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RESEARCH ARTICLE

CLINICAL AUDIT OF LICHTENSTEIN HERNIOPLASTY AT A TERTIARY CARE CENTRE IN RURAL INDIA – AN INSTITUTIONAL EXPERIENCE

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ABSTRACT

Aim/Objectives: Major concern of inguinal hernia repair is recurrences and chronic groin pain. Aim of this study is to know the delayed complications like recurrence and chronic groin pain after Lichtenstein hernioplasty and to share our experience of Lichtenstein hernioplasty.
Methods: We conducted Observational study of 150 unilateral groin hernias operated in our institute with Lichtenstein technique. Data was collected after indoor case paper review and after postoperative follow-up in Outpatient department and by telephonic conversation. Duration of study was between September 2011 to September 2014. At the end of study our data was compared with the other published data. The comparison was done in percentages of recurrence and percentages of chronic groin pain.
Results: End point in our study was recurrence and chronic groin pain after minimal 3 months of surgery. There was 0.66 % recurrence and 10.6% mild chronic groin pain. There was mild chronic pain in all cases, relived by mild analgesics. There was not a single case of moderate to severe pain requiring nerve block or surgical intervention.
Conclusion: Least recurrence and least chronic groin pain can be achieved with Lichtenstein hernioplasty.

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INTRODUCTION

Inguinal hernia is the commonest surgical problem in adult population. There is weakness of posterior inguinal canal due to altered collagen 1 and 3 ratio in hernia patients, so we need to strengthen posterior inguinal wall by non absorbable proline mesh either by open or laparoscopically. The main principle of Lichtenstein hernioplasty is tension free repair achieved by proline mesh. Lichtenstein hernioplasty is the commonest hernia repair done in our institute.

MATERIALS AND METHODS

This was an observational study of 150 unilateral groin hernias operated in our institute with Lichtenstein technique. Data was collected after indoor case paper review and after postoperative follow-up in O.P.D. and by telephonic conversation. Duration of study was between Sep. 2011 to Sep. 2014.

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All patients who presented with clinically diagnosed unilateral groin hernia (primary or recurrent) operated with Lichtenstein hernioplasty under spinal or local anesthesia were included in the study. All medically fit patients were operated under spinal anesthesia, as surgery under local anesthesia had more postoperative inguinodynia. Smoker were advised to stop smoking atleast 2 weeks prior to surgery. Conditions that increased intraabdominal pressure like cough, prostatomegaly, constipation before were treated prior to surgery. All patients with additional surgical intervention planned during the hernia repair, history of lower abdominal surgery, severe local inflammation or radiotherapy, pregnancy or previous participation in study due to contralatral hernia, Obstructed or strangulated inguinal hernia were excluded from study. End point was recurrence of the hernia as clinically detectable swelling at the operation site and persistence of postoperative pain at groin, scrotum and medial part of the thigh at 3 months. Degree of pain was assessed with Four Point Verbal Rating Scale. Grade one is absent pain, grade two is mild pain relieved by oral analgesics; grade three is moderate pain requiring injectable analgesics and grade four is severe pain not relieved by medications. According to International association of the study of pain chronic groin pain is defined as 'groin pain' reported by the patient at and beyond 3 months.

Surgical Technique

Inguinal hernia repair consists of the inguinal hernia sac dissection up to retro peritoneum, reduction of its content, inversion of small indirect sac , ligation of the neck of the large indirect sac, cutting across the body and keeping rest of sac open while direct sac is invaginated. We see that there were no associated hernias, unrecognized small indirect sac and associated hernia like femoral hernia, interstitial and spingelian hernia as these hernia type lead to pseudo recurrence of hernia. Strengthening of posterior wall of inguinal canal with polypropylene mesh was done in all cases. Lower edge of mesh was sutured with polypropylene 2-0 suture to upturned part of inguinal ligament from pubic tubercle to internal ring level. About 2cm overlap on medial side of pubic tubercle was given. Inadequate medial mesh overlap causes direct recurrence. Lateral edge of mesh was cut approximately 1/3 above the lower margin to make two tails of mesh. This was done to accommodate cord structure at the internal ring. Anuloplasty was done for reconstruction of internal ring. About 5 cm overlap of mesh lateral to internal ring was given. Superiorly 3 cm overlap was given above Hasselbachs triangle. Mesh was fixed medially over anterior rectus sheath and just medial and caudal to internal ring through internal oblique muscle. Ileoinguinal, ileohypogastric and genital branch of genitofemoral nerve were identified with meticulous dissection, preserving fascia over it and with judicious cautery. Whenever improper dissection caused lifting of ileoinguinal nerve from bed it was prophylacticaly cleanly cut under stretch to avoid neuroma formation. Pre hernia lipoma needs to be excised, which is also recognized cause of hernia recurrence. Incised external oblique muscle was sutured with 2-0 polypropylene suture with creation of new lax external ring. All patients were covered adequately perioperatively with adequate doses of antibiotics with first dose given one hour prior to incision. Patients were discharged as soon as they were mobile with oral analgesics and antibiotics as required.

