

Ambulatory surgery for groin hernia: the Gilbert repair

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Abstract

The aim of this study was to evaluate the results of the Gilbert repair for primary treatment of indirect inguinal hernias performed as day cases. From September 1996 to September 1998, 145 patients who were admitted for ambulatory surgery underwent Gilbert tension-free repair for treatment of unilateral inguinal hernia. Sex, age, the American Society of Anaesthesiologists (ASA) preoperative assessment score, type of anaesthesia, operating time, postoperative recovery, postoperative pain, morbidity, mortality, recurrence, return to work and the normal daily activities were assessed. The mean follow-up was 21 months (range 12–36). Gilbert's classification, type 2 and 3 hernias were the most common. Spinal anaesthesia was used in 73% of patients. Mortality was zero. Four patients developed postoperative haematomas, two urinary retention, three seromas, and two wound infections. During the follow-up period, only two recurrences of hernia were noted (1.4%). In conclusion, these data show that Gilbert repair is a safe operation, which is simple to learn. It can be performed on an outpatient basis, with a low complication rate, a low level of pain and a short recovery period. Although it seems to have a low risk of recurrence, a long-term follow-up is needed. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

Inguinal hernia is one of the most common surgical conditions. Since the development of Bassini's technique in the late 19th century, many operative techniques have been described for inguinal herniorrhaphy. During the past 10 years, the rapid changes that have been developed in prosthetic materials, the trend towards outpatient procedures regional and local anaesthesia, and advances in laparoscopic techniques have meant that the surgical management of the groin hernia has undergone extensive reevaluation. There are three groups of operative procedures for the surgical treatment of hernias [1–8], the 'traditional' herniorrhaphies (Shouldice, Mc Vay, Bassini), the open tension-free procedure with implantation of a mesh (Lichtenstein, Gilbert, Rutkow), and the endoscopic procedure (trans-abdominal preperitoneal hernioplasty (TAPP) and total extraperitoneal hernioplasty (TEP)). Numerous studies have been done to demonstrate both the advantages

and the disadvantages of the individual operative procedures. However, the different types of repair must be compared not only with reference to recurrence and complication rates but also to socio-economic aspects, patient satisfaction, and cost-effectiveness of the particular procedure.

The aim of this study was to evaluate the results of the Gilbert repair for primary treatment of indirect inguinal hernias performed as day cases.

2. Material and methods

Between September 1996 and September 1998, 145 patients underwent a Gilbert tension-free hernioplasty for treatment of unilateral indirect hernia in the Ambulatory Surgery Unit of the University Hospital of La Princesa. The type of hernia was classified according to Gilbert's classification (Table 1) [9,10]. Only patients referred electively for repair of indirect inguinal hernias were included. Patients with incarcerated hernias or in need of emergency operation were excluded, as were patients with femoral hernias detected intraoperatively.

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Table 1
Gilbert classification of groin hernias [9,10]

Gilbert type	Description
1	Indirect inguinal hernia with a snug internal inguinal ring
2	Indirect inguinal hernia with moderately dilated internal ring less than 4 cm
3	Indirect inguinal hernia with a large dilated and distorted internal ring more than 4 cm
4	Direct inguinal hernia with full blow-out of the posterior wall. Internal ring intact; no peritoneal sac
5	Direct inguinal hernia. Diverticular defect of the posterior wall. Internal ring intact, no peritoneal sac

Table 2
Clinical details of the patients studied

<i>Sex</i>	
Men	126 (87%)
Women	19 (13%)
Years, mean (range)	42 (23–70)
<i>Type of hernia, number (%)</i>	
1	21 (14.4)
2	68 (46.9)
3	56 (38.6)
<i>Number (%) in ASA grade</i>	
I	76 (52.4)
II	67 (46.2)
III	2 (1.4)
<i>Anaesthesia</i>	
Spinal	106 (73%)
General with laryngeal mask	39 (27%)
Duration of operation, min (range)	35.35 (20–60)

Table 3
Postoperative complications after 145 outpatient hernia repairs

Haematoma or ecchymosis	4
Urinary retention	2
Seroma	3
Wound infection	2

The operations were performed in accordance with the descriptions in previous papers [5,11]. The hernia sac was fully separated from the cord structures and dissected up to the level of the internal ring and inverted into the abdomen without ligation. A cone-shaped plug was placed in the deep ring. The mesh, measuring 6 × 11 cm was composed of polypropylene (Marlex[®] or Prolene[®]). In type 1 y 2 hernias no suturing was necessary. In type 3 hernias one or two 2-0 prolene sutures were used at the internal ring either medial or lateral to the spermatic cord. The cord was replaced and the aponeurosis of the external oblique muscle was then closed over it with an absorbable suture.

