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Original Research Article

Study of the Lichtenstein's hernioplasty and its post-operative complications for different types of inguinal hernia

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ABSTRACT

Background: Lichtenstein's hernioplasty is the commonly done surgery for inguinal hernias. The present study is aimed to study the Lichtenstein's hernioplasty and its postoperative complications for different types of inguinal hernia.
Methods: This prospective study was conducted at Department of General Surgery, MVJ Medical College and Research Hospital, Hoskote, Bangalore Rural, Karnataka. A total of 90 patients were selected for this study. Subjects with the age of 21 to 75 years with inguinal hernia are included in the study. A pre-designed proforma was used to collect their details. All selected cases were studied up to discharge regarding the type of hernia and followed up in OPD for 1 year regarding post-operative complications.
Results: Immediate post-op complications like seroma/hematoma was observed in 10 (11.1%), wound infection was in 5 (5.5%) and orchitis was in 2 (2.2%). Post-operative complications like stiffness in lower abdomen was observed in 21 (23.3%) patients. Long term complications like forein body sensation was experienced by 22 (24.4) patients post-operatively at 1 month follow up, 8 (8.8%) patients at 3 months follow up and 3 (3.3) patients at 1 year follow up. Chronic pain was experienced by 17 (18.8%) patients at the end of 1 month follow up, at 3 month follow up, 13 (14.4%) patients and at the end of 1 year of follow up 4 (4.4%) patients at operated site. Recurrence was not observed in any of the patient.
Conclusions: The study findings indicate that Lichtenstein's hernioplasty was safe and reliable procedure for inguinal hernia repair.

Keywords: Chronic pain, Lichtenstein's hernioplasty, Post-operative complications, Recurrence, Seroma/hematoma, Stiffness in lower abdomen

INTRODUCTION

A hernia is the protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity. Most of the abdominal wall hernias occur in the groin. Inguinal hernia repair is the most common operation in general surgical practice. In the general population, hernias occur in about 1–5%. Inguinal hernias are usually unilateral and about 20% of patients with inguinal hernia present bilateral hernias in the diagnosis. A hernia is defined as weakness of the fibromuscular tissues of the wall from which contents of the cavity underlying it arise from the wall. The strengthening of the posterior aspect of the inguinal canal remains the major objective in inguinal hernia repair.[1]

Although numerous techniques have been described, currently tension free mesh repair is the standard of care

in the treatment of inguinal hernia because of the low recurrence rates.[2] However, chronic pain, foreign body sensation, stiff lower abdominal wall have been variably reported in patients. Experimental studies have hypothesized that the inflammatory reaction and scar formation caused by the mesh is responsible for the high incidence of post-operative pain. Despite the frequency of this procedure, no surgeon has ideal results, and complications such as postoperative pain, nerve injury, and infection and recurrence remain.[3]

Inguinal hernias are classified mainly as direct and indirect type. Many times inguinal hernias may present with surgical emergencies like irreducibility, intestinal obstruction, strangulation etc. Inguinal hernias are up to 10 times more common in men than women and one in four men will develop a hernia at some point in their life.[4]

The open methods of inguinal hernia surgery include Bassini's repair, modified Bassini's repair, Shouldice technique, Lichtenstein's tension free Hernioplasty, Desarda's repair, Prolene mesh repair and preperitoneal mesh repair. Until the 1980's the most common repairs were anatomic and tissue based and were associated with high recurrence rates, between 1% and 15-20% depending on the technique. Improving recurrence rates ultimately has socioeconomic impacts due to quicker return to work. Excessive tension on suture line was considered as one of the reasons for recurrence. Surgeons sought a way to create a tension free repair (Lichtenstein's Hernioplasty).[1]

The polypropylene mesh which is non-carcinogenic, non-allergic, non-inflammatory was introduced. Potential immediate complications (intra operative) after primary inguinal repair include hemorrhage, injury to vas deferens, vascular injury, bowel injury, urinary bladder injury, nerves and testicular blood supply. Postoperative complications are wound infection, urinary retention, hematoma, neuralgia, hydrocele formation, ischemic orchitis and testicular pain and swelling and recurrence.[5]

This clinical study has been undertaken to study the Lichtenstein's Hernioplasty and its postoperative complications for different types of inguinal hernia - (a) Intra operative complications (b) post-operative complications (c) long term complications.