RESULTS

Out of 150 operated patients included in study 141 were male and 9 female. Male to female ratio of 15/1 (Figure 1). There were 45 patients in 18 to 40 year age group, 46 in 40 to 60 year age group, 52 in 60 to 80 year age group and 7 in above 80 year age group as shown in Fig. 2.

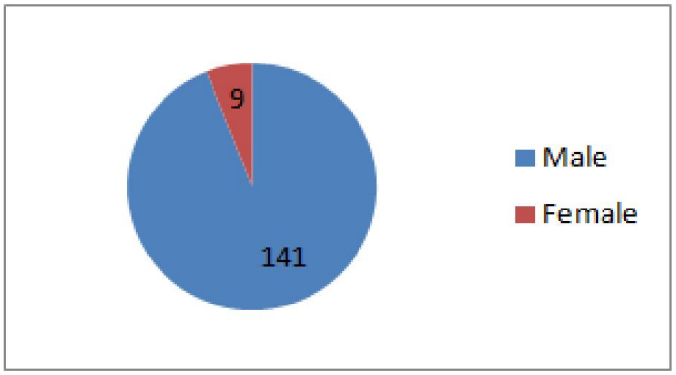


Figure 1.

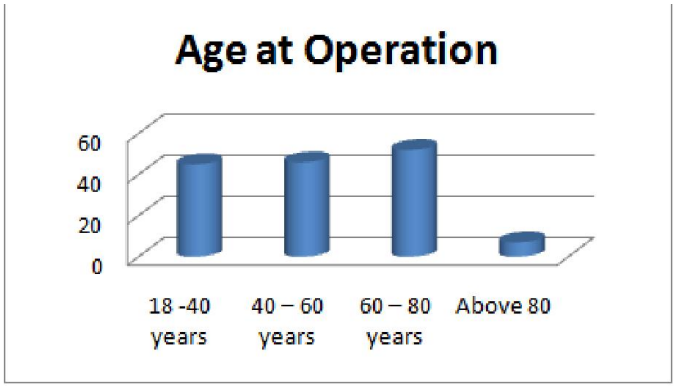
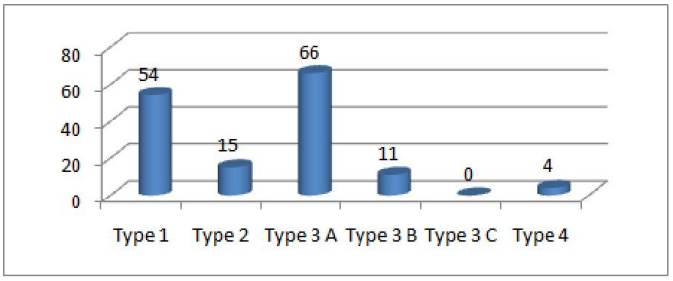


Figure 2.

Nyhus distribution of type of hernia is given in (Figure 3). 54 patients had Nyhus 1 type hernias, 15 had Nyhus 2 type hernias, 66 had Nyhus 3 A hernias, 11 Had Nyhus 3 B hernias, and 4 had Nyhus 4 type recurrent hernias. There was no femoral hernia in the our study.



Nyhus type 1: Indirect hernia with normal internal ring
Nyhus type 2: Indirect hernia with dilated internal ring, posterior wall intact
Nyhus type 3: posterior wall defect
1. Direct inguinal hernia
2. Indirect inguinal hernia ring dilated with posterior wall defect
3. Femoral hernia
Nyhus type 4: Recurrent hernia

Figure 3. Nyhus type of Hernia

One patient had recurrence of hernia with moderate to severe pain within 1 year of surgery. We had used light weight polypropylene mesh, which causes less foreign body reaction with wide overlap to counter 20 to40% mesh contracture in future. There was only 0.66% recurrence in our study. One recurrence we had may be because of faulty surgical technique.

134 patients had no pain after 3 month followup.16 patients had mild pain on follow-up. Follow up graph showing patients with pain and postoperative duration after surgery is given in (Figure 4). 10 patients out of 50 operated in 2014 had mild chronic groin pain.5 patients out of 59 operated in 2013 had mild chronic groin pain. One patient out of 44 operated before 2012 had mild pain.

One patient with recurrence had moderate to severe pain due to hernia recurrence. Over all 10.6% patients had mild pain. There was not a single case of severe neurogenic pain requiring nerve block or surgical intervention.

