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ORIGINAL ARTICLE

Chronic groin pain following lichtenstein mesh hernioplasty for inguinal hernia. Is it a myth?

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Abstract

Background The Lichtenstein mesh hernioplasty is currently the most popular operative technique for open repair of inguinal hernia. The incidence of chronic groin pain (CGP) following this procedure is reported to be high. However, since our experience did not support this observation, this study was undertaken at our centre, to assess the incidence of CGP following Lichtenstein mesh hernioplasty.

Methods A prospective study was conducted on all patients undergoing elective hernia repair at a tertiary care teaching hospital. The patients underwent Lichtenstein mesh hernioplasty and were followed up for the primary outcome measures of development of recurrence and Chronic Groin Pain.

Results A total of 470 patients were enrolled for the study. Out of these 16 patients never reported for follow up after discharge from hospital. The remaining 454 patients with 510 primary inguinal hernias were included in the study. Of these 449 patients were male and 5 were female. The mean follow-up period was 14 months (range - six months to twenty four months). One patient had recurrence of hernia and CGP was reported in four patients. In all four patients CGP was mild and was well controlled with oral NSAIDS used on SOS basis.

Conclusion The incidence of CGP in our study is 0.78% for the number of operated hernias. This is not only considerably less than what is generally reported but is also less disabling.

Keywords Chronic Groin Pain · Lichtenstein Mesh Hernioplasty

Introduction

Inguinal hernia repair is a common surgical procedure and mesh hernioplasty has gained wide spread acceptance due to its superior outcome in terms of reduced recurrence rates which are in the range of 1 to 2% [1, 2]. These advances, however threaten to be offset by the disabling complication of chronic groin pain, the reported prevalence of which varies widely, with some workers reporting an incidence of almost 75.5% [3, 4].

Chronic groin pain (CGP) is defined as post operative pain lasting for more than three months [5]. It contributes to significant morbidity after groin hernia surgery. Various methods to reduce its occurrence have been suggested. These include prophylactic ilioinguinal neurectomy [6], laparoscopic TEP repair [7], and the use of light weight meshes [8]. The use of fibrin glue sealant for mesh fixation has also been described [9].

It was noticed by us that the incidence of CGP in our patient population was much less compared to what was reported in most studies on this subject. This study was hence undertaken to define the true prevalence of CGP in

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our patients. We present our findings following Lichtenstein mesh hernioplasty in 454 patients.

Materials and methods

This prospective study was conducted at a tertiary level teaching hospital from 01 Feb 2006 to 29 Feb 2008. All adult patients undergoing elective primary inguinal hernia repair by Lichtenstein mesh hernioplasty, were included in the study. Children up to 18 years of age, patients with recurrent hernia and those with obstructed or strangulated hernia were excluded. A total of 16 patients who did not report for follow up were also excluded from the study. Patients with bilateral hernias were operated upon on both sides simultaneously. The operations were carried out by surgical consultants with varying levels of experience, ranging from 2 to 25 years, and by surgical residents with assistance from consultants. The operation was carried out under spinal / local / general anesthesia, depending on the choice of the patient and the operating surgeon. The inguinal canal was opened by an incision 2.5 cm above and parallel to the medial three-fifths of the inguinal ligament. The conventional practice of identifying and preserving the nerves was followed and no deliberate division of any nerve was undertaken [10]. The hernial sac was identified and the Gilbert's classification was used to assess the type of defect [11]. For indirect sacs, a high dissection and herniotomy was carried out while direct sacs were inverted inside with absorbable, 2/0 Poly Glycolic Acid, suture. A standard Lichtenstein tension free mesh hernioplasty, using a 15 x 7.6 cm polypropylene mesh, was then performed, with the mesh extending 2 cm medial to the pubic tubercle, 3 to 4 cm above the Hesselbach triangle, and 5 to 6 cm lateral to the internal ring [12]. The medial end of the mesh was sutured to the insertion of the rectus sheath onto the pubic bone. The upper edge of the mesh was secured to the rectus sheath and internal oblique aponeurosis with two interrupted sutures, and the lower edge to the inguinal ligament with a continuous suture, with a maximum of 4 passages up to a point just lateral to the internal ring. The lower edges of each of the two tails were fixed to the inguinal ligament just lateral to the completion knot of the lower running suture and the external oblique aponeurosis was then closed over the cord. An absorbable suture, 2/0 Poly Glycolic Acid, was used by us for the entire procedure. All cases received Injection Ciprofloxacin 200mg and Injection Gentamicin 80 mg intravenously at the commencement of the surgery followed by two more such doses post-operatively. Further doses of antibiotics were given only if there was evidence of wound infection. All patients received Injection Diclofenac Sodium (75 mg intramuscularly every 12 hours) or Diclofenac Sodium rectal suppository (100 mg every 12 hours) for pain relief on post operative days 1 and 2 and then on SOS basis. The patients were followed up at 3 months, 6 months, 1 year and 2 years after surgery. They were assessed by physical examination in the OPD for 1 year and subsequently by telephonic interview, with a visit to OPD only if required. The primary outcome measures that were studied were the presence of CGP and local recurrence. Pain assessment was carried out by the VAS score with a score of less than 10 graded as mild pain, between 10 and 50 as moderate and a score greater than 50 as severe pain.

