Inguinal Hernia

National Digestive Diseases Information Clearinghouse

U.S. Department of Health and Human Services

NATIONAL INSTITUTES OF HEALTH

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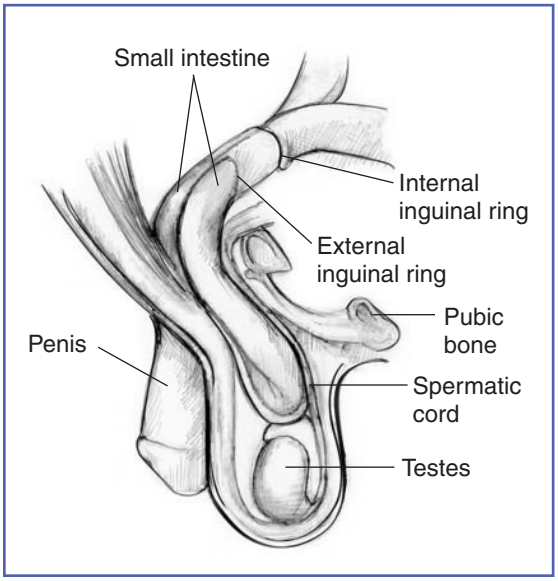
NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES

What is inguinal hernia?

An inguinal hernia is a condition in which intra-abdominal fat or part of the small intestine, also called the small bowel, bulges through a weak area in the lower abdominal muscles. An inguinal hernia occurs in the groin—the area between the abdomen and thigh. This type of hernia is called inguinal because fat or part of the intestine slides through a weak area at the inguinal ring, the opening to the inguinal canal. An inguinal hernia appears as a bulge on one or both sides of the groin. An inguinal hernia can occur any time from infancy to adulthood and is much more common in males than females. Inguinal hernias tend to become larger with time.



An inguinal hernia showing the small intestine descending through the inguinal canal.

What are the types and causes of inguinal hernia?

The two types of inguinal hernia have different causes.

Indirect inguinal hernia. Indirect inguinal hernias are congenital hernias and are much more common in males than females because of the way males develop in the womb. In a male fetus, the spermatic cord and both testicles—starting from an intra-abdominal location—normally descend through the inguinal canal into the scrotum, the sac that holds the testicles. Sometimes the entrance of the inguinal canal at the inguinal ring does not close as it should just after birth, leaving a weakness in the abdominal wall. Fat or part of the small intestine slides through the weakness into the inguinal canal, causing a hernia. In females, an indirect inguinal hernia is caused by the female organs or the small intestine sliding into the groin through a weakness in the abdominal wall.

Indirect hernias are the most common type of inguinal hernia. Premature infants are especially at risk for indirect inguinal hernias because there is less time for the inguinal canal to close.

Direct inguinal hernia. Direct inguinal hernias are caused by connective tissue degeneration of the abdominal muscles, which causes weakening of the muscles during the adult years. Direct inguinal hernias occur only in males. The hernia involves fat or the small

intestine sliding through the weak muscles into the groin. A direct hernia develops gradually because of continuous stress on the muscles. One or more of the following factors can cause pressure on the abdominal muscles and may worsen the hernia:

- sudden twists, pulls, or muscle strains
- lifting heavy objects
- straining on the toilet because of constipation
- weight gain
- chronic coughing

Indirect and direct inguinal hernias usually slide back and forth spontaneously through the inguinal canal and can often be moved back into the abdomen with gentle massage.

What are the symptoms of inguinal hernia?

Symptoms of inguinal hernia include

- a small bulge in one or both sides of the groin that may increase in size and disappear when lying down; in males, it can present as a swollen or enlarged scrotum
- discomfort or sharp pain—especially when straining, lifting, or exercising—that improves when resting
- a feeling of weakness or pressure in the groin
- a burning, gurgling, or aching feeling at the bulge

What are "incarcerated" and "strangulated" inguinal hernias?

An incarcerated inguinal hernia is a hernia that becomes stuck in the groin or scrotum and cannot be massaged back into the abdomen. An incarcerated hernia is caused by swelling and can lead to a strangulated hernia, in which the blood supply to the incarcerated small intestine is jeopardized. A strangulated hernia is a serious condition and requires immediate medical attention. Symptoms of a strangulated hernia include

- extreme tenderness and redness in the area of the bulge
- sudden pain that worsens in a short period of time
- fever
- rapid heart rate

Left untreated, nausea, vomiting, and severe infection can occur. If surgery is not performed right away, the condition can become life threatening, and the affected intestine may die. Then that portion of the intestine must be removed.

How is inguinal hernia diagnosed?

To diagnose inguinal hernia, the doctor takes a thorough medical history and conducts a physical examination. The person may be asked to stand and cough so the doctor can feel the hernia as it moves into the groin or scrotum. The doctor checks to see if the hernia can be gently massaged back into its proper position in the abdomen.

How is inguinal hernia treated?

In adults, inguinal hernias that enlarge, cause symptoms, or become incarcerated are treated surgically. In infants and children, inguinal hernias are always operated on to prevent incarceration from occurring. Surgery is usually done on an outpatient basis. Recovery time varies depending on the size of the hernia, the technique used, and the age and health of the patient. The two main types of surgery for hernias are as follows:

- **"Open" hernia repair.** In open hernia repair, also called herniorrhaphy, a person is given local anesthesia in the abdomen or spine to numb the area, general anesthesia to sedate or help the person sleep, or a combination of the two. Then the surgeon makes an incision in the groin, moves the hernia back into the abdomen, and reinforces the muscle wall with stitches. Usually the area of muscle weakness is reinforced with a synthetic mesh or screen to provide additional support—an operation called hernioplasty.
- **Laparoscopy.** Laparoscopic surgery is performed using general anesthesia. The surgeon makes several small incisions in the lower abdomen and inserts a laparoscope—a thin tube with a tiny video camera attached to one end. The camera sends a magnified image from inside the body to a monitor, giving the surgeon a close-up view of the hernia and surrounding tissue. While viewing the monitor, the surgeon uses instruments to carefully repair the hernia using synthetic mesh.

