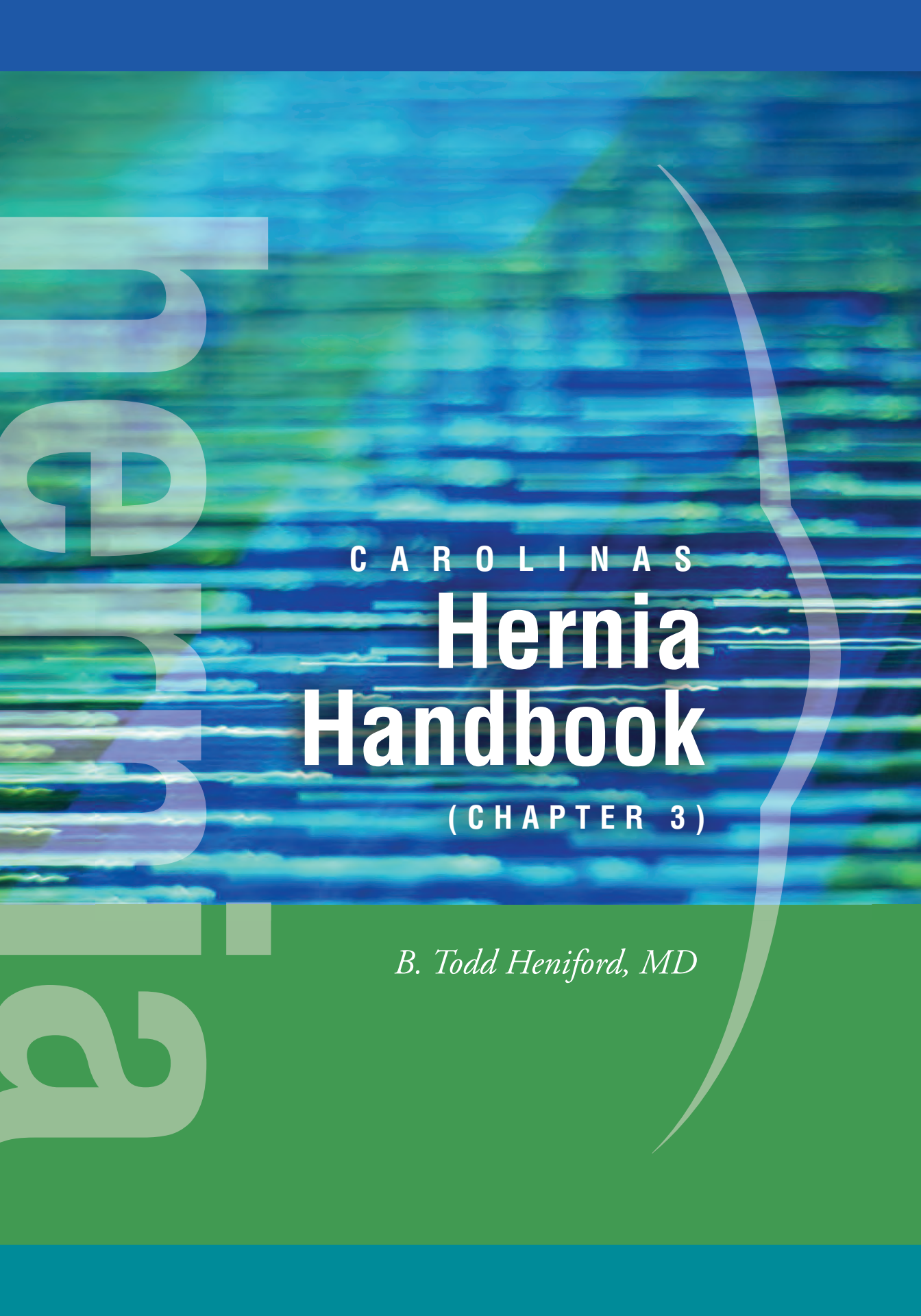

CAROLINAS
Hernia
Handbook
(CHAPTER 3)
B. Todd Heniford, MD

CHAPTER 3

Ventral Hernias

Ventral Hernias

WHAT IS A VENTRAL HERNIA?