Results

This study was carried out from 01 Feb 2006 to 29 Feb 2008. A total of 470 patients were enrolled, of which 16 patients never reported for follow up after discharge from hospital and were hence excluded. The remaining 454 patients with 510 primary inguinal hernias were included in the study. The study group comprised of 449 male and 5 female patients. 398 patients underwent unilateral Lichtenstein mesh hernioplasty and 56 were operated on both sides. The maximum numbers of patients were in the age group 51-60 years (Fig. 1). 115 patients had associated co-morbidities, the most common of which was Hypertension. A total of 84 patients were smokers. Right sided inguinal hernia was commoner and was present in 249 patients. Gilbert's

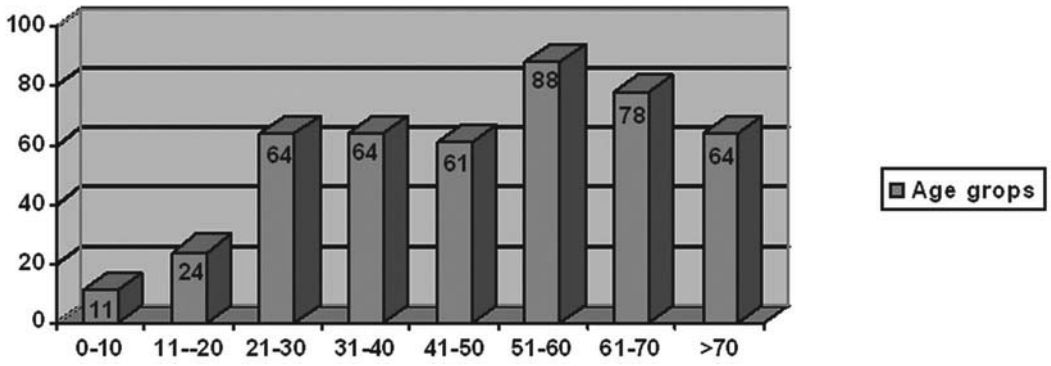

Fig. 1 Distribution of patients as per age

type 4 variety of hernial defect was encountered most often (Fig. 2). 219 patients were operated upon by consultants and 235 by surgical residents, with consultants participating as first assistants. The anesthesia used was spinal in 390 patients, local in 37 and general anesthesia in 27 patients. After the procedure the patients were followed up with a minimum observation period of 6 months and a maximum of 2 years (mean follow up period 14 months). The primary outcome measures recorded were development of recurrence and CGP.

During the follow-up period, one patient had recurrence of hernia, two months after the surgery. The development of CGP was reported by four patients. None of these four patients had undergone previous lower abdominal surgery or had complained of pre-operative groin pain and all of them had experienced an uneventful surgery and post operative recovery. Three of these patients were in the third decade with no co-morbidity, while the fourth was in the seventh decade, a chronic smoker with associated Hypertension. In all these patients it was mild activity related pain, without associated numbness, which was well controlled with NSAIDs (Ibuprofen 400mg) taken on SOS basis. No patient has been subjected to groin re-exploration for CGP or removal of mesh.

Discussion

Hernias are among the oldest known afflictions of humankind and surgical repair of inguinal hernia is the most common general surgical procedure performed today [13]. Much effort has been devoted to reducing the rate of recurrence and currently the techniques that use a mesh for tension free repair are the most popular. The development of post operative CGP is an area of growing interest and concern because it contributes to significant morbidity and threatens to offset the gains made in terms of reduction of recurrence rates. As mentioned earlier, CGP is defined as post operative pain lasting for more than three months. Cunningham et al were the first to bring up the issue of CGP [14] and thereafter it has become an important area of research. In a recent review Nienhuijs et al reviewed 29 good quality studies from January 1996 to June 2006 with a total of 8350 patients and a mean follow up ranging from 3 to 36 months and concluded that after mesh based repairs, 11% of patients suffer chronic pain [15]; whereas in our study we have found the incidence of CGP to be 0.78%. This is considerably less than what has been reported earlier [3, 4].