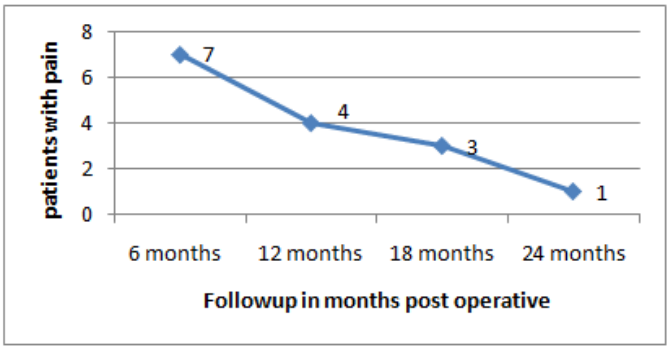


Figure 4.

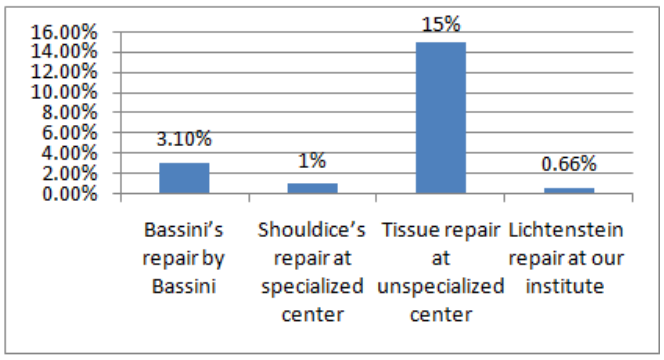


Figure 5. Gives recurrence of hernia by various methods

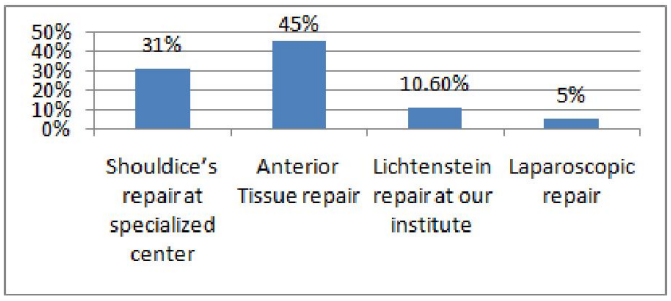


Figure 6. Gives chronic pain by various hernia repair methods

DISCUSSION

Earliest record of inguinal hernia dates back to 1500 BC (Jack Abrahamson, Hernia 1990). Latin word hernia means rupture. Term hernia derives from Greek word meaning an off shoot. Ancient management of inguinal hernia was external bandage, and then trusses. Edoardo Bassini was the father of modern hernia surgery. In 1884 the Bassini repair was documented with 3.1% recurrence in 227 patients with 98% follow-up at 4.8 years. (Jack Abrahamson, Hernia 1990) Bassini's principles was suturing conjoint tendon to inguinal ligament after treating sac and reconstructing internal ring. His technique was followed for almost 100 years. Whenever musculoaponeurotic arch was wide it has to be brought under tension to suture to inguinal ligament. Tissue under tension becomes ischemic and leads to poor healing. Shouldice in 1953 did multilayered tissue repair with less than 1% recurrence at special centers. Till then overall recurrence after anterior tissue hernia repair was 10 to 30 % at most other places.

Subsequently early forms of mesh were created and implanted to make repair tensionless. These consist of stainless steel, which was too stiff and breaks. Nylon which disintegrated too rapidly and then came polypropylene and polyester. At that time mesh was simply used to buttress or reinforce suture repair. Many surgeons also used fascia, fascia lata, strip of skin, nylon, external oblique aponeurosis to strengthen posterior wall of inguinal canal. Usher was the first to start utilizing mesh to bridge the hernia gap (Jack Abrahamson and Hernia, 1990), so it was the first description for tension free hernia repair. It was Irving Lichtenstein placed mesh anterior to the transversalis fascia. Lichtenstein in 1989 described tension free hernioplasty. (Lichtenstein) Cochrane review has mentioned use of Lichtenstein tension free mesh repair is associated with the reduction in the risk of recurrence of between 50 to 75% and also reduction in chronic pain (Chen and Amid, 2013). Gilbert in 1987 advised that today's surgeons can choose between four basic techniques for hernia repair, but must keep in mind that recurrence should be well below 1% with long and diligent follow-up. Gilbert's basic techniques of hernia repair are pure tissue repair, tissue repair with prosthesis, pure prosthesis repair and nylon darning (Inguinodynia, 2013) A prospective series of 419 patients operated by open Lichtenstein repair at 1 year follow up had 19% patient with pain, 6% with moderate to severe pain. (Callesen, 1999) Scottish population based study of 4092 operated patients with anterior inguinal hernia repair, identified at 3 months postoperative an incidence of 43% mild pain and 3% severe pain. A Second survey at 30 month found that 29% resolved, 31% improved and 26% continued with pain. (Hakeem and Shanmugam, 2011) Chronic groin pain after open inguinal herniorrhyphy repair ranges from 0 to 60% in various other reports. (O' Dwyer *et al.,* 2005) Only 2% to 4% are adversely affected by chronic groin pain in their daily activities.

