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Original Research

A comparative analysis of Stoppa's repair and the Lichtenstein approach for the surgical treatment of bilateral inguinal hernia

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ABSTRACT:
Aim: A comparative analysis of Stoppa's repair and the Lichtenstein approach for the surgical treatment of bilateral inguinal hernia. **Methods:** This research was conducted at the Department of General Surgery using a prospective, open, randomised, comparative design. The patients were randomly assigned to two groups using simple randomization. Group 1 received Lichtenstein tension-free mesh hernioplasty, whereas group 2 got Stoppa's repair. Age, primary symptoms, and duration of inguinal hernia, as well as any other accompanying problems such as chronic cough, chronic constipation, urinary issues, etc., were all considered. Additionally, the patient's history of prior abdominal operations, family medical history, employment, and marital status were taken into consideration. Additionally, a comprehensive physical examination was conducted. A total of 60 patients, with 30 patients in each group, were included in the research based on their fulfilment of the selection criteria. **Results:** The current research has included 60 individuals who have bilateral inguinal hernia and match the specified selection criteria. The participants were allocated to one of two groups at random in this research. Group 1 consisted of 30 patients who received bilateral Lichtenstein tension-free hernioplasty, while group 2 got Stoppa surgery. The duration of the operation was much shorter for patients in group 2 (45.69±3.74 min), compared to group A where it was 81.25±2.99 min. There were no issues during the surgery in any of the groups. Patients in Group 2 had notably reduced pain ratings after surgery, as determined by the visual analogue scale, 12 hours after the procedure. However, there was no statistically significant disparity in pain levels after 24 hours or 7 days after the surgery. **Conclusion:** Our analysis showed that both techniques were effective in producing positive post-operative results and encountered comparable challenges. The duration required for all groups to resume regular activity and employment without experiencing discomfort was extended, perhaps due to the fact that the hernia surgeries were performed on both sides.
Keywords: Stoppa's repair, Lichtenstein, Bilateral inguinal hernia

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INTRODUCTION

The history of groyne hernias is closely intertwined with the history of surgery.Hernia repair is a frequently conducted surgical treatment in the field of general surgery, which is carried out on a global scale.[1,2] Ever since Bassini first detailed his procedure, the quest for an optimal method of repairing inguinal hernias has continued. An optimal hernia repair should be performed in a manner that eliminates tension, relies on tissue for support, avoids any harm to critical structures, minimises the risk of long-term discomfort or consequences, and prevents the hernia from recurring. Lichtenstein's use of prolene mesh for prosthetic repair has gained recent popularity due to its tension-free nature. The mesh functions as a physical barrier, but it does not provide movement or a physiologically active posterior wall.[3] Moreover this technique is associated with risk of infections, recurrence, chronic pain testicular atrophy and infertility, foreign body sensations and chronic groin sepsis which sometimes may require mesh removal.[4] Other tissue repairs like such as modified Bassini, Iliotibial tract repair, Shouldice, Nylon- Darn, Halsted-Tanner, McVay and many others either

requires good surgical experience or are tension repairs fraught with recurrences. Recurrences vary from surgeon to surgeon and centre to centre owing to complexity of the procedures.[5] The Stoppa's Repair first described in 1975 by Rene Stoppa, also known as giant prosthetic reinforcement of the visceral sac (GPRVS), is a tension free type of hernia repair, which is performed by wrapping the lower part of the parietal peritoneum with prosthetic mesh and placing it at a preperitoneal level through pfannensteil incision. This technique has met particular success in the repair of bilateral hernias, large scrotal hernias, and recurrent hernias in which conventional repair is difficult and carries a high morbidity and failure rate.[7-9] This new technique is theoretically closer to ideal hernia repair and based on the concept of providing a strong, mobile and physiologically dynamic posterior inguinal wall. The technique is simple, easy to learn and does not require complicated dissection or suturing.

MATERIAL AND METHODS

This research was conducted at the Department of General Surgery using a prospective, open, randomised, comparative design. The patients were randomly assigned to two groups using simple randomization. Group 1 received Lichtenstein tension-free mesh hernioplasty, whereas group 2 got Stoppa's repair. Age, primary symptoms, and duration of inguinal hernia, as well as any other accompanying problems such as chronic cough, chronic constipation, urinary issues, etc., were all considered. Additionally, the patient's history of prior abdominal operations, family medical history, employment, and marital status were taken into consideration. Additionally, a comprehensive physical examination was conducted. A total of 60 patients, with 30 patients in each group, were included in the research based on their fulfilment of the selection criteria.

