical hernia repairs, and others only recommend its use in larger defects^{4,5}. We typically use mesh in larger defects or those that appear as if they may have a higher risk of recurrence. There are many types of mesh, and most are well accepted by the body and allow natural tissues to grow into them. They are used to reinforce the closure of the umbilical defect. A discussion with a surgeon can help a patient decide if mesh is necessary and what type is most appropriate.

Laparoscopic technique

Laparoscopic, or minimally invasive, surgery is another hernia repair option. During laparoscopic surgery, 3 to 4 small incisions are made in different parts of the abdomen so that specialized long, thin instruments and video camera can be inserted (Figure 2). The abdomen is temporarily inflated with gas to give the surgeon space to work under the abdominal wall.

Figure 2. Laparoscopic umbilical hernia repair with mesh



The hernia can be repaired with mesh alone or sutures with mesh. In the open technique, mesh may be secured to the abdominal wall with sutures. In the laparoscopic approach, sutures, short cork-screw shaped tacks, or a combination of both can be used to secure the mesh. Occasionally, in either open or laparoscopic procedures, a special glue is used with or without sutures or tacks to hold the mesh in place.

PREPARATION FOR SURGERY

Health history and physical exam should be performed by a surgeon and, sometimes, an anesthesiologist prior to surgery. Depending on the patient's age and health, blood testing, urinalysis, EKG, chest X-ray, or other tests may be required. An evaluation by a heart specialist may be needed if particular types of heart disease are

present. There are certain medications that may need to be stopped prior to surgery. Patients must discuss their medications with the doctors. They should not stop any medications without their doctor's instruction. Aspirin and Plavix slow down blood clotting and, in general, these medications are stopped 7 days prior to the procedure to decrease the risk of bleeding. Coumadin also slows down blood clotting and should be stopped at least 3-5 days prior to the surgery. It is extremely important to discuss these medications with doctors, as stopping these medications without substituting other medicines may be dangerous in certain situations.

Fasting is required overnight prior to morning surgeries, or at least 6 hours prior to afternoon or evening procedures. All daily medications that the doctor instructs a patient to continue can be taken on the day of surgery with a sip of water.

Recovery

In the absence of complications, most patients usually go home the same day as their surgery. All patients are discharged home with pain medication. Some post-operative pain is expected, and the recovery time varies from patient to patient. Some patients may only need pain medications on the day of surgery, while others may require them for up to 2 weeks after the operation. Patients may return to work a few days after the surgery if their job does not involve strenuous physical activity. The return to full physical activity (including exercising and heavy lifting) may be delayed as long as 6 weeks after the hernia repair.

WHAT ARE THE COMPLICATIONS OF SURGERY?

There is a risk of side-effects from anesthesia, which are the medications used to induce a sleep-like state during surgery. While very uncommon, a combination of anesthesia and the surgery itself can cause heart issues in patients with significant heart disease, and some may need approval from a cardiologist before surgery. Other risks involved with surgery, in general, include bleeding or infection of the skin, deeper tissues, or mesh. Deep venous thrombosis or blood clots in the deep veins of the legs or pelvis due to not moving during surgery or in the days that follow are rare following an operation to repair an umbilical hernia. Patients often receive antibiotics prior to surgery to attempt to prevent infection. Blood thinners can also be given to prevent blood clots. There is also a chance that underlying organs could be injured during a hernia repair, but this, too, is quite uncommon. Ultimately, any of the complications described above could lead to the most serious consequence of all, death. Death is extremely rare during or following hernia surgery.

Recurrence

The use of mesh has drastically changed the surgical approach to the umbilical hernia repair and has reduced the rate of hernia recurrence from 11% to 1%. There is a debate between surgeons whether or not mesh is needed for very small defects, which have been shown to have very low recurrence rates with suture-only repair in some studies⁴⁻⁶.

Wound Complications

The wound complications associated with an umbilical hernia repair include wound infections, seromas (fluid collections), and hematomas (blood clots). However, the rates of these complications are low and have been reported to be around 4.5% when mesh is used^{4,6,7}. Infection of the mesh used in the hernia repairs can also occur. This can be treated with antibiotics, but may require removal of the mesh in the operating room.

Ileus

In surgeries that involve the intestines or simply manipulating them, a condition known as an “ileus” can occur. An ileus is when the intestines are somewhat paralyzed and do not move in a coordinated manner; this leads to food build-up in the intestines, nausea, and, possibly, vomiting. An ileus gets better with time, but may require dietary restrictions or possibly a tube placed through a patient’s nose and into the stomach to help decompress the food build-up in cases of nausea and vomiting until normal bowel function returns.

Intestinal adhesions

Bowel can also adhere to sutures or the mesh, if placed inside the abdomen. These adhesions can lead to kinking of the bowel in the future, which can cause an intestinal obstruction, but this is extremely uncommon following umbilical hernia surgery.