Ventral hernias are holes or openings through the muscle and strong connective tissue of the abdominal wall. They can form essentially anywhere in the abdomen. Hernias can occur on their own, or they can occur at the location of an incision. They are caused by a weakness in the abdominal wall that allows organs, such as intestines or fatty tissue, to protrude through the weakened area. This often creates a bulge under the skin (Figure 1).

A hernia forming after surgery through the site of an incision is known as an "incisional" hernia. After any surgery, incisional hernias form between 3% and 20% of the time. These occur most often after a long incision in the middle of the abdomen, but they can occur through incisions anywhere on the abdomen[1-3]. Sometimes these hernias form only in part of the incision. For example, a long incision in the middle of the abdomen can lead to a small hernia anywhere along the scar: above the belly button, below the belly button, or under the sternum (Figure 1).

Hernias that occur on their own (no previous surgery at the hernia site) can also occur anywhere on the abdominal wall. These are often due to weaknesses in the abdominal wall present at birth. As patients get older or become injured, these weaknesses can worsen, leading to a hernia. These hernias can occur at the belly button (umbilical), in the groin (inguinal), or near the hip bone (spigelian); these specific hernias are described in other chapters. This chapter will discuss hernias that occur in the midline of the abdomen and those that occur at the flanks, under the ribs at the sides of the abdomen, as well as "incisional" hernias.

WHAT IS A RECURRENT HERNIA?

A recurrent hernia is a hernia that has been repaired in the past, but the previous repair failed and the patient's hernia is once again present.

WHAT IS "MESH"?

Mesh is a device that is used very frequently in hernia repair. It is a thin knitted material that is used to increase the strength of a hernia repair. Mesh can be made from many different substances. "Synthetic" meshes are made from soft, flexible, plastic-like

Figure 1. Ventral Hernia

materials; some of these are permanent and some dissolve. "Biologic" meshes are made from connective tissue (collagen) that often comes from skin. Biologic meshes are more expensive, but are more resistant to infection, in general. Both types of meshes can fail and lead to a recurrent hernia. Biologic meshes are more likely to bulge with time, even when the hernia has not truly recurred.

WHO IS MORE LIKELY TO GET A HERNIA?

Risk factors for hernia development may include chronic cough, smoking, obesity, straining while lifting heavy objects, straining during bowel movements or urination, pregnancy, and certain medications, such as steroids.

Incisional hernias can occur after any surgery, but they are more common in certain patients. Older age, obesity, diabetes, steroid use (steroid pills and injections used for chronic diseases), lung disease, smoking, and an infection in the incision have all been linked to increased hernia rates.

HOW COMMON ARE VENTRAL HERNIA SURGERIES?

An estimated 348,000 ventral hernia repairs (VHR) were performed in 2006 in the United States[4], and it has been projected that 300,000 VHR are performed annually in Europe[5].

WHAT ARE TREATMENT OPTIONS?

The treatment of ventral hernias is surgical, and most patients undergo repair, but not all patients require treatment. Later in this chapter, we will discuss non-surgical management of hernias, as well as the risks of avoiding surgery and the risks of surgery itself. In the past, before appropriate meshes and techniques for implanting them were available, sutures alone were used to close the weaknesses in the abdominal wall. These often were unsuccessful in the long-term, as most patients' hernias would recur. For some very small ventral hernias, suturing alone remains acceptable. It is more appropriate in most cases for hernias to be reinforced with mesh. In the 1950's, surgeons began using an early variation of the mesh that is commonly used today. Since that time, surgeons have developed sophisticated techniques for placing and securing mesh to the abdominal wall and have documented that we can significantly reduce hernia recurrences with mesh. The meshes that are implanted have also become more highly developed and afford surgeons greater options to help their patients.

Traditionally, hernias are repaired by making an incision over the hole or defect in the abdominal wall. The intestines, fat, or other organs in the hernia are placed back in the abdomen. The muscular defect is then closed with sutures alone or is reinforced with a piece of mesh. The mesh is attached to the abdominal wall with suture to keep it in place. The abdominal wall is then closed with suture over the mesh. Often, temporary drainage tubes are placed through the skin to prevent fluid build-up within the abdominal wall. (Figure 2).

