

**INFORMATION**  
**FOR PATIENTS CONSIDERING**  
**A**  
**LAPAROSCOPIC**  
**INGUINAL HERNIA REPAIR**

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## 1. Background

The laparoscopic hernia repair technique was introduced in 1990s and has been applied to most hernias of the abdominal (tummy) wall but most commonly for repair of inguinal hernias (the commonest groin hernia). The National Institute for Clinical Excellence (NICE) issued guidance on the use of this technique in inguinal hernia repair in September 2004 (Technology appraisal 83). The repair has obvious benefits for patients with a hernia in both groins or with a recurrent hernia. NICE has recently indicated the technique also has benefits for first time hernias on one side and recommended using the technique more widely but with specific recommendations on guidance for patients as the benefits over the open operation for this group of patients is not as obvious. This information sheet is produced to give guidance to patients and in response to the report by NICE. It is designed for any patient with a groin hernia and considering the laparoscopic method of repair.

Please click here if you wish to see the complete NICE report (pdf format).  
<http://guidance.nice.org.uk/TA83/Guidance/pdf/English>.

## 2. What is an inguinal hernia?

Inguinal hernias can occur in men and women but are much commoner in men. In the abdominal wall at the groin there is a channel between the muscle layers that allows structures to pass to and fro between the testicle and the inside of the abdomen and pelvis. This channel is called the inguinal canal and is an area of natural weakness in the tummy wall. Women also have an inguinal canal but it is smaller and carries a ligament connected to the uterus. This area is lined on the inside by a membrane that covers the entire abdominal cavity called the peritoneum. When the inguinal canal becomes weak the peritoneum will bulge through the abdominal wall along the inguinal canal and may protrude to lie under the skin at the top of the scrotum or above the opening of the vagina. This bulge is an inguinal hernia. Hernias become commoner as we get older. People who have higher pressures in their tummy cavity due to strenuous work, sport, constipation, a chronic cough or bladder problems and patients who smoke are more prone to inguinal hernias but often people acquire hernias for no apparent reason. (Please note that adult inguinal hernias are different to inguinal hernias in children – in children these are due to a congenital bulge and are covered in a separate fact sheet on the website).

### **3. What are the symptoms of an inguinal hernia?**

The universal feature of a hernia is a bulge in the groin that you can either feel or see. Occasionally the start of the bulge can be attributed to a particularly strenuous activity, which caused pain in the groin. The bulge starts small but will gradually, over several years, increase in size. When small, the bulge will fluctuate in size naturally. It is more prominent when standing, during activity and at the end of the day. It will naturally go flat when lying or when pushed. If left for many years the hernia may extend well down into the scrotum. The hernia then may not naturally go back. The bulge is then a permanent feature in the groin. Massive hernias may occur if left for a long time and may make urination difficult. Surgery for large hernias is often more extensive, prolonged and complicated.

Occasionally a hernia will ache but usually there are no other symptoms than the bulge, unless bowel becomes trapped within the hernia (see below). When the hernia is pushed back it may squelch; you should not be alarmed by this.

### **4. Why does an inguinal hernia need surgery?**

Not all inguinal hernias require surgery. Patients with small hernias that have no symptoms and go completely flat may require nothing unless they get bigger, particularly if patients are elderly or have medical problems. The latter may make an anaesthetic more problematic. Although a hernia can be repaired without a general anaesthetic (i.e. going to sleep) by using local anaesthetic (i.e. making the area numb with an injection) this cannot be done laparoscopically.

The principle reasons for surgery are

1. Some patients find the discomfort of the hernia interferes with their normal working life or leisure activities.
2. There is a small risk that if a hernia is left alone a small portion of bowel may become trapped in the hernia. This is called incarceration. If left the bulge may become painful and tender to touch and will not go flat if pushed. These are symptoms to suggest that the bowel is losing its blood supply – a condition called strangulation. These symptoms require urgent attention and you should seek medical attention from a casualty department if this occurs. This condition requires emergency surgery, which may also involve removing a portion of bowel. This condition is estimated to occur in 1 to 5% of patients with an inguinal hernia. However it occurs more frequently with very large inguinal hernias (hernias bigger than the size of your fist) and inguinal hernias

that have come back after previous surgery (recurrent). Another type of hernia called a femoral hernia also occurs in this area and this is also more prone to strangulation.

Hernias will gradually increase in size with time. Large inguinal hernias that extend into the scrotum are unsightly, trap bowel and may make urination or even walking difficult.

The longer surgery is deferred the larger the hernia may become and the more difficult subsequent repair then becomes with a consequent risk of the hernia coming back.

## **5. What are the methods available to repair a hernia?**

An adult inguinal hernia bulge forms because the back of the inguinal canal becomes weak and allows a bulge to push through the tummy wall at that point of weakness. Therefore hernia surgery in adults consists of two parts.

1. Removal of the bulge
2. Reinforcement of the inguinal canal

Removing the bulge involves either tying off the hernia then removing or dividing it, or placing it back into the tummy cavity.

To reinforce the inguinal canal a mesh is placed over the back of the inguinal canal to strengthen it and attract scar tissue. The mesh and the scarring strengthen the tummy wall at this point and prevent the hernia from coming back.

Older operations require sutures to reinforce the inguinal canal. These are either loose sutures laid as a darn or tight sutures. These procedures are considered obsolete by most surgeons because patients have more pain, take much longer to return to normal or strenuous physical activity and have a higher recurrence rate compared to the mesh repair. An exception to this is the overlapping sutured repair known as the Shouldice repair, although for most surgeons the mesh repair has superseded this because of its simplicity and faster return to activity.

## **6. Why mesh?**

The mesh repair is simpler to perform than sutured repairs and more effective. It achieves a more consistent repair and has a reduced recurrence rate of approximately 2% at 5 years from the operation compared to 5% or more for the older repairs.