The etiology of CGP is multifactorial. Although there is a mix of nociceptive pain (related to tissue injury) and neuropathic pain (related to nerve injury), the latter is predominant and its intensity seems to be aggravated when numbness is also present [16]. Damage to a nerve in the groin region may occur due to stretching, contusion and crushing or thermal injury due to electrocautery or injury due to entrapment while suturing. The nerves that are usually injured are the ilioinguinal nerve, iliohypogastric nerve, both the genital and femoral branches of the genitofemoral nerve, and the lateral femoral cutaneous nerve of the thigh. The first two are especially prone to injury during an open hernioplasty, with the most frequent site of involvement being the suture line of external oblique near the superficial inguinal ring [17] while the latter are more likely to be damaged during laparoscopy [5]. Damage to the nerves due to scar tissue formed because of the mesh has also been implicated. Demirer et al, in an animal study, have shown that mechanical compression of peripheral nerves due to a polypropylene mesh is associated with myelin degeneration, endoneurial and perineurial edema, fibrosis, axonal loss, and peripheral neuropathy [18].

To minimize the development of CGP, Lichtenstein et al recommend the preservation of the nerves in the inguinal canal [19]. The ilioinguinal and Iliohypogastric nerves are generally injured during elevation of the external oblique fascial flaps, while the genitofemoral nerve is most likely to be injured during the isolation of the cord and stripping of the cremaster muscle fibres. After identification, these nerves must be retracted out of the operative field and their excessive manipulation must be avoided. Sometimes it may be difficult as they may hinder dissection or may

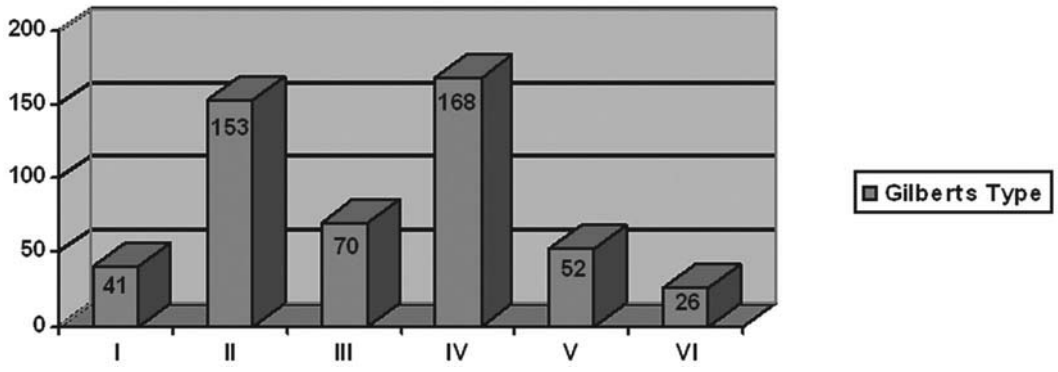

Fig. 2 Gilbert's classification of defect

lie across the mesh in the posterior inguinal wall. In such circumstances, some surgeons prefer to sacrifice these nerves. The result of this maneuver is a region of sensory deprivation in the distribution of these nerves. However, it is thought to be better tolerated by the patient than the chronic and persistent pain attributed to nerve entrapment in scar or mesh [20]. Elective division of Ilioinguinal nerve to reduce development of CGP has been recommended by some workers [6, 21]; however other authors have not found similar beneficial results [22]. Hence this practice cannot be endorsed for routine use.

In our study we have followed the practice of meticulous identification and preservation of the nerves with gratifying results. In addition, we have used an absorbable suture for fixation of the mesh and for closure of the external oblique aponeurosis. In our experience we found that a single 90 cm strand of 2/0 Poly Glycolic Acid suture suffices for the entire surgical procedure, thus reducing costs by avoiding use of an additional nonabsorbable polypropylene suture. We also feel that the practice of using a minimum number of sutures, of absorbable material, just enough to prevent dislodgement of the mesh might also have contributed to the low incidence of CGP in our study.

Although it is believed that light weight and partially reabsorbable meshes are associated with lesser incidence of CGP, a recent report by Paajanen emphasizes that there is no difference of pain and quality of life after use of a conventional polypropylene mesh, lightweight mesh or partly absorbable mesh in 2 years of follow-up, when the same surgeon operated on all patients with exactly the same technique [23]. We have not used these newer meshes during this study and find it difficult to recommend their use especially in view of their considerably higher cost.

To conclude, our study has shown that the problem of CGP does exist. However, is neither as common nor as disabling as is widely believed. Procedures like deliberate sacrifice of nerves and the use of light weight meshes are therefore difficult to justify at present.

Conflict of interest The authors do not have any disclosable interest

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