International Surgery Journal
Arora BK et al. Int Surg J. 2017 Aug;4(8):2736-2740
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20173409

Original Research Article

Two mesh technique in lieu of single mesh in giant prosthetic reinforcement of the visceral sac for bilateral inguinal hernias

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Received: 11 June 2017
Accepted: 08 July 2017

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ABSTRACT

Background: Posterior wall strengthening is the essential aim of Bilateral Inguinal hernia repair. The two methods for it are tissue repair and tension free repair. Tension free repair have become the gold standard. The preperitoneal repair for Bilateral Inguinal hernia is performed by wrapping the lower part of the parietal peritoneum with a large chevron shape polypropylene mesh.
Methods: This study presents a modification of stoppas repair using a polypropylene mesh of size 15×9 cm to cover the myopectineal ostium of fruchaud on each side. The direct hernia sac was inverted with a purse string suture. Indirect hernia was opened and margins approximated with a 2-0 polyglycolic acid suture. No drainage was used.
Results: Post-operative period was uneventful in all the patients. This new technique uses less post-operative time and the cost of surgery is reduced. There was one post-operative recurrence on one side only on follow up at one week, three weeks and three months.
Conclusions: The use of two small size mesh covering both Fruchaud's myopectineal orifices for bilateral inguinal hernia repair instead of a large size mesh is a promising technique. It saves the operative time and shortens the hospitalization time.

Keywords: Bilateral inguinal hernia, GPVRS, Preperitoneal repair, Stoppa's repair, Two mesh

INTRODUCTION

The hernia repair was mastered by Bassini since 1884 and Shouldice since 1953.[1] Various methods are used for inguinal hernia repair. The conventional tissue repairs promulgated by Bassini have been replaced by Lichtenstein tension free repair using polypropylene mesh.[2] Bilateral uncomplicated inguinal hernias can be operated simultaneously under local anaesthesia as day surgery procedure.[3] In a historical review it was concluded that preperitoneal approach for the repair of primary or recurrent, bilateral inguinal and femoral hernias now dominates the techniques of repair of these anterior abdominal wall hernias.[4] There are two preperitoneal approaches in practice now. The first approach is open surgery and the second is laparoscopic surgery. European hernia society guidelines on treatment of inguinal hernia have recommended simultaneous Lichtenstein repair or preperitoneal repair either open or laparoscopic. As laparoscopic repair has a learning curve open preperitoneal repair should be considered in absence of expertise.[5] Laparoscopic hernia repair has been considered as the most appropriate for bilateral inguinal hernia repair as a tension free repair in the preperitoneal space. The laparoscopic repair is considered a complex repair with a long learning curve, high cost, more

complications and high recurrence rate.[6] Simultaneous bilateral inguinal hernia repair has many advantages like less physical and psychological stress, low cost and reduced work days lost.[7] Giant prosthesis for reinforcement of visceral sac repair was pioneered by Rene E Stoppa for repair of bilateral inguinal hernias and incisional hernia.[8]

Open preperitoneal mesh techniques compared with Lichtenstein mesh repair in terms of pain, a Cochrane database study concluded that pain in preperitoneal repair is less as compared to acute and chronic pain in Lichtenstein repair.[9] Another review compared laparoscopic mesh techniques with open mesh techniques for inguinal hernia repair, it was concluded that there was no apparent difference in recurrence rate between laparoscopic and open mesh methods of hernia repair.[10]

The aim of this study is to evaluate use two small size meshes in lieu of one large size mesh used in conventional Stoppas repair for simultaneous bilateral inguinal hernia repair in giant prosthetic reinforcement of the visceral sac in regard to duration of operation, postoperative pain, hospital stay, convalescence period, complications, recurrence rate and quality of life.

METHODS

This study was conducted on 30 patients presenting with bilateral inguinal hernia whether direct or indirect. All the patients presenting with clinical diagnosis of bilateral inguinal hernias were included in this study. A detailed history was taken in reference to straining at micturition and defecation. The history was also recorded for chronic cough due to chronic asthmatic bronchitis. Patients with history of prostatism were investigated and treated preferably with medical therapy. Then these patients were included in this study. Haematological investigations and pre anaesthetic checkup was done prior to admission. Informed consent was taken from each patient. Institutional ethical committee consent was obtained. After preoperative preparation, these patients were operated under general or spinal anaesthesia.

Inclusion criteria

Bilateral inguinal hernias

Exclusion criteria

- Unilateral inguinal hernia
- Asthmatic
- Enlarged prostrate requiring surgical treatment
- Patients with ASA grade IV.

Operative technique

All the patients were operated under spinal or regional anaesthesia. A midline infra umbilical incision was made (Figure 1). The preperitoneal space or space of Retzius was opened. The blunt or finger dissection technique was used in this retropubic space in front of bladder as far as the prostrate. This blunt dissection was extended laterally behind the rectus muscles and epigastric vessels in retroinguinal space as far as the iliopsoas fascia.