Chronic pain

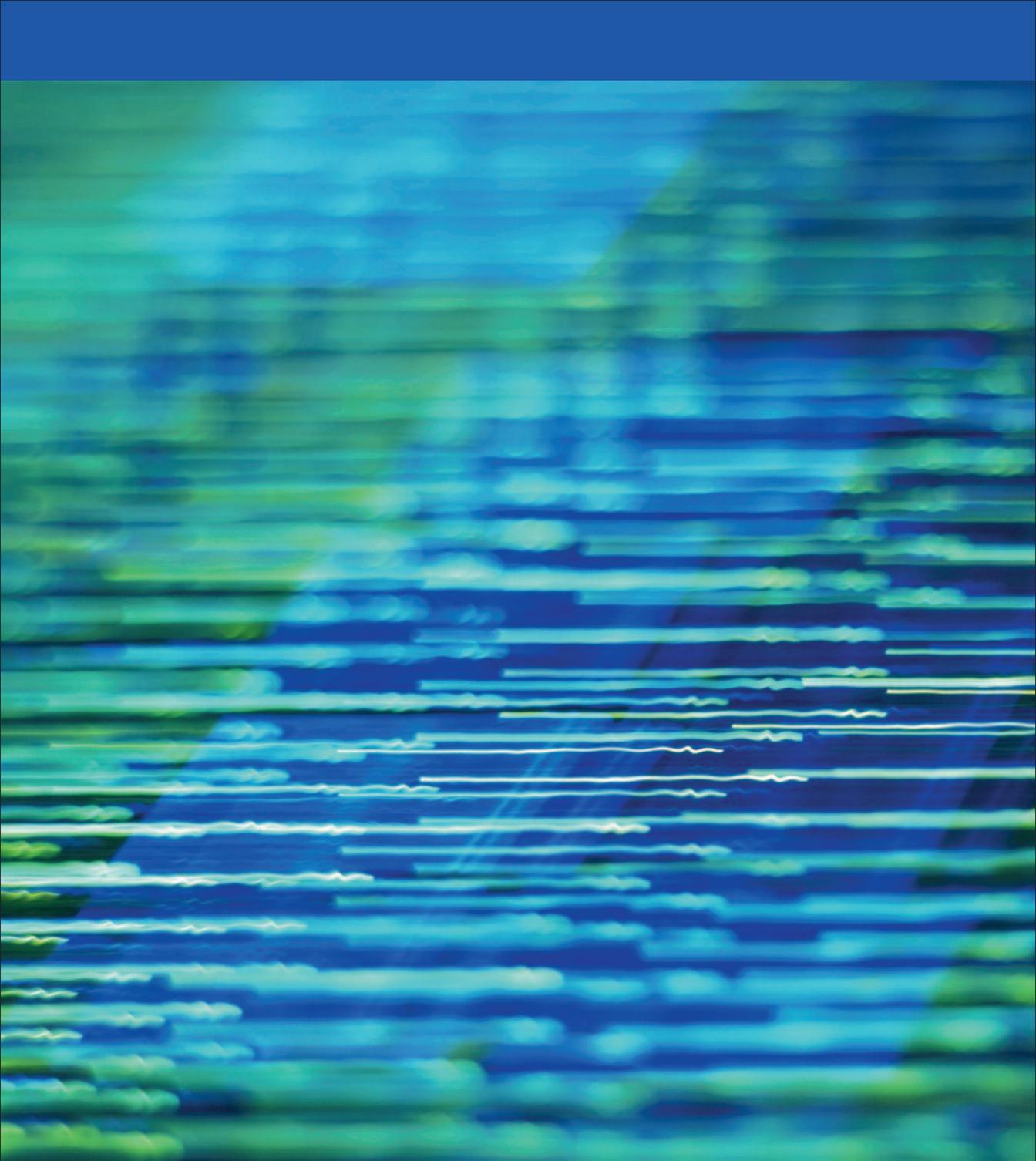
Chronic pain is pain present 3 months after surgery. This is not common following repair of an umbilical hernia. It can occur where a suture is placed to close the defect or suture sites associated with mesh placement. When present, it is most often treated successfully with an injection of a local anesthetic in the abdominal muscle during an outpatient follow-up visit⁸. Other times, there is no clear explanation. Patients with umbilical pain before surgery are more likely to have chronic discomfort than patients without preoperative symptoms.

SUMMARY

Umbilical hernias are very common problems. Surgery is the only definitive treatment for an adult with an umbilical hernias. Not all hernias need to be immediately repaired, but they tend to grow over time and always carry a risk of incarceration or strangulation, which can lead to a life-threatening situation requiring emergent surgery. Repair of hernias can be performed either open or laparoscopically. When electively repaired, umbilical hernia repair reinforced with a prosthetic mesh is associated with a very lower recurrence rate and is often recommended.

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