In the 1990's, laparoscopic hernia repairs were first described. This technique is also known as "minimally invasive". It involves three or four small incisions in separate areas of the abdomen. A small camera and thin tools, such as small graspers and scissors, are passed through the small holes to perform the hernia repair. Just like the traditional repair, the intestines, fat, or other organs are pulled back into the abdomen. The muscle weakness is then covered with a mesh or, if possible, it is closed with suture followed by a reinforcing mesh to cover the weak area. Sutures, short tacks (shaped like tiny corkscrews), or glue can be used to attach the mesh to the abdominal wall[6]. (Figure 3).

Figure 2. Open ventral hernia repair

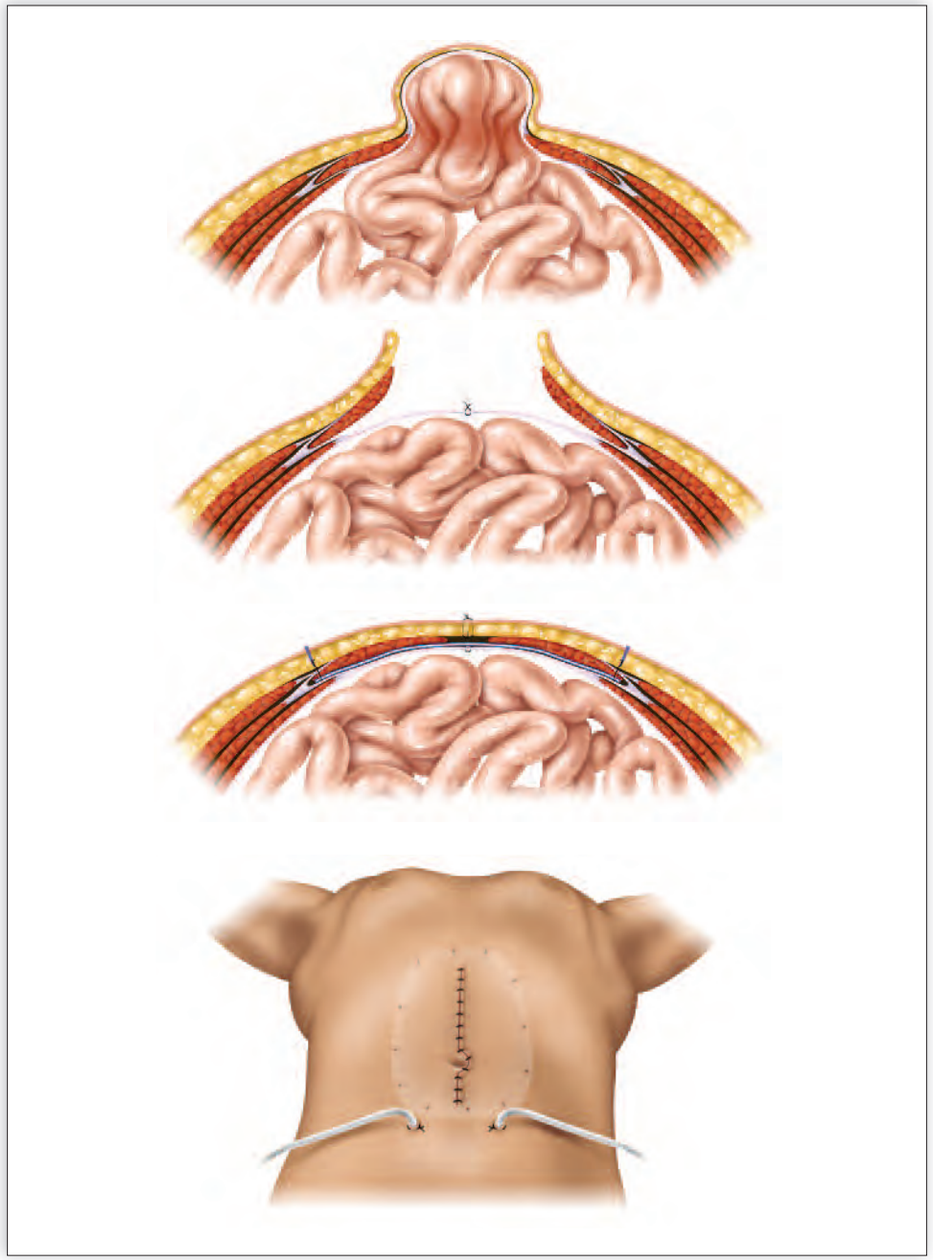
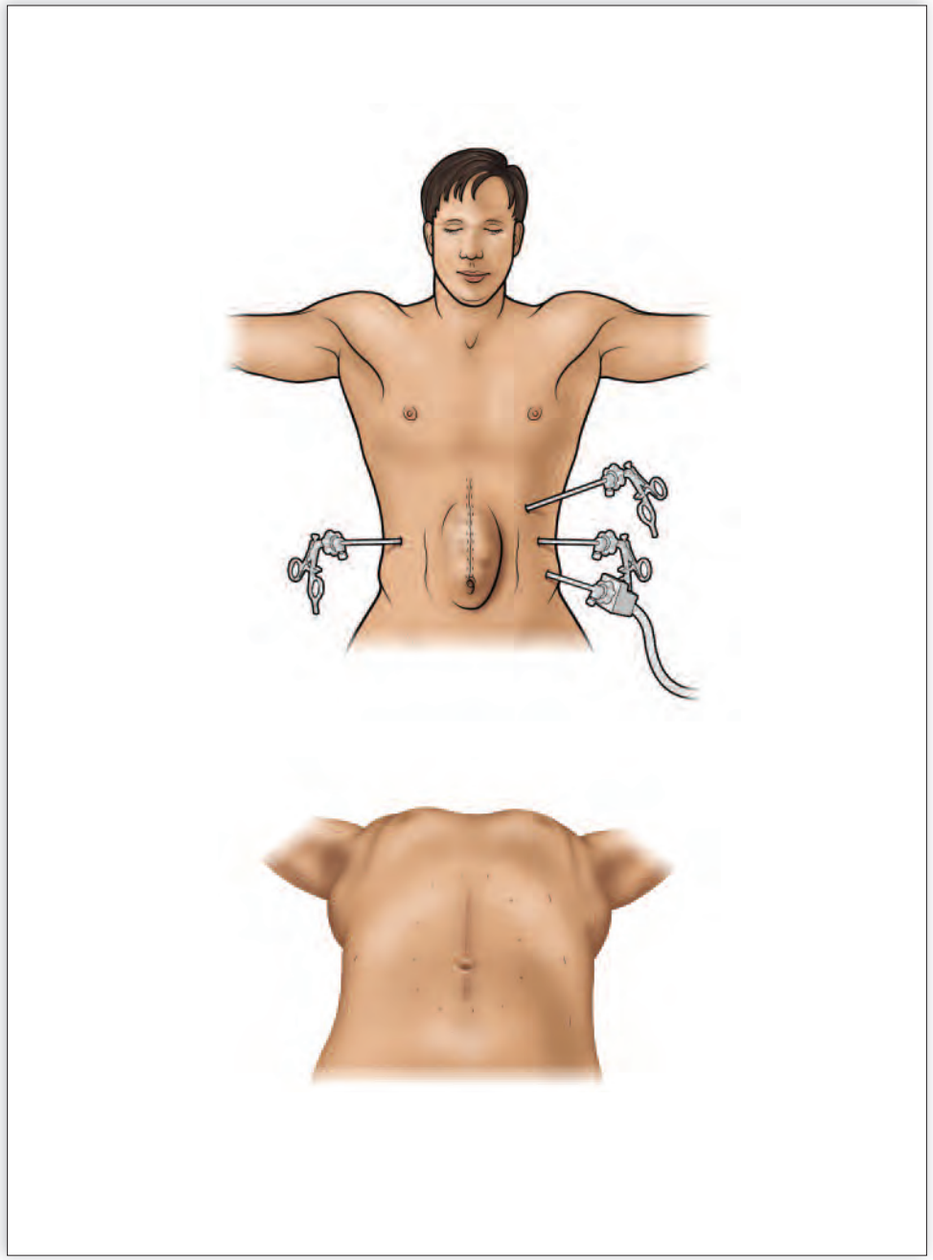


Figure 3. Laparoscopic ventral hernia repair



WHAT ARE THE DIFFERENCES BETWEEN THE TWO REPAIR TECHNIQUES?