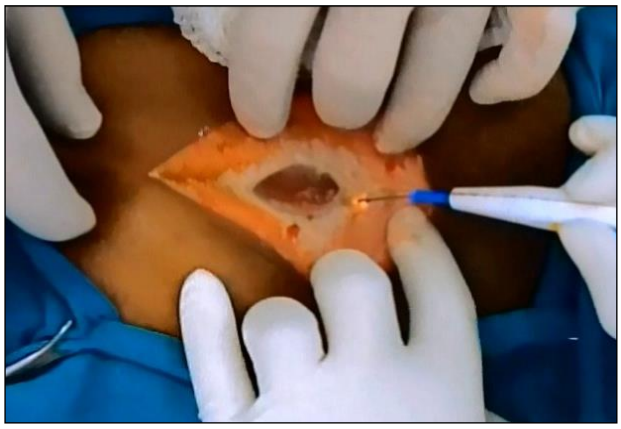

Figure 1: Midline incision.

The sac of the inguinal hernia was identified when the inguinal hernia was indirect. The sac and the spermatic cord were gently retracted with careful isolation of spermatic elements. The preperitoneal cleavage plane was extended to expose the deep aspect of the obturator region below, the iliac vessels laterally and fascia of psoas major muscles. The direct hernial sac was inverted with a purse string suture (Figure 2).

The indirect hernia sac was opened and finger introduced within it to ease the isolation of spermatic elements. Indirect hernia was opened and margins approximated with a 2-0 polyglycolic acid suture (Figure 3).

Figure 2: Inversion of direct hernia in Preperitoneal plane.

We are doing a modification of stoppas repair using a polypropylene mesh of size 15 cm X 9 cm to cover the myopectineal ostium of fruchaud on each side (Figure 4).

Figure 3: Indirect hernia in preperitoneal plane.

Figure 4: Placing mesh in preperitoneal plane.

Mesh on each side was stitched to pubic symphysis and laterally to facia near anterior superior iliac spine (Figure 5). No drainage was used.

Figure 5: Both mesh placed on myopectineal orifice.

The observations were recorded were patient characteristics, operative time, hospital stay, postoperative pain, recurrence rate and quality of life.

RESULTS

All the 30 patients selected for this study were male with clinical diagnosis of bilateral inguinal hernias. The age group varied of these patients varied from 39-74 years of age. The clinical attribute of bilateral inguinal hernias were; 24 patients were having bilateral direct inguinal hernias, 5 were having both direct and indirect hernia while one patient was having bilateral indirect inguinal hernias. All the patients were operated by one surgeon with same technique described above. For indirect hernia herniotomy was done while for direct hernia inversion of sac was done. The operative time was 35 to 65 minutes. The immediate postoperative period was uneventful in all the patients. The postoperative pain was evaluated using visual analogue pain score scale. Fifteen patients (50%) had pain within six hours of surgery and required injection Diclofenac once only. These patients were allowed orally after six hours of surgery. All the patients were discharged on second or third postoperative day. The patient was called after one week of surgery in outpatient department. The skin staplers were removed on 7^{th} to 10^{th} postoperative day. The wound got infected in only one patient it was of minor type and treated with dressings. Seroma or haematoma occurred in none of the patients. Recurrence was seen in one patient on right side only at one month follow up. The work loss days were 7-10 days. The quality of life was satisfactory according to most of patients.

DISCUSSION

Anterior preperitoneal approach for hernia repair using polyethylene and polypropylene mesh was introduced in 1958 by Usher et al.[11] The concept of lateralization of spermatic cord and use of mesh for hernia repair was also introduced by them. In 1965 Stoppa et al started giant prosthetic reinforcement of the visceral sac covering both Fruchaud's myopectineal orifice using a large polypropylene mesh in preperitoneal space protecting all weak points in lower part of the abdomen. The skin incision used was midline infra umbilical. The large size mesh was not fixed except for one suture at superior margin of mesh to umbilical fascia.[12] The mechanism of fixation of mesh is based on a principle of physics called Pascal's hydrostatic principle by which mesh applied to the visceral sac gets pinned against the parietal musculature due to intra-abdominal pressure. For symptomatic bilateral inguinal hernias, a simultaneous operation is advised which is safe and effective. The choice of operation can be according to surgeon's choice. Fernandez- Lobato R et al did Stoppa repair in 210 patients and concluded that it is a very safe procedure for bilateral inguinal hernia but requires a learning period for optimal results. Over a period of nine years same procedure was done by different surgeons leading to

improvement in learning curve. The operative time improved remarkably. The first few cases of the technique in the learning curve are depicting high rate of morbidity, operative difficulty and long hospital stay.[13] Sharma P et al, carried out a study to determine clinical effectiveness and cost effectiveness of open preperitoneal mesh repair in comparison to Lichtenstein mesh repair in primary unilateral inguinal hernia.