METHODOLOGY

Patients were randomised into two groups based on simple randomization-group 1: patients underwent Lichtenstein tension free mesh hernioplasty; and group 2: patient underwent Stoppa's repair. Age, chief complaints and duration of inguinal hernia, other concomitant conditions such as chronic cough, chronic constipation, urinary complaints, etc., history of previous abdominal surgeries, family history, occupation, marital status, and etc. were all taken into account. A thorough physical examination was also carried out. Total 60 patients-30 patients in each group-were included in the study who were fulfilled the selection criteria.

In Lichtenstein tension-free hernioplasty, a skin incision was made parallel to the inguinal ligament from about 1/2 inch above and lateral to the pubic tubercle to about 1/2 inch below and medial to the anterior superior iliac spine.[10] Vicryl 0. was used to dissect the indirect hernia sac, ligate it, and section it. Vicryl 2/0 was used to plicate and invaginate the large direct sacs. In all cases, a 6x11 cm heavy prolene mesh was used. Using interrupted polypropylene 2/0, the mesh was secured in place. Starting from the pubic tubercle and extending beyond the orifice of the internal ring, the mesh was fixed to the inguinal ligament and conjoint tendon. In another group, Stoppa procedure which was developed by Stoppa was used, with some modifications.[11-14] The standard incision for all patients was a Pfannenstiel incision, followed by vertical separation of both recti to enter the preperitoneal space. The preperitoneal space was dissected with a blunt dissection. Retzius' retropubic space was dissected, and the rectus abdominis muscle and epigastric vessels were reached laterally, extending to the retroinguinal space. It was possible to see the spermatic cord and gonadal vessels. The iliac vessels, the superior pubic ramus, and the obturator foramen were all exposed. The presence of direct hernias was discovered and the size of the hernias was reduced. Large sacs were removed and a purse-string suture was used to bind them. The distal peritoneum was left attached to the cord, the indirect sacs were divided, and the proximal peritoneum was sutured. If the indirect hernia was sliding, the sac was separated from the cord structures. Dissection of the spermatic cord and gonadal vessels' peritoneal attachment was used to partialize them. In the preperitoneal space, a prolene mesh (polypropylene nonabsorbable synthetic mesh; single (60×60 cm) or two (30×30 cm) was placed. The mesh did not need to be fixed because the intraabdominal pressure forces it to lay flat between the peritoneum and fascial layers.

Each patient's operative data was recorded in case record form, with a focus on operative time and intraoperative complications. Assessment of postoperative pain, postoperative complications, hospital stay, time to return to normal daily activities, chronic groyne pain, and recurrence were all included in the postoperative data collection. The visual analogue scale was used to assess postoperative pain in each patient at 12 hours, 24 hours, and 7 days after surgery. After the operation, all patients were monitored for one month to assess complications, pain, return to normal daily activities, chronic groin pain, and recurrence.

The statistical package for the social sciences, version 25.0 software (SPSS v.25.0) was used to conduct the analysis. P=0.05 was considered as the significance level. Number and percent were used to describe qualitative data. Range, mean, SD, and median were used to describe quantitative data. The χ^2-test was used to compare different groups in terms of categorical variables.

RESULTS

The current research has included 60 individuals who have bilateral inguinal hernia and match the specified selection criteria. The participants were allocated to one of two groups at random in this research. Group 1

consisted of 30 patients who received bilateral Lichtenstein tension-free hernioplasty, while group 2 got Stoppa surgery. The preoperative factors, including age, BMI, comorbidities, and smoking, did not exhibit a statistically significant difference between the two groups. Table 2 demonstrates that the duration of the operation was much shorter for patients in group 2 (45.69±3.74 min), compared to group A where it was 81.25±2.99 min. There were no issues during the surgery in any of the groups. Patients in Group 2 had notably reduced pain ratings after surgery, as determined by the visual analogue scale, 12 hours after the procedure. However, there was no statistically significant disparity in pain levels after 24 hours or 7 days after the surgery, as seen in Table 3. There was no statistically significant difference seen between the two groups in terms of surgical complications, length of postoperative hospital admissions, return to regular daily activities, and persistent groyne discomfort.