People who undergo laparoscopic surgery generally experience a somewhat shorter recovery time. However, the doctor may determine laparoscopic surgery is not the best option if the hernia is very large or the person has had pelvic surgery.

Most adults experience discomfort after surgery and require pain medication. Vigorous activity and heavy lifting are restricted for several weeks. The doctor will discuss when a person may safely return to work. Infants and children also experience some discomfort but usually resume normal activities after several days.

What are the complications of surgery for inguinal hernia?

Surgery to repair an inguinal hernia is quite safe and complications are uncommon. Knowing possible risks allows patients to report postoperative symptoms to their doctor as soon as they occur.

- **Risk of general anesthesia.** Before surgery, the anesthesiologist—a doctor who administers anesthesia—reviews the risks of anesthesia with the patient and asks about medical history and allergies to medications. Complications most likely occur in older people and those with other medical conditions. Common complications include nausea, vomiting, urinary retention, sore throat, and headache. More serious problems include heart attack, stroke, pneumonia, and blood clots in the legs.

  Getting out of bed after surgery and moving as soon as the doctor allows will help reduce the risk of complications such as pneumonia and blood clots.
- **Hernia recurrence.** A hernia can recur up to several years after repair. Recurrence is the most common complication of inguinal hernia repair, causing patients to undergo a second operation. Hernia recurrence occurs less often when a hernioplasty is performed.

- **Bleeding.** Bleeding inside the incision is another complication of inguinal hernia repair. It can cause severe swelling and bluish discoloration of the skin around the incision. Surgery may be necessary to open the incision and stop the bleeding. Bleeding is unusual and occurs in less than 2 percent of patients.[1]
- **Wound infection.** The risk of wound infection is small—less than 2 percent—and is more likely to occur in older adults and people who undergo more complex hernia repair.[2] The person may experience a fever, discharge from the incision, and redness, swelling, or tenderness around the incision. Postoperative infection requires antibiotics and, occasionally, another procedure requiring local anesthesia to make a small opening in the incision and drain the infection.
- **Painful scar.** Sometimes people experience sharp, tingling pain in a specific area near the incision after it has healed. The pain usually resolves with time. Medicine may be injected in the area if the pain continues.
- **Injury to internal organs.** Although extremely rare, injury to the intestine, bladder, kidneys, nerves and blood vessels leading to the legs, internal female organs, and vas deferens—the tube that carries sperm—can occur during hernia surgery and may lead to more operations.

[1]Freeman ME, Smith SL. Inguinal hernia: open repair. In: Hinder RA, Kelly KA, Sarr MG, eds. *Mayo Clinic Gastrointestinal Surgery*. St. Louis: Elsevier Science; 2004: 679–689.

[2]Ibid.

Points to Remember

- An inguinal hernia is a condition in which intra-abdominal fat or part of the small intestine, also called the small bowel, bulges through a weak area in the lower abdominal muscles. An inguinal hernia occurs in the groin—the area between the abdomen and thigh.
- An inguinal hernia can occur any time from infancy to adulthood and is much more common in males than females.
- Direct and indirect hernias are the two types of inguinal hernia, and they have different causes.
- Symptoms of an inguinal hernia usually appear gradually and include a bulge in the groin, discomfort or sharp pain, a feeling of weakness or pressure in the groin, and a burning, gurgling, or aching feeling at the bulge.
- An incarcerated inguinal hernia is a hernia that becomes stuck in the groin or scrotum and cannot be massaged back into the abdomen.
- A strangulated hernia, in which the blood supply to the incarcerated small intestine is jeopardized, is a serious condition and requires immediate medical attention. Symptoms include extreme tenderness and redness in the area of the bulge, sudden pain that worsens quickly, fever, rapid heart rate, nausea, and vomiting.
- An inguinal hernia is diagnosed through a physical examination.
- Inguinal hernias may be repaired through surgery. Surgery is performed through one incision or with a laparoscope and several small incisions.

- Surgery for inguinal hernia is usually done on an outpatient basis. Recovery time varies depending on the size of the hernia, the technique used, and the age and health of the patient.
- Complications from inguinal hernia surgery are rare and can include general anesthesia complications, hernia recurrence, bleeding, wound infection, painful scar, and injury to internal organs.

Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases' Division of Digestive Diseases and Nutrition supports basic and clinical research into digestive and abdominal conditions. Scientists and surgeons continue to evaluate ways to prevent postoperative complications following inguinal hernia repair. New technologies and materials are being developed to improve existing surgical techniques for all types of inguinal hernia repair and to decrease hernia recurrence rates.

Participants in clinical trials can play a more active role in their own health care, gain access to new research treatments before they are widely available, and help others by contributing to medical research. For information about current studies, visit *www.ClinicalTrials.gov*.

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Acknowledgments

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This publication was reviewed by Michael G. Sarr, M.D., Mayo Clinic.

You may also find additional information about this topic by

- searching the NIDDK Reference Collection at *www.catalog.niddk.nih.gov/resources*
- visiting MedlinePlus at *www.medlineplus.gov*

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This fact sheet is also available at *www.digestive.niddk.nih.gov*.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

NIH Publication No. 09–4634
December 2008