All operations were performed in an ambulatory setting. Patients were admitted on the morning of surgery and discharged the same day if no complications developed. The following variables were recorded, sex, age, the American Society of Anaesthesiologists (ASA) preoperative assessment score, type of anaesthesia, operating time, postoperative recovery, postoperative pain, morbidity, mortality, recurrence, return to work and the normal daily activities.

All patients were given amoxicillin–clavulanic acid (2 g) intravenously as prophylaxis against infection. The degree of postoperative pain was assessed using a 10 cm visual analogue scale (VAS) on which 0, ‘no pain’; and 10, ‘worst possible pain’ at 12, 36, and 60 h after surgery.

At the end of the operation, 10 ml of 0.25% plain bupivacaine was injected over and 5 ml under the external aponeurosis for pain relief. For postoperative analgesia, magneic metamizol was used intravenously when pain occurred, followed by additional doses by the oral route on request. Before leaving, the patient was given written information and analgesics for another 2–3 days.

Patients were examined postoperatively by a surgeon at 1 week, 6 months, 1 year and every year thereafter. The mean follow-up was 21 months (range 12–36).

3. Results

Clinical details of the patients studied are summarised in Table 2. Patients undergoing herniorrhaphy were mainly male, with a low ASA score. Type 2 and 3 were the most common types of hernia according to Gilbert’s classification. The mean operating time was 35.35 (20–60) min. Mean pain scores according to the VAS (0–10) were 2.41 at 12 h, 1.74 at 36 h and 1.56 at 60 h.

There was no mortality or major complications related to the operation or the anaesthetic. Table 3 contains a summary of the postoperative complications. Two patients needed help to empty the bladder after the operation. Four patients developed haematoma but none needed evacuation or reoperation. Three patients developed seroma and two patients wound infection, which required incision and drainage. In none was it necessary to remove the mesh. There were no instances of draining sinuses, testicular problems, long-term pain, cardiovascular problems, or plug erosion and migration. One hundred and thirty-six (93.97%) patients were discharged on the day of surgery. Complications that delayed discharge were mainly related to the anaesthesia (Table 4).

Two patients had a recurrence at follow-up within 1–3 years postoperatively, giving a recurrence rate of

1.4%. The first recurrence was diagnosed after about 8 months in a patient with a type 3 hernia. This recurrence was symptomatic and has been reoperated upon. The second recurrence was discovered at the 2 year follow-up when the inguinal canal was examined by the surgeon.

One hundred and twenty-two of the 145 patients were still working at the time of operation. Ninety-eight (80.3%) patients returned to work between 15 and 21 days and 24 (19.7%) between 21 and 30 days.

4. Discussion

Tension on the suture line represents the main aetiological factor for recurrent hernia. Suture lines under tension stimulate an inadequate fibroblastic response for healing with a weak scar, mainly when the suture lines are subject to the same forces that caused hernia [8]. With the introduction of polypropylene mesh Usher et al. [12] in 1959, it was possible to perform all hernia repairs avoiding undesired suture line tensions.

Inguinal mesh and plug hernioplasties have been performed using prostheses of different sizes and shapes, either sutured or not, to the tissues. Lichtenstein proposed a complete reinforcement of the inguinal floor with a large sheet of mesh, with adequate mesh tissue interface beyond the boundary of the inguinal floor and the creation of a new internal ring made of prosthesis [2]. Gilbert extended the concept of tension-free hernioplasty to the use of a combination mesh plug and sutureless onlay mesh patch [5] initially used only for the treatment of small to moderate-sized indirect inguinal hernias. The 'second version' of his technique extends the plug repair to type 3 hernias and abandons the patch for all plug repairs [6]. Rutkow proposed the sutureless plug and patch techniques [3,4,13] and a preformed polypropylene mesh plug (Perfix) [14] is now commercially available in various sizes and readily conforms to the configuration of most defects. Recently, Gilbert et al. [15] have proposed a new bilayer patch device with three attached components, an underlay patch that provides a posterior mesh repair; a connector (plug); and an onlay patch that covers the posterior wall.

