

Repair of a Primary Inguinal Hernia by Using a Polypropylene Mesh: A Tension Free Lichtenstein Repair in Rural Andhra Pradesh

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ABSTRACT

Introduction: Inguinal hernia repair is one of the most commonly performed surgeries in the world. Inguinal hernia accounts for 75% of all the abdominal wall hernias, with a life time risk of 27% in men and 3% in women [1]. The recurrences which follow inguinal hernia repair are of a significant problem. As the pathogenesis of adult inguinal hernia is a defect in the metabolism of collagen, leading to a weakening in the fascia transversalis, the use of such a weakened tissue is problematic for the hernia repair. This study was conducted in the Konaseema Institute of Medical Sciences, Amalapuram, in a rural area of Andhra Pradesh, to determine the usefulness of a polypropylene mesh for tension free repair in terms of patient comfort, affordability, return to normal activity and post operative follow up.

Materials and Methods: A prospective study was conducted from April 2008-March 2009, with a follow up of 2 years, for

recurrence and any other morbidity. 100 Lichtenstein tension free hernioplasties for inguinal hernia were performed by using a polypropylene mesh between.

Results: The inguinal hernia was right sided in 54 cases and 28 cases had left sided hernia, while 18 were bilateral hernias. Out of these, 57 were indirect and 43 were direct hernias. The average duration of the surgery was 45 minutes, the duration of the stay in the hospital was 4 days and after a follow up for 2 years, there was no evidence of recurrence, post-operative neuralgia, delayed rejection of the mesh or testicular swelling. 2 cases had superficial wound infections.

Conclusion: Lichtenstein tension free repair with a prolene mesh is an excellent approach in the management of inguinal hernia, with encouraging results in places where Laparoscopic TEP and TAPP are not within the reach of most of the patients in terms of affordability.

Key Words: Herniorraphy, Lichtenstein hernioplasty, Inguinal hernia

INTRODUCTION

Numerous surgical approaches exist for treating inguinal hernia. The Lichtenstein tension free polypropylene mesh repair remains the criterion standard [1]. Recurrences are a common problem following hernia repair. There is evidence that a defect in the metabolism of collagen is involved in the pathogenesis of inguinal hernia and so, such a weakened tissue is problematic for hernia repair. Modern synthetic polymer plastic or polyethylene in the form of a sheet of a woven or knitted mesh of polyamide and a newer polypropylene was first popularized by Usher in 1958 [2]. In the Cocharane review, the evidence from the comparison of the mesh to non-mesh open repair was sufficient to conclude that the use of the mesh was associated with a reduced rate of recurrence [3]. The Lichtenstein hernioplasty bypasses the problem of working with degenerated tissue, because of the possibility of being able to place the edge of the mesh on the surrounding healthy tissue, thus providing a stronger reinforcement for the abdominal wall. So, in this study, we adapted a tension free hernia repair to determine the morbidity, affordability, patient comfort and the rate of recurrence which was associated with it.

MATERIALS AND METHODS

A prospective study was conducted from April 2008-March 2009, with a follow up of 2 years. 100 tension free Lichtenstein hernioplasties for inguinal hernia were performed by using a polypropylene mesh. 54 were on the right side, 28 were left sided and 18 were

bilateral hernias. The inguinal hernias were indirect in 57 cases and direct in 43 cases, with a normal abdominal tone. The patients who had co-morbid conditions like COPD and BPH were treated for their primary illnesses before being taken up for the study. 4 cases from the group had BPH and they had to undergo TURP, following which they were taken up for the study. This procedure was not carried out in cases of obstructed and strangulated inguinal hernias. A majority of the repairs were done under spinal anaesthesia and some were done under general anaesthesia.

SURGICAL TECHNIQUE

After a proper pre-operative workup and after treating the comorbid conditions, the patients were taken up for the surgery. A majority of the repairs were done under spinal anaesthesia by using 5% xylocaine and some were done under general anaesthesia. The patients were placed in the supine position. The groin was prepared in the usual fashion. An oblique incision of size 4-5 cm was made half an inch above the inguinal ligament, towards the pubic tubercle. The external oblique aponeurosis was incised, the superficial inguinal ring was opened and the flaps of the external oblique aponeurosis were raised, exposing the inguinal ligament and the conjoint tendon. The spermatic cord was dissected and it was elevated from the posterior wall. The cremasteric box was opened and the sac was identified and dissected upto the neck. After the sac was opened, its contents were reduced and its neck was transfixed and ligated. A polypropylene mesh of size, 3x6

inches was trimmed at the corners and it was spread over the posterior wall. The first suture was fixed to the pubic tubercle, upto 2 cm, by using 1-0 prolene. The same continuous suture was then sutured to the lower border of the mesh, to the inguinal ligament, upto the deep ring. It was cut in the shape of a fish tail, while enclosing the spermatic cord and the two free ends were sutured. The upper end of the mesh was fixed to the conjoint tendon with interrupted sutures. Proper haemostasis was achieved. The wound was closed by using a closed suction drain beneath the external oblique aponeurosis. The external oblique aponeurosis was closed with vicryl (2-0). The skin was sutured with ethilone (2-0). Post-operatively, the patient received intravenous cephalosporin for 2 days, followed by oral cephalosporin for 4 days. NSAIDs were given for the pain for 3 days. The drain was removed on the 2nd post-operative day and the patient was discharged on the 4th post-operative day.

