Inguinal hernias

RICHARD VOGEL, MB ChB (UCT), FCS (SA)
Principal Specialist, General Surgery, Livingstone Hospital, Port Elizabeth

BERNARD OCHARO, MB ChB (Nhbi), FCS (SA)
Senior Registrar, General Surgery, Livingstone Hospital, Port Elizabeth

SATS PILLAY, MB ChB, FCS (SA)
Head, Department of Surgery, Livingstone Hospital, Port Elizabeth

The word ‘hernia’ is derived from the Latin word for rupture. A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls.

Although hernias can occur at various sites in the body these defects most commonly involve the abdominal wall, particularly the inguinal region. Inguinal hernia repair is the most common operation performed by general surgeons, hence the importance of ongoing improvements in operative technique.

Brief history

Before the 1980s repairs were tissue-based anatomical approximations. These techniques caused the repair to be subjected to continuous tensile stresses and strains, resulting in recurrence rates of 1 - 20%. The 1980s saw an explosion of surgical advances, with the ‘tension free’ polypropylene mesh repairs (described by Lichtenstein) becoming the gold standard of open repairs. Recurrence rates were reported as less than 5%.

The 1990s saw the birth of laparoscopic hernia repairs, with a concerted effort to reduce postoperative pain and recovery time after surgery.

All these improvements met initial resistance from the surgical community, with eventual acceptance after critical analysis of long-term outcomes.

Aetiology and pathophysiology

Evolution

The absence of the posterior rectus sheath below the arcuate line and a weak fascia transversalis resisting intra-abdominal pressure predisposes to the development of hernias. The erect posture of humans has resulted in gravitational stresses passing down to the lower abdominal wall, which is structurally not designed for these forces. However, despite these deficiencies, less than 5% of people develop a hernia.

Causes

These are multifactorial:

- A patent processus vaginalis is the prime cause of indirect inguinal hernia, most commonly seen in infants. However, 20% of autopsy studies reveal a patent processus with no hernia – therefore other factors must play a part.

- The shutter mechanism. With a rise in intra-abdominal pressure the conjoined tendon contracts, descends and comes to lie close to the inguinal ligament. The crura around the internal ring contract around the spermatic cord and the external oblique aponeurosis becomes tense and presses on the internal ring, thus reinforcing the weak posterior wall. Failure of this ‘shutter mechanism’ would predispose to a hernia.

- Raised intra-abdominal pressure. This could be caused by coughing, straining or lifting. The shutter mechanism could be overwhelmed, particularly in men over 50 years who have weakening of the abdominal muscles, the shutter and the fascia transversalis.

- Collagen and fascia transversalis. A disorganised framework of the fascia transversalis could lead to weakening and predispose to a direct hernia.

- General factors. Advancing age, lack of exercise, illness and prolonged bedrest all lead to weakening of muscle and fascia.

Diagnosis

An intermittent or persistent swelling in the inguinal region is a sign of an inguinal hernia. It may be associated with pain or vague discomfort, and occasionally patients may present with paraesthesia caused by compression or irritation of the inguinal nerves by the hernia.

The inguinal region should be examined with the patient in the supine and standing positions. The distinction between a direct and indirect inguinal hernia is of little importance because the operative repair of these two types of hernias is the same.

Ultrasound may aid in the diagnosis of occult groin hernias. The differential diagnosis of a groin mass includes femoral hernia, hydrocele, inguinal adenitis, femoral adenitis, lymphoma, varicocele, ectopic testis, lipoma, haematoma, psoas abscess, metastatic neoplasm, epididymitis, testicular torsion and femoral artery aneurysm.

Should all inguinal hernias be repaired?

Traditionally, inguinal herniorrhaphy was the norm, mainly to prevent complications such as incarceration and/or strangulation of abdominal contents. All symptomatic patients should undergo herniorrhaphy.

However, two recent randomised controlled trials comparing ‘watchful waiting’ with repair in minimally symptomatic men have shown the risk of complications to be less than 1.1%. Therefore asymptomatic patients could be treated conservatively.

Operative techniques

Hernia repairs may be done by the traditional open method or by the laparoscopic methods.

Open operations

The most common open operation is the Lichtenstein tension-free onlay mesh repair (Fig. 1). A mesh plug or a combination of plug and mesh may also be used in large hernias (Fig. 2).

Advantages

- These operations can be performed under local, regional or general anaesthesia.
- Open operations are easily taught and most surgeons are au fait with the techniques.
The operating time is short.
There is a low recurrence rate equivalent to that of a laparoscopic operation.

Disadvantages
- The surgical scars are larger.
- There is more postoperative pain and discomfort.
- The risk of sepsis is higher.

Laparoscopic repairs
Two techniques are widely used:
- The transabdominal preperitoneal (TAPP) technique – this involves entering the peritoneal cavity, with the attendant risk of injury to abdominal contents.
- The totally extraperitoneal (TEP) technique – this operation is technically more demanding, and the repair is done in the plane between the peritoneum and the abdominal wall musculature.

Advantages
- There is reduced postoperative pain and discomfort.
- One can return to work sooner.

Bilateral repairs can be done concomitantly.
These techniques avoid the previous operative field in recurrent hernias.
The inguinal and femoral canals can be repaired bilaterally.

Disadvantages
- All operations have to be done under general anaesthesia.
- There is a longer learning curve and operative time for the surgeon.
- There is a higher risk of rare serious complications, especially bladder and vascular injuries.
- The cost is significantly more than that for the open operation.

Chronic pain after herniorrhaphy
Up to 30% of patients will have mild pain and 3 - 6% will have severe pain 1 year after hernia repairs. Patients need to be counselled about this potential side-effect of herniorrhaphies, particularly those with asymptomatic hernias.

Postoperative convalescence
Traditional convalescence recommended 3 - 6 weeks before resumption of normal activity. This was based on the assumption that the earlier repairs under tension would have a high recurrence if strained.
It no longer applies to tension-free repairs, as most patients can resume work in 7 - 10 days. Patients can mobilise once recovered from anaesthesia and resume normal activities within 14 days. However, pain and wound problems remain limiting factors to the early resumption of full physical activity.

Summary of key points
- Hernia repair is the general surgeon’s most common operation.
- Asymptomatic hernias can be treated conservatively.
- Mesh tension-free repairs are the gold standard.
- Laparoscopic and open repairs have similar recurrence rates.
- Laparoscopic repairs
  - produce less pain and allow an earlier return to work
  - are more costly, take longer, and require a general anaesthetic
  - have a longer learning curve
  - are more difficult with large hernias.
- Chronic pain has become a more...
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significant problem than hernia recurrence.

Suggested reading


Cochrane Review. Laparoscopic techniques vs open techniques for inguinal hernia repair.