Open and laparoscopic techniques do offer some differences in outcomes. Most of the literature comparing the two techniques supports a shorter hospital stay[6-15] and a slightly lower rate of infection after laparoscopic surgery[6, 7, 14-20]. However, open surgery almost always allows a patient to have their muscle closed over the mesh, which is quite uncommon in laparoscopic surgery. Because the laparoscopic approach requires the use of spiral-shaped, small tacks to hold the mesh in place, the laparoscopic repair results in more discomfort than open surgery, which can last in excess of a month after surgery[7]. In patients that have a hernia in a previous incision, open surgery can often offer a better cosmetic result because the previous scar can be removed at the time of surgery, Studies have provided mixed results for some other outcomes, but the rate of recurrence is very close to equal between methods[7]. It is appropriate to discuss both methods with your surgeon to determine which is best for you.

WHAT ARE THE RISKS OF NOT HAVING SURGERY?

All types of hernias have a risk of intestines or other organs being trapped within the hernia. In ventral hernias, this may be more common with smaller defects. When organs are trapped and cannot be pushed back into the abdomen, the trapped tissues are said to be "incarcerated". If this limits the blood supply to the tissues, the trapped intestine of fat becomes "strangulated", which is a surgical emergency and can become life threatening if not treated quickly.

Ventral hernias that do not become incarcerated are called "reducible" because the hernia can be "reduced" or pushed back into the abdomen. After being reduced, hernias will soon bulge once again. As long as they are freely reducible, ventral hernias can be observed. Often even patients with reducible ventral hernias will still seek surgery due to the presence of symptoms, such as pain, activity limitation, or simply poor cosmetics.

Unfortunately, however, untreated hernias increase in size with time, do not fix themselves, and leave the patient at risk for complications Studies have shown that larger hernias are associated with more complications, more pain after surgery, and have a higher rate of failure and recurrence after surgery. Most patients elect to undergo surgery for an asymptomatic hernia to avoid the increasing risks associated with repair of a larger hernia defect in the future and the risk of incarceration now.

WHAT ARE THE RISKS OF VENTRAL HERNIA SURGERY?

All surgeries have risks associated with them. The risks, benefits, and alternatives to ventral hernia repair should be discussed by the surgeon. The details contained in this section of the chapter are meant to be a broad overview of the many possible complications. Many of these complications are very rare, but are included as possible discussion points with a doctor.

There is a risk of side-effects from anesthesia, which are the medications used to induce a sleep-like state during surgery. Anesthesia or surgery can stress someone's heart if they have a history of specific types of heart problems; patients with heart disease, a history of a heart attack, or other problems may need approval from a cardiologist before surgery. Other risks involved with surgery, which are general risks in any operation, include bleeding, infection of the skin, deeper tissues, or even the mesh. Another possible problem includes development of blood clots in the big veins in a patient's legs or pelvic veins due to immobility around the time of surgery. Patients often receive antibiotics prior to surgery to attempt to prevent infection. Blood thinners and the placement of compression stockings on someone's calves can also be given to prevent blood clots.

Wound complications

Skin-level wound infections do not occur often after ventral hernia repairs, but they are a possible complication. This is more common in very large hernias. Other wound-related complications are also possible. A common issue after surgery is the development of fluid where the hernia used to be. This fluid, called a seroma, is most often found between the skin and the abdominal wall muscle or the mesh.

One of the most important factors that contribute to infections is smoking[21]. If someone smokes, it is important to reduce this as much as possible. Optimally, it would be best to completely quit for 3 weeks prior to surgery, which can substantially decrease the risk of infection.

Mesh Infection

Infection of the mesh used in the hernia repairs can also occur. This can be treated with antibiotics, but could require removal of the mesh in the operating room. Increased rates of mesh infection are associated with diabetes, smoking, obesity, chronic lung diseases, and a decreased immune system (from some chronic diseases or certain medications).

Recurrence

There is also a risk of recurrence, or failure of the hernia repair. Studies report varying recurrence rates, but laparoscopic and open repairs have similar recurrence rates in many studies[7].

