GROIN SURGERY

Hernia Repair, Herniorrhaphy

A surgery, which is performed in inguinal part of the body.

⚠️ Risk factor ♂ Male

About Groin surgery

The most common condition, which needs to be solved surgically, is groin hernia. The problem may arise since the spermatic cord which carries blood vessels and vas deferens (responsible for transport of sperms from the testicle) is located near where the hernia repair is usually done. When the surgery is performed, there are some possible complications, including obstruction of the spermatic cord. Obstruction may occur during direct injury when surgery is performed, or what is more often, some time after the hernia repair. Inguinal vasal obstruction related to inguinal herniorrhaphy (especially mesh repair methods) is a frequently unrecognized cause of azoospermia in the male infertility patient.

Groin hernia

A hernia is the exit of an organ, such as the bowel, through the wall of the cavity in which it normally resides. Hernias come in a number of different types. Most commonly they involve the abdomen, specifically the groin. By far the most common hernias (up to 75% of all abdominal hernias) are the so-called inguinal hernias. Inguinal hernias are further divided into the more common indirect inguinal hernia, in which the inguinal canal is entered via a congenital weakness at its entrance (the internal inguinal ring), and the direct inguinal hernia type, where the hernia contents push through a weak spot in the back wall of the inguinal canal. Inguinal hernias are the most common type of hernia in both men and women. In some selected cases, they may require surgery. In adult hernia repairs, the underlying principle involved reconstruction of weakened muscles and aponeurosis in multiple anatomical layers, for pediatric hernia simple dissection and high ligation of processus vaginalis at internal ring was found to be sufficient to provide a long lasting cure to repair indirect inguinal hernia. In the last few years the use of the laparoscopic approach to inguinal hernia has increased not only for accurate diagnoses, but also for treatment. The data reported in the literature underline the safety, reproducibility and excellent cosmetic results of this technique to an extent that it can now be considered as a valid alternative to traditional surgery and a first choice technique to explore the contralateral side, in the differential diagnosis between direct and indirect hernias, and for the treatment of recurrence. Nevertheless some perplexity still remains about the higher percentage of recurrence rate with this technique ranging from 3.4% to 4.1% compared to the open technique.

Probably the most discussed part of hernia repair involves muscle reinforcement techniques which often use synthetic materials (a mesh prosthesis). The mesh is placed either over the defect (anterior repair) or under the defect (posterior repair). At times staples are used to keep the mesh in place. These mesh repair methods are often called "tension free" repairs because, unlike some suture methods (e.g., Shouldice), muscle is not pulled together under tension. However, this widely used terminology is misleading, as there are many tension-free suture methods that do not use mesh (e.g., Desarda, Guarnieri, Lipton-Estrin, etc.). Evidence suggests that tension-free methods (with or without mesh) often have lower percentage of recurrences and the fastest recovery period compared to tension suture methods. However, prosthetic mesh usage seems to have a higher incidence of chronic pain and, sometimes, infection. Complications may arise post-operation, including rejection of the mesh. In the event of a mesh rejection, the mesh will very likely need to be removed. Mesh rejection can be detected by obvious, sometimes localized swelling and pain around the mesh area. 

Moreover, mesh can cause scar tissue to form, providing a blockage to prevent future hernias from occurring, but this can also cause obstruction of the vas deferens.

Symptoms
Some hernias do not cause any symptoms. These are very often diagnosed by doctor’s professional palpation examination. Others can be felt or seen as the bulge in an inguinal area. More obvious are when you stand and try to cough or strain. The bulge can burn or ache, sometimes you can feel weakness or pressure in your groin. In complicated cases, hernia could incarcerate. The blood supply is blocked and this is very serious situation— if you have rapid heart rate, fever, nausea, strong pain in your groin or the hernia became red, purple or dark, you need to see your doctor immediately.

**Associated diseases**
- obstructive azoospermia
- ejaculatory disorders

**Complications**

Complications are frequent (>10%). They include, but are not limited to: foreign-body sensation, chronic pain, ejaculation disorders, mesh migration, mesh folding (meshoma), infection, adhesion formation, erosion into intraperitoneal organs. Such complications usually become apparent weeks to years after the initial repair, presenting as abscess, fistula, or bowel obstruction.

Commercial meshes, which are used to hold hernia inside the body, are typically made of proline (polypropylene) or polyester. In the long term, polypropylene meshes face degradation, due to heat effects and also increases the risk of stiffness. Cases of obstructive azoospermia have been related with the use of polypropylene mesh, due to the obstruction of the vas deferens as a result of the fibroblastic reaction to the mesh. However, a recent study finds that this risk seems to be less than 1% and therefore, it does not need to be notified in an informed consent.