They interpreted that inguinodynia in Lichtenstein repair is more as compared to open preperitoneal repair. They attributed it to dissection in the inguinal canal and mesh fixation. In open preperitoneal technique the mesh is placed in the preperitoneal plane and gets fixed in place by intra-abdominal pressure. Both have similar recurrence rates. They concluded that open preperitoneal repair is a safe, most efficient and cost-effective alternative to Lichtenstein mesh repair.[14] Askar et al, conducted a prospective randomized study for repair of bilateral inguinal hernia in 60 patients comparing Stoppas technique with simultaneous bilateral Lichtenstein repair. They concluded that Stoppas repair is a reliable technique for repair of bilateral inguinal hernia repair consuming less operative time, reduced postoperative pain, early return to routine activity, low recurrence rate and good patient satisfaction level.[15]

Sajid et al, in a meta-analysis of published controlled trials compared laparoscopic versus open preperitoneal mesh repair in inguinal hernia. They evaluated 1286 patient of ten randomized trials and calculated that laparoscopic preperitoneal hernia repair takes longer operative time and has less postoperative pain as compared to open preperitoneal approach. Both open and laparoscopic preperitoneal hernia repairs were statistically was equivocal in terms of postoperative complications, recurrence and chronic inguinal pain.[16] Ates et al suggested the use of Stoppa procedure whenever conversion is required in laparoscopic TEP hernia repair due technical difficulties. This procedure is advantageous especially in bilateral inguinal hernia repair as it mesh reinforcement is done in the same plane and avoids entering into the peritoneal cavity.[17]

The Stoppas procedure or giant prosthetic reinforcement of visceral sac is a preperitoneal repair for bilateral inguinal hernias. This procedure requires wide dissection of subfascial preperitoneal space. The classical Stoppas repair is performed by wrapping lower part of the parietal peritoneum with a large chevron shape polypropylene mesh.[18] Pelissier et al suggested that all recurrences occur through the myopectineal orifice so a mesh covering only this area is effective as done in Rives procedure.

A large mesh covering the iliac vessels and urinary bladder as done in Stoppas repair can cause problems later on related to these systems. Covering the myopectineal orifice only can avoid the problems related to these systems. They used a mesh of size 8-10 cm length and 6-7 cm breadth in preperitoneal space using inguinal approach. The fascia over the mesh was closed without any fixation of the mesh. They operated 161 hernias with this technique and had only one recurrence (0.7%) due misplacement of mesh. Mild inguinal pain occurred in eight patients and there were no complications. From this study, they concluded that covering only the myopectineal orifice with a small size mesh using inguinal approach is effective.[19]

"The open new simplified totally extra-peritoneal (ONSTEP) inguinal hernia repair" is a new technique using mesh in preperitoneal space by open surgery.[20] Andresen et al, in a recent review of open preperitoneal techniques of nine different techniques searched on data bases. In data base 67 studies describing nine different methods like Kugel, TREPP, TIPP, ONSTEP, Horton, Nyhus, Vgohavy, Read and Stoppa were found. They analyzed the results in reference to pain, recurrence and complications in one month follow up. They concluded that preperitoneal techniques with placement of mesh by open surgery seem to be promising as compared with standard anterior techniques.[21,22]

Maghsoudi et al, did a study on 234 patients with 420 inguinal hernias of which 186 were bilateral and 49 were unilateral. Out of these, recurrent hernia was present in 154 cases. Stoppas preperitoneal technique using a large polyester mesh was used for repair of these hernias. The mean operative time was 45 minutes and mean hospital stay was 2.2 days. There were occasional complications. On follow up recurrence rate was 0.71% which is very low per hernia repaired.[23]

A recent clinical trial assessed the results of bilateral inguinal hernia repair in patient undergoing conventional Stoppa repair and laparoscopic total extraperitoneal repair with a single mesh and without staple fixation. This study concluded that laparoscopic approach causes less trauma but has longer operative time. The quality of life during early postoperative period was similar in both techniques.[24] In simultaneous bilateral hernia repairs, the Lichtenstein method and laparoscopic repairs are the commonly used. The Lichtenstein technique has increased risk of mesh inguinodynia. The laparoscopic technique needs special equipment and training.

This two-mesh technique is a modification of Stoppas technique. The modification of classical stoppas repair using two small size meshes is based on rationale that covers the myopectineal ostium of Fruchauds. This two-mesh technique uses minimum dissection and only covers the myopectineal ostium of Fruchauds on both sides. This technique is easy to learn and perform as compared to laparoscopic repair.

The cost is remarkably reduced. The operative time and hospital stay are comparable. Minimum complications occurred in this study and recurrence rate is low. The overall quality of life after this surgery is satisfactory for majority of patients as in other studies.[25]

CONCLUSION

The use of two small size mesh covering both Fruchaud's myopectineal orifices for bilateral inguinal hernia repair instead of a large size mesh is a promising technique. It saves the operative time and shortens the hospitalization time. The complication rate and recurrence rate is very low using this technique. The quality of life is satisfactory for most of the patients.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Arora BK, Arora R, Arora A. Two mesh technique in lieu of single mesh in giant prosthetic reinforcement of the visceral sac for bilateral inguinal hernias. Int Surg J 2017;4:2736-40.