

Hernia Service



Surgeries and Procedures



Laparoscopic (Keyhole) Hernia Surgery

Open Hernia Repair

Robotic Hernia Surgery

Single Incision Laparoscopic (SILS) Hernia Repair

Complex Abdominal Wall Hernia Repair

Endoscopic Component Separation Surgery

Umbilical Hernia Repair With Minimal Access Technique

Laparoscopy In Groin Hernia (Inguinal/ Femoral/Obturator)

Incisional Hernia Surgery

Repair Of Rare Hernia (Spigelian/Lumbar/ Parastomal/Subxiphoid)

Emergency Hernia Surgery



What is a Hernia?

A hernia is a bulge over the abdominal wall caused by a weakness or tear of the muscles which allows organs such as the intestines, fatty tissue inside the abdomen and urinary bladder to protrude through the defect. Patients usually notice a swelling under the skin and may experience pain and discomfort occasionally. Symptoms may worsen after prolonged standing, walking or straining (e.g. lifting of heavy objects).

Most hernias occur as a result of weakness or defect in the muscles of the abdomen since birth. As one ages, this defect is further weakened by strenuous physical activity, lifting of heavy objects or incisions of a previous surgery.

The risk of developing a hernia increases with:

- Lifting heavy objects/strenuous physical activity
- Pregnancy
- Chronic cough (e.g. Asthma/ Chronic Obstructive Pulmonary Disease (COPD))
- Straining due to constipation or when passing urine
- Smoking
- Obesity
- Taking medications such as steroids

Types of Hernia

Hernias are named according to their location on the abdominal wall or occasionally their specific cause.

1] Groin Hernia: There are two types of groin hernias – Inguinal and Femoral. Inguinal hernia is the most common type of hernia and has two varieties – Indirect and Direct. Indirect hernia occurs through the groin in an area on the muscle where the male testis pierces and descends down during foetal development. Femoral hernia is more common in women and is known to cause acute problems.

2] Umbilical Hernia: This is one of the most common hernias. Women are more commonly affected than men – probably due to a previous pregnancy. This area is particularly weak because of the umbilical cord attachment during birth.

3] Incisional Hernia: This form of hernia develops at the site of previous surgical incisions. The muscles around the incision site becomes weak and may lead to hernia formation. At times, multiple areas of weakness may develop with multiple hernias along the entire length of the scar and these can develop weeks, months or years after the initial surgery. Every subsequent surgery further weakens the muscle and increases the risk of hernia formation.

4] Midline Ventral Hernia: This can be epigastric (in upper abdomen), para-umbilical (around the umbilicus), supra-pubic (in lower abdomen) and sub-xiphoid (just below the rib cage in the midline).

5] Spigelian Hernia: This occurs through the spigelian fascia which is just beside the rectus muscles of the abdomen. The hernia lies in between two muscles of the abdominal wall and is hence difficult to diagnose clinically. The surgeon may need to perform an ultrasound or computed tomography (CT) scan.

6] Rare Hernia: This includes obturator hernia, lumbar hernia, sub-xiphoid hernia and para-stomal hernia.



How is a hernia diagnosed?

Most patients notice a bulge over the abdomen. Some patients may experience pain over the swelling particularly while straining, and/or during physical activity. Most hernias are diagnosed by routine clinical examinations. In some cases, an ultrasound or a CT scan can be performed (i.e. large hernia, complex hernia, recurrent hernia, obese patient etc).

Why do patients need surgery?

Most hernias need to be repaired surgically to treat symptoms and prevent complications (e.g. strangulation of intestine). Truss or abdominal binder are just temporary measures while awaiting surgery.

What happens if patients do not undergo surgery?

The only treatment for hernia is surgery to repair the defect in the muscle. By not undergoing surgery, the hernia may increase in size and a portion of the intestine or fat inside the abdomen may pass through the defect and get trapped. This may lead to blockage or strangulation of the intestine. Patients may also get a sudden onset of abdominal pain, distention of abdomen, persistent vomiting and constipation.

What is the type of anaesthesia used?

In NUH, most hernias are operated under General Anaesthesia (GA). Local Anaesthesia (LA) can also be an option for patients who are not suitable for GA.

How many days do patients have to stay in the hospital?

Most patients go home on the same day. Few patients stay overnight for pain or social/familial reasons. Patients with large or complex hernia may have to be warded for a few days, depending on the complexity of the surgery.



Inguinal Hernia Surgery

- **Open Hernia Repair**

Done from an 8 – 10cm incision in the groin, the hernia is reduced and the defect in the muscles is repaired with a surgical prosthesis (mesh). For bilateral hernia, incisions on both groins are needed. This can be performed under LA.

- **Laparoscopic (Keyhole) Surgery**

A laparoscope (tiny camera) and small instruments are inserted through 3 small holes into the abdomen. The hernia is then identified, reduced, and repaired with a mesh. In some cases, small surgical staples may be used to hold the mesh in place. This is usually carried out under GA.

2 types of Laparoscopic Surgery:

1. **TAPP** (Trans abdominal pre-peritoneal)
2. **TEP** (Totally extra-peritoneal) – this is generally recommended as we do not enter the abdominal cavity, hence reducing the risk of complications

Why Keyhole surgery?