METHODS

This prospective study was conducted at Department of General Surgery, MVJ Medical College and Research Hospital, Hoskote, Bangalore Rural, Karnataka from January 2016 to May 2017. A total of 90 patients were selected for this study. Subjects >21 years and <80 years with inguinal hernia are included in the study and hernia which cannot be detected on physical examination, ASA class IV or V (severe co-morbid conditions), complicated hernias, femoral hernias, recurrent hernias are exclusion from the study. This study has been approved by the Institutional Ethical Committee and informed consent was obtained from the study subjects..The subjects were selected for the study consecutively as and when they present. A pre-designed proforma was used to collect their details. All selected cases were studied up to discharge regarding the type of hernia and followed up in OPD for 1 year regarding post-operative complications. The following complications were emphasized.

Intra-operative complications

Hemorrhage, injury to vas deferens, nerves, injury to other spermatic cord structures, bowel and urinary bladder.

Post-operative complications

Seroma, surgical site infection, hematoma, hydrocele formation, pain and orchitis.

Long term complications

Chronic neuralgia, testicular atrophy, foreign body sensation and recurrence.

Patients were assessed by taking history and thorough clinical examination and by ultrasound scan.

All patients were followed up postoperatively at the end of 1 month, 3 months and 1 year for recurrence, foreign body sensation, pain and return to normal activities. Patients complaining of persistent pain at the operative site during the 3rd month follow up were considered as having chronic pain. Patients were taken for ultrasonography on 2nd, 3rd, 4th and 5th follow up visits for determining local tissue reaction/subclinical recurrence, testicular atrophy and mesh shrinkage.

Statistical methods

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD and results on categorical measurements are presented in number and percentage (%).

RESULTS

In this prospective study, 90 hernia subjects were included. Among them 84 were males (93%) and 6 were females (6.6%). Age of the subjects was 21 to 75 years. Maximum numbers of patients were in the age group of 41-50, which had 29 (32.2%). Right sided hernia was observed in 56 (62.2%) patients, left sided hernia was observed in 24 (26.6) patients and 10 patients had bilateral hernia. Among 90 patients direct hernia was observed in 75 (83.3%) patients and indirect hernia was observed in 15 (16.6%) patients. Mean intra-operative time (minutes) was 53.43±15.12, post-operative hospital stay (days) was 5.06±1.91 and post-operative ambulation

time was (1.72±0.71) as illustreated in Table 1. Immediate post-op complications like seroma/hematoma was in 10 (11.1%), wound infection was in 5 (5.5%) and orchitis was in 2 (2.2%) observed repectively. A post-operative complication like stiffness in lower abdomen was observed in 21 (23.3%) patients. In the present study, immediate post-op pain as per visual analogue scale (VAS) day 1 is 4.20, day 2 is 1.68, at discharge is 1.38 and the average time taken to return to work post-operatively was 9.58±3.51 as illustrated in Table 2.

Table 1: Characteristics of the study subjects, site and type of hernia (n=90).

Characteristics	Number of subjects	%
Sex		
Male	84	93
Female	06	6.6
Age (years)		
21-30	11	12.2
31-40	12	13.3
41-50	29	32.2
51-60	26	28.8
61-70	10	11.1
>71	02	2.2
Site of hernia		
Right	56	62.2
Left	24	26.6
Bilateral	10	11.1
Type of hernia		
Indirect	75	83.3
Direct	15	16.6
Mean intra-operative time (minutes)	53.43±15.12	
Post-operative hospital stay (days)	5.06±1.91	
Post-operative ambulation time	1.72±0.71	

Table 2: Characteristics of the study subjects, surgery and complications during and after surgery (n=90).

	Number of subjects	%
Immediate post-op complications		
Seroma / Hematoma	10	11.1
Wound infection	5	5.5
Orchitis	2	2.2
Post-operative complications		
Stiffness in lower abdomen	21	23.3
Immediate post-op pain as per visual analogue scale (VAS)		
Day 1	4.20	
Day 2	1.68	
At discharge	1.38	
Return to work post-operatively (days)	9.58±3.51	

Table 3: Long term complications.

Complications	At 1 month follow up N (%)	At 3 month follow up N (%)	At 1year follow up N (%)
Foreign body sensation	22 (24.4)	8 (8.8)	3 (3.3)
Chronic pain	17 (18.8)	13 (14.4)	4 (4.4)
Recurrence	0	0	0

Long term complications like foreign body sensation was experienced by 22 (24.4) patients post-operatively at 1 month follow up, 8 (8.8%) patients at 3 months follow up and 3(3.3) patients at 1 year follow up. Chronic pain at operated site was experienced by 17 (18.8%) patients at the end of 1 month follow up, at 3 month follow up, 13 (14.4%) patients and at the end of 1 year of follow up 4 (4.4%) patients at operated site. Recurrence was not observed in any of the patient as shown in the Table 3.