Generally patients complain of dull aching or sharp shooting pain along the distribution of inguinal nerves. Pain in our patients was mild gnawing, intermittent due to nociceptor receptor stimulation, while others had mild burning pain due to inflammatory neuropathy. (Robert and Condon, 2001) Chronic groin pain reduces over the years. Most of chronic groin pain responded to anti-inflammatory drugs. There was not a single case of moderate to severe neuropathic groin pain in our series. (Smed's, Lofstrom and Ericsson, 2010) It is said that neuropathic pain can be reduced from the reported range of 6to8% to less than 1% by careful nerve handling to avoid destruction of the protective layers of the nerves during open repair. (Sajid *et al.,* 2011; Bringman *et al.,* 2006; Nikkolo *et al.,* 2010; Weyhe *et al.,* 2007; O'Dwyer *et al.,* 2005) Use of light weight mesh must have reduced chronic groin pain in our studies. Main reasons hypothesized for chronic groin pain are per operative nerve damage, postoperative fibrosis, mesh related fibrosis (Heise and Starling, 1998). Trauma to nerve can occur during dissection, retraction, wrong cautery use and nerve entrapment during mesh fixation. Partial or complete nerve trauma may lead to neuroma. Anatomical variations of nerve should be identified to prevent nerve injury. (Al. dabbagl, 2002) Course of both ileoinguinal and Ileohypogastric nerves is as per anatomical texts in only 42%

of patients. However these anatomical variations are readily identifiable.

There can be non-neurogenic causes of chronic groin pain like, periosteal reaction of suture or staples over pubic tubercle, Osteitis pubis, rolled up mesh (meshoma), Orchitis. (O' Dwyer *et al.,* 2005) Tight external ring can cause spermatic cord compression causing venous congestion, mesh related spermatic cord inflammation, compression and dilatation of vas deference. It can cause ejaculatory pain and pain during sexual activity. (O' Dwyer *et al.,* 2005; Aasvang *et al.,* 2007; Aasvang *et al.,* 2006) Orchitis, spermatic cord and vas deference related pain is also called visceral pain. C.T. Scan can diagnose non-neurogenic chronic groin pain due to excessive fibrosis and mesh related factors. Mechanical compression of peripheral nerve is associated with myelin degeneration, endoneurial and perineurial edema, fibrosis, axonal loss and edema may cause peripheral neuropathy. Heavy weight mesh can cause foreign body sensation and stiffness in groin. Lange and Alfieri showed less incidence of chronic groin pain with identification of all 3 nerves during surgery. Risk of chronic groin pain increases from 2.2 to 19.2 % if one of nerves has not been recognized. (Lange *et al.,* 2009; Alfieri *et al.,* 2006; Hakeem *et al.,* 2011) Amid and Wijsmullar showed identification of inguinal nerve avoided damage to nerve by mesh or suture. (Wijsmullar *et al.,* 2007; Amid, 2004)

Risk factors for chronic pain are recurrent hernia repair, preoperative pain, day case surgery, delayed onset of symptoms of hernia and higher pain score in the 1st week after surgery. Younger age group and overweight, obese patients are also at higher risk for chronic pain. One should wait more than 1 year before surgically treating pain disturbing daily activity. Patients with moderate to severe pain adversely affecting daily activity need more medical or surgical treatment. Non surgical management like: Oral analgesics or Nerve block: Xylocaine with triamcinalone, Xylocaine with phenol, Xylocaine with alcohol, cryoprobe, radiofrequency or Trans-cutaneous nerve stimulation.Surgical management like: Triple neurectomy with burring of the tip of nerve in internal oblique muscle, gives relief in 60 to 70 % patients. (Deysin *et al.,* 1987; Loos *et al.,* 2010; Johner *et al.,* 2011) or sometimes triple neurectomy with mesh removal is required.

Conclusion

Excellent results in respect to recurrence and chronic groin pain can be achieved with Lichtenstein hernioplasty. It has short learning curve. The results can be reproduced. It gives satisfactory long term results to the community and is economical. Financial and other competing interest-none.

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