- Involves small incisions, so there is less pain, shorter hospital stay, faster recovery and earlier return to usual activities
- Placing the mesh on the inside (posterior repair) of the defect gives better biomechanical strength as compared to open surgery
- Lesser chance of damage or irritation of nerves as the surgery is done behind the defect in the muscle and away from the nerves in the inguinal canal
- Hernias on both sides can be repaired through the same three cuts on the abdomen
- It is a better option to repair a recurrent hernia after a previous open surgery as it would be done on a new plane as compared to that of the earlier one
- Repair other hernias e.g. femoral, obturator in the same setting, if incidentally identified
- Shorter period of post-operative restrictions on physical activities
- Cosmetically better as it results in smaller scars

Ventral Hernia Surgery

- **Open Mesh Repair**

The skin incision depends on the size of the hernia, and is almost two to three times the size of the hernia. The hernia is pushed back and the defect in the muscle is closed with sutures. This is then covered by a mesh which is fixed to the abdominal wall with multiple stitches. For large hernias, we may need to place plastic tubes (drain) through the abdominal wall for a few days.

- **Laparoscopic (Keyhole) Surgery**

A 10 – 12mm incision is made at the flank and two additional 5mm incisions above and below the first cut, usually on one side of the abdomen. A tiny camera allows the surgeon to see the surgery on a TV screen and thin long instruments are also inserted through these cuts. The hernia is reduced back inside the abdomen, and the defect is closed with stitches and covered by a mesh from inside. This mesh is fixed to the abdominal wall with a few stitches and absorbable screw-like device (tackers).

Why Keyhole surgery?

- Involves small incisions, so there is less pain, shorter hospital stay, faster recovery and earlier return to normal activity.
- Placing the mesh on the inside of the defect gives better mechanical strength than when placed outside as compared to open surgery
- Allows surgeons to see the entire hernia from inside and helps identify additional defects if present, especially in cases of incisional or a recurrent hernia
- It is a better option to repair a recurrent hernia after a previous open surgery as it would be done on a new plane as compared to that of the earlier one
- Repair other hernia e.g., inguinal in the same setting, if incidentally identified
- Shorter period of post-operative restrictions on physical activities
- Cosmetically better as it results in smaller scars
- Particularly advantageous in obese patients
- Reduced wound infections and wound complications

Novel Techniques

- **Single Incision Laparoscopic (SILS) Hernia Repair**

This offers an even less invasive method of hernia repair. The surgery is performed through just one incision of about 1.5 – 2cm over the abdomen using special device and instruments. By using only one cut, it results in lesser pain and better cosmesis.

- **Robotic Surgery**

In large, complex and difficult hernias, laparoscopy may not be possible and patients invariably undergo open repair. As a result, patients may end up with large incisions, increased pain and wound complications after surgery. The robot is an advanced technology used by the surgeon to perform complex manoeuvres not possible by laparoscopy. The robot also allows us to perform the surgery through similar small incisions.

- **Endoscopic Component Separation (ECS)**

In hernias with large defects, it is difficult to achieve closure of the abdominal wall. In such cases, ECS is performed. We incise on the muscles in the lateral abdominal wall to release the attachments and bring them to the midline to cover the defect. The robot may be used to perform this procedure.



Enhanced Recovery after Surgery (ERAS)

We adopt the ERAS Protocol for faster and more effective patient recovery.

Pre-Operative

- Patient Education
- Multimodal analgesics (non-opioid)

Operative

- Minimally-invasive techniques
- Avoid fluid overload
- PONV (post-operative nausea vomiting)
- No drains

Post-Operative

- Non-opioid pain control
- Early diet
- Early mobilisation
- Early catheter removal



Post-Operative Advice

- You may notice some pain after surgery, especially with open surgery, and will be given analgesics for this period. The pain will minimise with time.
- You will experience most pain during changing of position and while getting out of bed.
- Take it easy for the first 2 – 3 days, after which you can resume your normal activities.
- Most patients are able to get back to their normal activities in a short period of time. These include showering, driving, walking up stairs, work and sexual intercourse.
- After Laparoscopic surgery, you are advised to avoid lifting heavy weights and strenuous physical activity for 2 – 3 weeks.

Call us if you experience:

- Persistent fever above 39°C
- Bleeding
- Chills
- Increased abdominal pain or swelling
- Persistent nausea or vomiting
- Persistent cough or shortness of breath
- Drainage from any incision
- Redness surrounding your incisions

Notes

A series of horizontal dotted lines for writing notes.

Notes

Surgical Specialists Centre
NUH Medical Centre Level 15
Email: surgical_specialists_centre@nuhs.edu.sg

University Surgical Centre (USC)
Kent Ridge Wing Level 5
Email: usc@nuhs.edu.sg

Appointment Line: (65) 6772 2002

Opening Hours:
Monday to Friday: 8:30am - 5:30pm
Closed on Sat, Sun & Public Holidays



Nearest MRT Station: Kent Ridge (Circle Line)

National University Hospital
5 Lower Kent Ridge Road, Singapore 119074
Tel: (65) 6779 5555 Fax: (65) 6779 5678
Website: www.nuh.com.sg
Company Registration No. 198500843R

Information is correct at time of printing (May 2017) and subject to revision without prior notice. The information provided in this publication is meant purely for educational purposes and may not be used as a substitute for medical diagnosis or treatment. You should seek the advice of your doctor or a qualified healthcare provider before starting any treatment or if you have any questions related to your health, physical fitness or medical conditions.

Copyright (2017). National University Hospital. All Rights reserved. No part of this publication may be reproduced without permission in writing from National University Hospital.