**Risk factors**
- age
- weaken muscles
- increase intraabdominal pressure
- constipation
- prostatitis
- bronchitis
- abdominal fat deposit
- age between 15-25

**Prevention**

To prevent hernia you should maintain healthy weight, eat high-fibre foods such as fruit and vegetable, because this helps to prevent constipation. Do not lift heavy objects, but if it is necessary, bend from your knees, not from your waist. You should also stop smoking.

**How it can affect fertility**

First of all, men with inguinal hernia should consider the risk of complication which results from hernia repair. The inguinal obstruction which may follow groin hernia surgery leads to fertility problems in the future. If the surgery is done on both sides left and right obstruction of spermatic cord could cause azoospermia-condition, when there is no sperm in ejaculate. Smaller probability of azoospermia is associated with only one sided surgery. Spermatic granuloma formation, vas and epididymal epithelium dysfunction and testicular atrophy, unilateral or bilateral are the most common consequences. Bilateral testicular damage leads to the formation of sperm autoantibodies and sympathetic orchiopathia.

Men should consider sperm cryopreservation before they undergo the groin surgery. Cryopreservation allows to do in vitro fertilization and intracytoplasmatic sperm injection, if any fertility problems will appear after the surgery.

**Prognosis**
Men with bilateral hernia repair could have a slightly increased risk for infertility compared to them with used on only one side. The cumulative incidence is still less than 1%.

Find more about related issues

Diagnoses

**Anejaculation**
The pathological inability to ejaculate in males, with (orgasmic) or without (anorgasmic) orgasm.
Learn more at: [www.fertilitypedia.org/therapy/diag/anejaculation](http://www.fertilitypedia.org/therapy/diag/anejaculation)

**Azoospermia**
Complete absence of sperm in the ejaculate of a man.
Learn more at: [www.fertilitypedia.org/therapy/diag/azoospermia](http://www.fertilitypedia.org/therapy/diag/azoospermia)

**Erectile dysfunction**
The inability (that lasts more than 6 months) to develop or maintain an erection of the penis during sexual activity.
Learn more at: [www.fertilitypedia.org/therapy/diag/erectile-dysfunction](http://www.fertilitypedia.org/therapy/diag/erectile-dysfunction)

**Hydrocele testis**
An accumulation of clear fluid in the tunica vaginalis, the most internal of membranes containing a testicle.
Learn more at: [www.fertilitypedia.org/therapy/diag/hydrocele-testis](http://www.fertilitypedia.org/therapy/diag/hydrocele-testis)

**Obstructive azoospermia**
Absence of sperm in the ejaculate despite normal spermatogenesis, caused by an obstruction of the genital tract.
Learn more at: [www.fertilitypedia.org/therapy/diag/obstructive-azoospermia](http://www.fertilitypedia.org/therapy/diag/obstructive-azoospermia)

**Orchitis**
An inflammation of the testes, involving swelling and heavy pains.
Learn more at: [www.fertilitypedia.org/therapy/diag/orchitis](http://www.fertilitypedia.org/therapy/diag/orchitis)

Therapies

**TESE**
Removal of a small portion of testicular tissue in order to extract a few viable sperm.
Learn more at: [www.fertilitypedia.org/edu/therapies/tese](http://www.fertilitypedia.org/edu/therapies/tese)

Gallery

**Inguinal hernia**
Diagram of an indirect inguinal hernia (view from the side).

**Hernia**
Frontal view of an inguinal hernia (right).
Mesh Graft
Mesh graft for groin hernia repair

Open inguinal herniotomy
Traditional open inguinal herniotomy in children.

Purse-string suture
Scheme of the peritoneum incision/purse-string suture.

Herniorraphy
Herniorraphy on the contralateral side.

Sources

“Hernia” —sourced from Wikipedia licensed under CC BY-SA 3.0

“Laparoscopic Approach in the Treatment of Inguinal Hernia and Associated Pathologies in Children” —by Marte et al. licensed under CC BY 3.0

“Inguinal hernia surgery” —sourced from Wikipedia licensed under CC BY-SA 3.0

“Inguinal hernia” —by NIDDK licensed under CC0

“Hernia” —by Heilman licensed under CC BY-SA 3.0

“Mesh graft” —sourced from Wikimedia licensed under CC BY-SA 3.0