Ileus

In some ventral hernia surgeries the intestines are often manipulated, and subsequently, a condition known as an "ileus" can occur. An ileus is when the intestines simply slow down and stop working in a coordinated manner. This can lead to food build-up in the intestines, nausea, and vomiting. An ileus gets better with time, but may require restrict eating or be without food or drink completely for a while. Infrequently, a tube placed through the nose and down into the stomach to help decompress the intestine in cases of nausea and vomiting until normal bowel function returns. Normal intestinal function can occur in 24 hours or might take a few days or anything in-between.

Intestinal Adhesions

Following any abdominal surgery, intestinal adhesions can occur. This is uncommon in small hernias where mesh is not placed in contact with the intestine. The development of scar tissue inside the abdomen is more common after someone has had a previous operation. Adhesions can develop between the mesh and the intestine when mesh is placed inside the abdomen; this less likely today due to the availability of specialized meshes that have an anti-adhesive barrier on the side that faces the internal organs.

Injury to Abdominal Organs

Abdominal organs are also at risk during hernia operations. Injury to the intestines, colon, or any other organ is possible when operating in the abdomen. These injuries are rare, are repaired when they occur, but can be very serious if they are not noted at the time of surgery. On occasion, injured bowel can lead to a communication of the intestines with the skin; this is known as a "fistula". This is also rare, and they can heal on their own, but fistulas often require surgery.

Death

Ultimately any of the complications described above could lead to the most serious consequence of all, death. Death is extremely rare during hernia surgery. It can occur from heart and circulation conditions, blood clots traveling to the lungs, bleeding, infections, or organ injury.

Chronic Pain

A complication that is not always considered is the risk of chronic discomfort following surgery, which can adversely affect a patient's quality of life in general. Chronic discomfort (pain present longer than 3 months after surgery) must be distinguished from short-term pain. All patients will have pain the day of surgery, some patients recover in a few days, while others can have significant discomfort for a few weeks. Pain medication is needed and given to nearly every patient after surgery. In general, patients complain of less pain 1 month after surgery than before the operation. Patients who have laparoscopic repairs complain of pain and activity limitation more frequently than patients who have open surgery in the short-term. By six months, bothersome symptoms are less frequent for both laparoscopic and open repairs, and there is no quality of life difference between repair methods[7].

WHAT IS THE RISK OF CHRONIC PAIN?

In general, patients with pain before surgery are more likely to have pain after surgery. There are other factors that contribute to pain after ventral hernia repair, as well. Currently, a computerized equation is being developed where patients or physicians can answer short questions about these factors and the percent chance of pain lasting 1 year will be calculated. This equation is being created using data contained in a very large international database. There is already an equation available for calculating this risk after groin hernia repair.

WHAT CAN BE DONE TO REDUCE THE RISK OF OTHER COMPLICATIONS?

Overall complication rates are considered to be low. Skin and wound complications are more common, but there are risk factors that can be modified. For example, quitting smoking for 3 weeks prior to surgery has been shown to reduce wound complications[22]. Weight loss and good control of diabetes are also associated with lower wound complications.

HOW DO I PREPARE FOR SURGERY AND WHAT IS THE RECOVERY PERIOD AFTER SURGERY?

Preparation for Surgery

Health history and physical exam should be performed by a surgeon and sometimes an anesthesiologist for every patient prior to surgery. Depending on the patient's age and health, blood testing, urine testing, EKG, chest X-ray, or other tests may be required. An evaluation by a heart specialist may be required if there is a significant history of certain heart problems. There are certain medications that may need to be stopped prior to surgery. Patients should discuss their medications with the doctors. They should not stop 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 3-6 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

The length of hospital stay varies after surgery. Some patients may go home on the day of surgery after small ventral hernia repairs. Other patients may stay in the hospital for several days to a week or more after repair of a large, complicated ventral hernia. After surgery, patients may return to work when they feel able to do so. This may take anywhere from a few days for small hernias to a several weeks for larger hernias. All patients are instructed to avoid heavy lifting and straining for 6 weeks after surgery.