Table 4
Complications that delayed discharge after inguinal hernioplasty

<i>Related to the operation</i>	
Haematoma	1
Local pain	1
<i>Related to the anaesthesia</i>	
Nausea and vomiting	3
Dizziness	3
Diminished sensation of the lower extremity	1

With the use of the Gilbert repair, two major advantages might be gained; first, it requires less dissection, so a haematoma and seroma formation and patient discomfort are reduced, the chance of nerve injury is decreased, and inadvertent puncture of blood vessels by a needle is avoided; second it can be learned rapidly and can be used in standardised fashion in the repair of virtually any groin hernia.

It is a sutureless technique that not only avoids tissue tension, but fixation is achieved by intra-abdominal pressure, the same force that caused the hernia. A complete dissection of the peritoneal indirect sac well into the iliac fossa is essential to avoid early failure [6].

In other techniques, such as the Shouldice hernioplasty, meticulous dissection and precise repair are desirable for a satisfactory outcome following hernia repair [16]. In the laparoscopic approach, there is a surgeon's learning curve of at least 50 cases [17]. In the Gilbert repair, these details may not be essential for a successful tension-free hernioplasty. It is easy to learn and it can be done by younger and less experienced surgeons in training [18].

Tension-free hernioplasties are said to produce less operative pain than conventional hernioplasties. In this study, postoperative pain has been minimal. Local infiltration with long-acting local anaesthetics has proven helpful [19]. In the majority of the patients no analgesics were administered within the first 24 h after operation. In the remainder only traditional analgesics were given.

In all our patients, we used antibiotics as prophylaxis against infection. Many surgeons use prophylactic antibiotics when mesh repair is used. However, there are conflicting studies regarding their routine use and costs. Taylor et al. [20] in a multicentre, prospective, double-blind study of 619 patients undergoing groin hernia repair concluded that antibiotic prophylaxis was of no benefit to the patients. Gilbert and Felton [21], in a similar study of 2493 hernia repairs with mesh, reported that the costs incurred for routine prophylactic treatment is not justified because the infection rate was only about 1%. On the other hand, Lazorthes et al. [22] in 324 patients showed that the cost of prophylactic antibiotics was ten times less than the cost of treatment of wound complications in the group that did not receive prophylactic antibiotics.

The data presented in this study confirms the experience of others reported in the literature of a low complication rate. A randomised prospective study comparing the complications of the Bassini repair and laparoscopic herniorrhaphy observed an overall complication rate of 21% for the Bassini technique compared with 8% for the laparoscopic approach [7]. Amid et al. [23] and Rutkow and Robbins [13] have both published complication rates of less than 1% with open mesh plug repairs in their specialised centres.

Several studies have reported a recurrence rate of 4.6–6.6% after the Shouldice repair, 2.3–8.6% after the Bassini repair, and 8.8–11.2% with Cooper's ligament repair [1,2,8,16]. In one study of 1252 tension-free hernioplasties [18] the recurrence rate was 0.5% and the complication rate of 1.2%.

Following the Cooper ligament repair and the Shouldice repair, most surgeons recommend patients to avoid vigorous activity or heavy lifting for 4–6 weeks [1]. However, Rutkow and Robbins [13] for the mesh plug repair have recommended resumption of most manual labour in 2 weeks and a 3-week layoff period for individuals who have very heavy work.

In conclusion, the tension-free repair described by Gilbert is a safe operation, simple to learn, can be performed on an outpatient basis, with a low complication rate, a low level to pain and a short recovery period. The Gilbert technique is an ideal hernia repair with low costs, high patient comfort and it seems to have a low risk of recurrence. However, the results of this study must be seen in the light of a short follow-up time and only after a truly long-term follow-up the validity and the recurrence rate of this technique can be determined.

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