

Inguinal Hernia Repair

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Introduction

Inguinal hernia is a common condition and 763 hernia operations were carried out in Government hospitals in Malta and Gozo during 1997. This figure would be over 1000 if private operations were included. In Britain they comprise 8% of all surgical operations.

The incidence of hernia increases with age but a large number affected are working men and they can be severely disabled by the condition. There are considerable economic implications, including time off work and the cost of surgery, which both increase if there is a high recurrence rate and a long convalescence period.

"A surgeon can do more for the community by operating on hernia cases and seeing that his recurrence rate is low, than he can by operating on cases of malignant disease" Wakeley

Aetiology

Man is peculiarly liable to hernia because of the anatomy of the region. The inguinal canal is formed of by inguinal ligament below, the conjoint tendon arches over the spermatic cord and the transversalis fascia forms the posterior wall. The groin has a shutter mechanism that closes when the abdominal muscles contract. Man's upright posture and two legged gait have made that shutter mechanism less efficient. Repeated episodes of intermittent high intra-abdominal pressure strain the mechanism. If there is collagen degradation, either familial or because of age, the tissues are liable to hernia.

"There is no doubt that the first appearance of the mammal, with his need to push his testicles out of their proper home into the air, made a mess of the three layered abdominal wall that had done the reptiles well for 200 million years" H. Ogilvie

Natural History

A hernia usually presents as a painful lump in the groin, often associated with a large strain but it may also be asymptomatic and coincidentally discovered on routine examination.

The diagnosis is usually obvious from the history and examination. Some patients present with groin pain but without an obvious lump and it can be difficult to distinguish between a muscle strain and a small hernia¹. The only useful investigations are herniography² and laparoscopy, but both of these are seldom used.

A hernia is repaired to relieve pain and also to reduce the risk of strangulation and subsequently the need for emergency surgery. A truss may be used in patients refusing surgery but this is often uncomfortable and ineffective. The surgeon aims to perform a sound repair with a low recurrence rate. There should be little pain or discomfort with a low complication rate enabling the patient to return to work and normal living within a short time.

Surgical repair - historical approach

The Egyptians first reported the management of hernia and they used snugly fitting bandages. It was the Roman, Celsus, who first described an operation for hernia in the first Century AD. After the fall of Rome little progress was made in surgery for several centuries until the Medici and Borgia Popes allowed human dissection to encourage artists to improve their work. This stimulated the anatomical descriptions of hernia by Antonio Scarpa, Sir Astley Cooper and Hasselbach, who were contemporaries. During the second half of the 19th Century general anaesthesia, antiseptics and asepsis were introduced. In 1889 Edoardo Bassini from the Padua Clinic in Pavia reported his results of hernia surgery³. He achieved a recurrence rate of less than 10% and one patient out of 262 died. These results shocked the surgical world which was then accustomed to recurrence rates of 50% within one year and a mortality of 6-7%. Bassini is considered the father of modern hernia surgery and his operation is still used today.

The Bassini repair involves suturing the conjoint tendon to the inguinal ligament, using a synthetic non-absorbable suture. Since then various modifications have been reported and until recently the Shouldice operation was considered the Gold Standard for inguinal hernia repair. The technique is similar to the Bassini repair but it includes division and overlapping of the transversalis fascia⁴. The Shouldice clinic reported recurrence rates of 1% and these results were repeated by specialist centres. Unfortunately the results from District General Hospitals were not as good, presumably because the operation is technically demanding. The high failure rate of the sutured hernia repair, more than 10%, would be unacceptable for other operations.

All these operations approximate the conjoint tendon to the inguinal ligament under tension. The problem is that the tissues are already weak once there is a hernia, and healing is impaired by the suture tension. Proper wound healing requires a fibroblastic response and this requires oxygen perfusion for proper hydroxylation of proline and lysine. Total absence of tension on a suture line is a *sine qua non* for successful hernia repair.

Surgical repair - modern methods

The first tension free repair was described by Moloney from Oxford in 1948⁵. He was appalled by the poor results of hernia surgery during the second world war and suggested sewing a darn without tension to form a mesh. This operation was very popular and was probably the most frequent operation for hernia in Britain until a few years ago. In 1986 Irving Lichtenstein⁶ from Los Angeles described a hernia repair using a Polypropylene mesh. This is loosely sutured to the inguinal ligament and the conjoint tendon. A slit is made to allow the cord to pass and the edges are overlapped to form a new shutter mechanism. The mesh is incorporated into the host tissue to form a strong posterior wall of the inguinal canal. The procedure is covered by a single dose of intravenous antibiotic. This operation is rapid and simple and is associated with little postoperative discomfort. It eliminates the cause of recurrence, because there is no tension applied to defective tissue. Indeed, the recurrence rate is very low and Lichtenstein reports 0.7% with an infection rate of less than 0.5%. These results have been achieved in other centres⁷ and it is now the most popular operation for hernia in Britain. The mesh can also be placed laparoscopically, but this makes the operation unnecessarily difficult and expensive with poor results⁸.

In Malta and Gozo the great majority of hernia operations are carried out under general anaesthesia, often as a day case. The operation can be carried out under spinal anaesthesia and local anaesthetic is a useful alternative, especially in thin, elderly, frail patients. A Diclofenac suppository, and local infiltration with a long acting local anaesthetic go a long way in keeping the patient comfortable. Early mobilisation is essential.

Table 1 - Comparison of the sutured "Bassini" repair with the Lichtenstein "mesh" repair

Conventional sutured repair "Bassini"	Lichtenstein repair "Mesh"
Repair under tension	Tension-free repair
Cheap	Mesh costs about Lm10
More painful	Less painful
Slow convalescence	Fast convalescence
Delayed return to work	Rapid return to work
Low infection rate	Infection rate higher but still low
Recurrence 10%	Recurrence 0.5%

Convalescence

Bassini's patients, more than 100 years ago, were confined to bed for six weeks. This advice was based on the concept that fresh wounds lack sufficient integrity to withstand stress until "they heal". Patients are still being advised to limit their physical activity for six to ten weeks postoperatively to prevent recurrence. This is unnecessary and is a costly practice. Several studies have shown that early mobilisation does not increase recurrence^{9,10}. Patients should be advised to return to full

activity as soon as soreness permits, usually 7-10 days, with no increase in recurrences. This prevents muscle atrophy and improves healing by exposing collagen to stress. Animal studies have shown that after standard open herniorraphy, the strength of the wound is 70% of that of intact tissue¹¹ and strong enough to withstand full physical activity. Open prosthetic mesh repair can withstand any degree of stress immediately and postoperative activity does not need to be restricted.

The patient's motivation is the driving factor in the decision to return to work - and that depends on their confidence in the repair. This in turn depends largely on what he has been told by the Surgeon or family doctor. Patients should be reassured that physical exertion will not affect the strength of the repair and early return to work is safe - usually 7-10 days¹². Driving should be avoided for ten days because of the effect of pain on the emergency stop time¹³.

Conclusion

I propose that all elective inguinal hernia repairs in adults should be performed with a mesh. The technique is straightforward and safe. The patient is more comfortable with a speedy recovery and there is a low recurrence rate and a low complication rate.

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