SUMMARY

Ventral hernias are common problems. Surgery is the only definitive treatment for ventral hernias, but not all hernias have to be repaired. Repair reinforced with a prosthetic mesh is associated with a lower recurrence rate and is generally recommended. Laparoscopic and open repair of ventral hernias are both good options with each having its own set of advantages.

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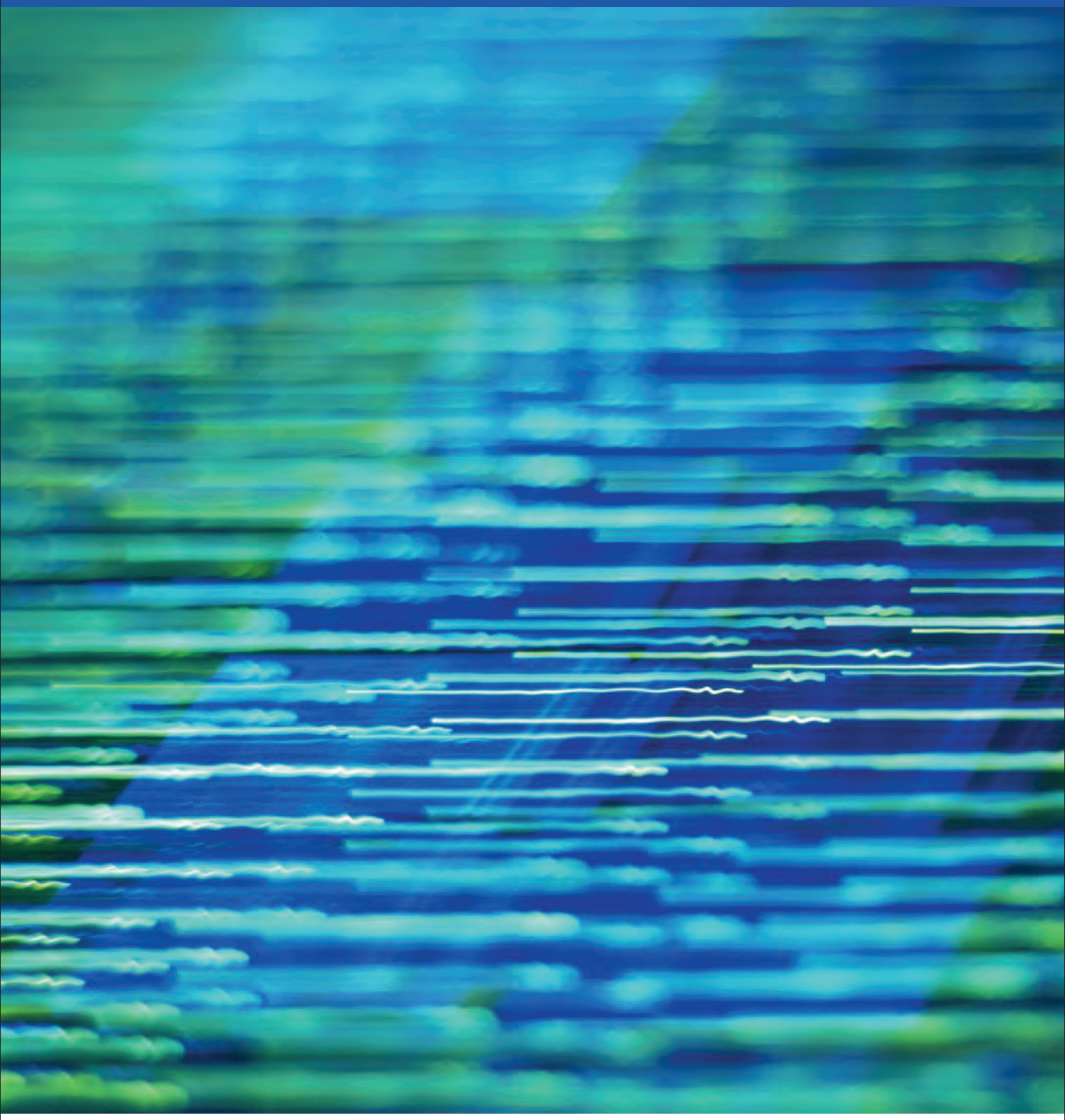

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