A mesh repair is placed without tension to the groin tissues and is therefore less painful. This also means that stitches are much less likely to tear out with

activity, allowing patients to return to normal activity within 2 weeks from the operation compared to 6 weeks for the stitched repair. Patients also do not need to avoid strenuous activity after the operation provided the wound does not hurt.

However meshes are not a panacea. Mesh research has shown that over time the scar tissue that forms around the mesh may cause it to contract and this may be one reason for the small recurrence seen with meshes. This process may also cause chronic groin pain in a small number of patients, although this complication can occur in all types of inguinal hernia repair. Mesh technology companies have recognised these problems as they occurred and newer, but more expensive, meshes are available which may reduce this problem. It may be a number of years before we know the answer to this. Because of the cost of these newer meshes they may not be available in some NHS hospitals where budgets are tight.

## **7. The open repair**

The open operation is performed through an incision in the groin along the groin skin crease (the one above the hip skin crease). This is usually about 5 to 10 cm in length depending on the hernia size. The first layer of the tummy wall (the external oblique aponeurosis) is opened to expose the inguinal canal and the hernia bulge. The hernia bulge is then dissected away from the tummy wall or from the spermatic cord (in men). Depending on the shape and position of the bulge it is then either tied off and removed or pushed back into the tummy cavity and over-sewn. A polypropylene mesh is then placed over where the bulge has come through and secured with titanium staples or stitches. A plug or sheet of the same mesh may also be stitched in place at the weakest point where the spermatic cord enters the tummy wall behind the inguinal canal. The layers of the tummy wall and skin are then closed up with absorbable stitches. The mesh (and staples or securing stitches) are permanent. Its presence induces scarring which, together with the mesh itself, reinforces the area to prevent the hernia from coming back.

An open mesh repair can be done under a general anaesthetic, spinal anaesthetic or local anaesthetic.

## **8. The laparoscopic repairs**

A laparoscopic hernia repair also uses mesh. However in this technique the mesh is placed on the inside of the tummy wall behind the weakness in the inguinal canal in the space between the tummy wall muscles and the lining of the tummy cavity (the extra-peritoneal space). This space has to be developed as part of the operation. By doing this the hernia bulge is pulled back into the tummy cavity. The extra-peritoneal space is either developed

directly without entering the tummy cavity, by tunnelling between the layers of the tummy wall (total extra-peritoneal (TEP) technique) or by entering the tummy cavity and opening the lining membrane of the tummy cavity (trans-abdominal pre-peritoneal (TAPP) technique). In the TAPP repair this membrane is closed over the mesh to prevent it from coming into contact with the bowel. The laparoscopic techniques involve making three small incisions in the tummy wall above the hernia bulge; one at the belly button and two others either each side of this or below it. The number of incisions is the same whether the hernia is on one side or both sides. To operate laparoscopically carbon dioxide gas is gently pumped into the tummy cavity to create an operating space. This is released after the operation and any residual absorbed by the body and breathed out through the lungs.

## **9. Comparison of the techniques**

The laparoscopic repair is less painful and allows a faster recovery than the open mesh repair. This is particularly the case for recurrent hernias and hernias in both groins repaired at the same time. For first time one-sided inguinal hernias this faster recovery is small but most obvious for those returning to particularly strenuous activity after about a week or ten days. The open mesh repair is also associated with swelling and aching in the groin, which may take six or eight weeks to go down. This does not usually interfere with work or activities, but it is not present after the laparoscopic operation.

Although these advantages exist for the laparoscopic repair, this operation does expose patients to risks they would not usually face from the open repair. This includes injury to bowel, bladder or blood vessels and bowel obstruction if it sticks to the mesh inside the tummy cavity. These complications are rare (0.6%). Bowel and bladder injury have been reported in the open repair but is very rare (0.1%). After the laparoscopic operation it is possible to get a hernia through the incision made at the belly button. Immediately after the laparoscopic operation the scrotum may be enlarged due to the presence of carbon dioxide gas (pneumoscrotum). This disappears within 24 hours. Occasionally the space where the hernia is removed can fill with fluid and create a bulge called a seroma. This is felt under the skin and usually disappears within two to three months.

Both types of repair can be associated with a stiff feeling in the groin particularly in thin patients, a long term ache associated with entrapment of a local nerve by scarring (2%), wound infection, mesh infection and bruising in the groin. All of these are uncommon, except bruising.

The recurrence rates for the open and laparoscopic mesh techniques are low and about the same (2-5%), but less than the sutured repair.

## **10. The laparoscopic operation – what to expect after the operation**

The operation can be done as a day case. This means that patients leave hospital within 24 hours and often within 8 hours. There is no limitation on diet or mobility. Patients will experience discomfort in the wounds and require regular pain-killers for the first 3 to 5 days and occasionally thereafter. Most patients are sufficiently recovered to return to drive between 6 and 10 days from the surgery and return to work at 10 to 14 days. Strenuous physical activity may be uncomfortable for another week. In general, after the surgery, if it hurts when you do something stop, but if it does not hurt you are all right to keep going.

## **11. Who cannot undergo a laparoscopic hernia repair?**

A laparoscopic hernia repair can only be performed under general anaesthetic so patients who do not want or cannot tolerate this, cannot be considered for the laparoscopic technique. In general if a patient has had a previous operation on the lower tummy where the scar is placed down the middle of the tummy wall, a laparoscopic hernia repair is likely to be more difficult.

## **12. More information**

Further information on laparoscopic hernia surgery can be found at the web page for the NICE guidelines for this operation or from the Association of Laparoscopic surgeons (see links page).

Alternatively discuss this with your surgeon or General Practitioner.

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