RESULTS

All the patients who underwent Lichtenstein's tension free hernia repair did not complain of neuralgia or post-operative pain which could not be controlled by the regular NSAIDs. The average duration of the surgery was 45-60 minutes. Wound infections (superficial skin infections) were noticed in 2 cases. There was no haematoma or seroma formation or any testicular swelling. After a follow up of 2 years, none of the cases had any recurrence or mesh rejection. The long term results are awaited.

DISCUSSION

The surgical history of inguinal hernia dates back to BC 1151. The mummy of Ramses the 5th had a huge hernia sac in the groin. The mummy of Pharaoh Merneptah had an incision over his inguinal region, with one testicle having been removed (BC 1224). In the renaissance era, Ambroise Pare described the use of the "Golden ligature" in the cases of a rupture of direct and indirect hernias. In the earliest part of the first century, AD Celsus described the operation in vogue at that time in the Greco-Roman area [4]. The greatest contribution to hernia surgery was made by the Italian surgeon, Edoard Bassini [5-10]. There are 3 important landmarks in the history of the repair of inguinal hernias:

1. Tissue repair-Edoard Bassini 1888,
2. Onlay mesh -Irving Lichenstein 1984 (tension free) repair,
3. Laproscopic Ger, Scultz hernia repair Corbitt, etc 1990.

Bassini first performed this operation in 1884 and reported it in 1887. He published his results in 1887, 1888, 1889, 1890 and finally in 1894 [5-10]. These phenomenal results earned him the title "Father of Modern Herniorraphy". The recurrences which follow the repair of inguinal hernias are a major drawback. As inguinal hernias result from a defect in the metabolism of collagen, leading to a weakening in the transversalis fascia, the use of such a weakened tissue is problematic. So, a prosthetic material like polypropylene was popularized by Usher in 1958 [2]. This material can be easily cut to the required shape, it is flexible, it is practically indestructible in the human tissue and it elicits little tissue reaction. Since 1969, sheets of knitted monofilament polypropylene have been extensively used as a simple means of reinforcement in indirect, direct and recurrent hernias. The description of the Lichtenstein tension free mesh repair opened a new era in the groin hernia repair [11]. In 1986, Lichtenstein stated that "the porous mesh permits the penetration and deposition of a thick layer of reactive fibrous tissue

that permanently buttresses the posterior canal repair" [12]. The properties of an ideal mesh are inertness, resistance to infection, molecular permeability, pliability, transparency, mechanical integrity and biocompatibility. The polypropylene mesh, which was a monofilament mesh, was used in this study, as it allowed a surface area for the growth of the connective tissue, leading to the permanent fixation of the prosthesis within the abdominal wall. The position of the mesh beneath the aponeurosis of the external oblique results in the intraabdominal pressure working in favour of the repair, since the external oblique aponeurosis keeps the mesh tightly in place by acting as an external support when the intraabdominal pressure rises [13]. The laparoscopic transperitoneal closure of the internal orifice of the groin hernias by a series of metal clips was introduced by Ger in 1977 [14], which is a recent trend. However, it is a messy procedure which requires general anaesthesia, with relative contraindications like obesity, significant chest disease, adhesions, massive hernia, pregnancy and lack of fitness for surgery [15-17]. The complications in the laproscopic inguinal hernia surgeries are more dangerous and more frequent than those in open Lichtenstein tension free hernioplasties. From the rural Indian perspective, it is not within the reach of most of the population, as it is more expensive to perform, which relates to the cost of the extra equipment and the increase in the operating time [18].

The average duration of the surgery was 45 minutes, the duration of the stay in the hospital was 4 days and after a follow up for 2 years, there was no evidence of recurrences, post-operative neuralgia, delayed rejection of the mesh or any testicular swelling. 2 cases had superficial wound infections.

CONCLUSION

Lichtenstein tension free polypropylene mesh inguinal hernia repair is a simple, safe, comfortable and effective method with extremely low early and late morbidity and a remarkably low recurrence rate. It is also cost effective. Therefore it is our preferred method of hernia repair.

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