Table 1: demographic profile of the patients,

Characteristics	Group 1=30	Group 2=30	P value
Age (years)	47.25± 2.58	50.25±2.69	0.26
Gender			0.19
Male	24	25	
Female	6	5	
BMI (kg/m^2)	29.25± 2.12	31.02±2.14	0.47
Co- morbidities			0.25
Hyper-tension	5	4	
Diabetes	6	6	
COPD	7	8	
Smoking	9	7	0.39

Table 2: Operative and postoperative parameters of the patients

Parameter	Group 1=30	Group 2=30	P value
Operation time (min)	81.25± 2.99	45.69±3.74	0.001
Post-op complications			0.26
Wound hematoma	5	4	
Urine retention	3	3	
Wound infection	1	0	
Scrotal hematoma	1	1	
Groin pain	16	17	
Post-op hospital stays (days)	1.17±0.39	1.14±0.31	0.34
Return to work (days)	19.34±2.01	20.05±2.80	0.24

Table 3: Comparison of post-operative pain in both groups

Groups	Post-operative pain		
	12 hours	24 hours	7 days
Group 1; Mean ± SD	8.25±1.71	5.79±1.11	2.02±1.19
Group 2; Mean ± SD	7.21±1.22	5.61±1.21	1.67±0.23
P value	0.03	0.19	0.62

DISCUSSION

Bilateral inguinal hernia repair has long been considered a two-stage procedure, with simultaneous repair discouraged. For the repair of bilateral hernias, Stoppa described his midline preperitoneal approach. [13] Bilateral hernias should be repaired at the same time rather than sequentially, according to research.[15,16] Amid et al later advocated using the Lichtenstein technique for simultaneous repair of bilateral hernias under local anaesthesia.[17] Fischer et al provided excellent documentation of the feasibility and tolerability of repairing bilateral inguinal hernias at the same time.[18] We have tried to investigated the benefits and drawbacks of two open, tension-free mesh techniques for the repair of bilateral inguinal hernias in this study. Malazgirt et al studied 45 patients with bilateral inguinal hernias-22 patients underwent Stoppa procedures and 23 patients underwent bilateral Lichtenstein procedures-and found that Stoppa procedures took significantly less time than bilateral Lichtenstein procedures.[19] Stoppa repair was done under spinal anaesthesia, and Lichtenstein repair was done under spinal or local anaesthesia. To avoid any bias in postoperative pain scoring, all procedures were performed under spinal anaesthesia in this study. In terms of operative time, our results were comparable to those of Malazgirt et al as the Stoppa procedure took significantly less time than bilateral repair. The mean operational time for Stoppa repair was 39.0±5.15 minutes in research by Talha et al which is about 10 minutes shorter than what Stoppa and colleagues reported since Stoppa and

colleagues concentrated their investigation on difficult and recurrent hernias, which we eliminated from our study.[20]

In our investigation, there was no significant difference in postoperative hospital stay between the two groups, which was consistent with Malazgirt et al findings.[19] For bilateral Lichtenstein repair, Maciel et al found a mean postoperative hospital stay of 1.55±0.83 days (most of their patients were admitted for 1 day).[21] For bilateral Lichtenstein repair, Miller et al reported a mean hospital stay of 6.4 days, and Serpell et al reported a hospital stay ranging from 2 to 12 days.[15,16] In these two investigations, we were unable to provide an adequate reason for the relatively protracted postoperative hospital stay following bilateral Lichtenstein repair. The length of stay in the hospital after bilateral Lichtenstein surgery was similar to that reported in the literature.[22] During their study in 2003, Fernandez-Lobato et al. found that the average postoperative hospital stay following Stoppa repair was 1.2 days; this result was also similar to the present study.[23]

Li et al carried out a meta-analysis. The results of 2860 patients enrolled in 10 randomized-controlled trials and two comparative studies for comparison between preperitoneal and Lichtenstein repair for unilateral inguinal hernia were pooled in this meta-analysis, which found no significant difference in postoperative complications between the 2 groups.[24] According to Malazgirt et al and Talha et al there was no significant difference in the incidence of postoperative complications between bilateral Lichtenstein repair and Stoppa repair.[19,20] Our findings were analogous to all these three studies, since we also found no significant differences in postoperative complications between the two groups.

In this study, there was no significant difference in the return to normal daily activities between the two groups. In this study, the Stoppa surgery had considerably lower postoperative pain scores at 12 hours than bilateral Lichtenstein repair, however there was no significant difference in pain scores at 24 hours or 7 days postoperatively. Similar type of findings was also observed in a study done by Talha et al.[20]

CONCLUSION

Our analysis showed that both techniques were effective in producing positive post-operative results and encountered comparable challenges. The duration required for all groups to resume regular activity and employment without experiencing discomfort was extended, perhaps due to the fact that the hernia surgeries were performed on both sides.

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