DISCUSSION

The description of the Lichtenstein tension-free mesh repair, about 30 years ago, opened a new era in groin hernia repair. Postoperative pain is minimal, as a result of the tension-free technique.[6] The method is very simple, effective, is associated with a very low recurrence rates (ranging from 0 to 2 % in the literature) and can be performed under local or regional anesthesia.[7-9] For these important advantages, it is currently the preferred method for the plastic reconstruction of inguinal hernias for the majority of surgeons around the world.

A variety of prosthetic mesh is available to the surgeon. The ideal mesh properties are inertness, resistance to infection, molecular permeability, pliability, transparency, mechanical integrity, and biocompatibility. Absorbable mesh does not remain in the wound long enough for adequate collagen to be deposited, while multi-filament mesh can harbor bacteria. Monofilament mesh is the most popular presently in use with the various types of polypropylene having different characteristic advantages.[9]

Use of porous mesh (polypropylene) allows a large surface area for in-growth of connective tissue leading to permanent fixation of the prosthesis within the abdominal wall. Intraparietal placement of the prosthesis allows well vascularized, tissue coverage of all aspects of the prosthesis. Fears of complications related to mesh implantation have proved to be without foundation. The use of vacuum drains is indicated in large inguinal hernias in order to minimize hematoma or seroma formation. However, duration of antibiotic use or indication for suction drainage differ among investigators.

To reduce the chance of recurrence, the mesh should extent 2-4 cm beyond the boundary of Hesselbach's

triangle. The position of the mesh beneath the aponeurosis of the external oblique results in the intraabdominal pressure working in favor of the repair, since the external oblique aponeurosis keeps the mesh tightly in place by acting as an external support when intra-abdominal pressure rises. The mesh should be fixated carefully, by the use of Prolene sutures or staples, to prevent folding, wrinkling or curling of the mesh around the cord.[10]

The method is simple, can be performed by all the surgeons – even those without special interest in hernia surgery – and is very effective in the prevention of recurrences. Indeed, an extremely low recurrence rate (range, 0 –0.7 %) has been reported from many groups of surgeons.[11,12] The method combines many advantages, such as simplicity, effectiveness, safety, comfortable postoperative course with easily controlled pain, rapid return to unrestricted activities, an impressively low recurrence rate and high patient satisfaction. We have been encouraged by these good results of this procedure in our study. For these reasons, it is our preferred method for hernia repair in our hospital.

Chronic pain after Inguinal Hernioplasty can be defined as a persistent pain in operated groin region, lasting from 3 months after operation until at least one year, following EHS guidelines definition.[13] Of course for patients post-hernioplasty pain begins after the operation and they have fear to have a chronicization of pain, when its duration is more than one week.

Factors related to surgical techniques, psychological factors, patients' fear, and open or laparoscopic approach were previously analyzed to assess the influence on postoperative chronic pain.[14] Mechanisms (nerve entrapment, nerve trauma, amputation neurinoma, cicatrization damage) were advocated responsible for chronic pain after inguinal hernioplasty and were previously investigated in other papers.[15]

The real incidence of chronic pain is lower than usually reported, discrepancies in published data are mainly due to the definition of "pain". Most patients' complaints are really just discomfort and also in our experience, as elsewhere reported, really severe chronic pain is extremely rare.[16]

In previous publications other authors reported the influence of age as a risk factor for developing chronic inguinal pain after hernioplasty. Even if to date, to our knowledge, no specific studies have been published assessing the influence of age alone on post-herniorrhaphy chronic pain, it is commonly accepted that young age is a risk factor for chronic pain.[17,18]

In our prospective analysis we could not confirm such previous findings; on the contrary we found there was no statistical difference appreciated in our study.

After primary hernia repair up to 10% recurrences are reported.[19] Mesh techniques and the surgeons' experience are important factors to obtain good results. Nevertheless, the risk for hernia recurrence increases from repair to repair.[20] The question is if patients with more than one recurrence are not treated sufficiently or if their recurrences are based on disturbances of the extracellular matrix.

Disturbed collagen expression can not only be caused by genetic alterations but also by exogenous factors, e.g. smoking and ascorbic acid deficiency. Moreover, it might be anticipated from diseases with gradual or late onset in life, e.g. atherosclerosis or hypertension, that the coincidence of multiple risk factors determines an individual's susceptibility. For the onset of inguinal hernia disease, smoking, co morbidity and age are established risk factors.[21-23]

CONCLUSION

The study results indicated that Lichtenstein's Hernioplasty has very few complications, be it intra-operative, post-operative and long term complications and no recurrence rate after 1 year follow up, suggests that Lichtenstein's hernioplasty was safe and reliable procedure for inguinal hernia repair.

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