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"A clinical study of comparing bilateral Lichenstein repair with Stoppa repair for bilateral and recurrent inguinal hernias"

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ABSTRACT: Inguinal hernias need repair of the posterior inguinal wall. There are different techniquesto repair inguinal hernia. In this study we comparebetween bilateral Lichenstein repair with Stoppa repair in bilateral and recurrent inguinal hernias. The study compares time taken for completion of surgery, complications, duration of stay and recurrence rates between two techniques. Emergency hernia repairs, pediatric population and patients who denied consent are excluded.Total of 44patients were included in this study with 23 patients in Stoppa group and 21 patients in bilateral Lichenstein group. This study was taken in Government General Hospital, Vijayawada.

KEYWORDS: Stoppa, bilateral Lichenstein, hernia, recurrence, complications, repair.

I. INTRODUCTION:

Inguinal hernias are a common surgical problem found worldwide in all ages and in both sexes. Hernia is defined asan abnormal protrusion of a viscous or part of viscous through an opening, artificial or natural, with a sac covering it.Frucharud's concept of hernia is failure of transversalis fascia to retain peritoneum. The recent concept of abdominal wall weakness are connective tissue disorders, deficient type 1 collagen, increase in type 3 collagen, smoking, reduced hydroxyproline, increased elastase activity, abnormal balance in matrix metalloproteinase production. Somesh is placed to strengthen the posterior abdominal wall. Symptoms include mass in groin, burning sensation in the groin, mass absent when the patient awakens in the morning and reappearing during the day, dull sensation as the day progress, a feeling of a gas bubble in the groin, appearing of mass on coughing or straining, a sudden increase in size suggest the development of a slidingcomponent or incarceration. Indirect hernias are more prone to incarcerate and strangulate than direct hernias. Sliding hernias are more commonly indirect hernias.Most hernias are clinically significant and have to be addressed with immediate repair before they increase in size. Bigger size hernias are associated with higher surgical failure and increased complications.Theprimary objective of groin hernia repair is the reconstruction of the posterior wall of the groin. There are two broad primary methods, and they are tissue repair technique and tension-free repair. The tissue repair technique has been replaced by tension-freerepair and has become the gold standard procedure for repairing theinguinal hernia.

Since Babylonia and Egyptian civilization, people have tried to correct hernia in different means. It started with trusses and taxis method of reduction and in 19th century surgical corrections were tried. It started with tissue repair technique and later progressed to tension free repair with the use of prosthetic mesh placement to strengthen the posterior inguinal wall. From open techniques to laparoscopic techniques many methods have been tried.

In this study we comparebilateral Lichenstein repair with Stoppa repair for bilateral and recurrent inguinal hernias. We are comparing interms of duration of surgery, postoperative complications, duration of stay and recurrence rate.In Lichenstein repair, inguinal incision is given, external oblique aponeurosis is opened, sac identified and cord structures separated, contents reduced and mesh is placed against posterior wall. In Stoppa repair, a transverse suprapubic or vertical infraumbilical incision given, rectus separated from peritoneum till myopectineal orifice of Fruchaud is reached. Mesh placed against peritoneum.

Myopectineal orifice of Fruchaudis bounded by laterallyiliopsoas muscle, inferiorly Cooper's ligament, medially rectus abdominis and rectus sheath and above by arching fibres of the internal oblique and transverse abdominis. Covering of myopectineal orifice of Fruchaud prevents direct, indirect and femoral hernias.

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II. RESULTS AND OBSERVATIONS:

Procedure	Number	Mean	Standard Deviation	Standard error mean
B/L Lichenstein	21	48.48	6.447	1.407
Stoppa	23	69.48	4.236	0.889

1)Time taken for surgery
P value is 0.058 and is not significant.
Time taken for surgery is calculated from time from incision to complete closure of skin. The mean duration of bilateral Lichenstein and Stoppa procedures are 48.48 and 69.48 minutes, respectively.
2)Procedure done and pain

Procedure/Pain	0-2	3-4	5-6
B/L Lichenstein	1	14	6
Stoppa	0	15	8
Total	1	29	14

Pain is a subjective phenomenon and varies from person to person. In this study, the numeric rating scale was used to analyze the severity of pain. The pain was interpreted on postoperative day 1, 24 hours after surgery. All patients treated with only Inj.Diclofenac 75mg intramuscular route twice a day.

3)Procedure and Seroma

Procedure	Seroma Present	Seroma absent
B/L Lichenstein	5	16
Stoppa	9	14
Total	14	30

4)Procedure and Surgical site infection

Procedure	S.S.I. Present	S.S.I. Absent
B/L Lichtenstein	3	18
Stoppa	3	20
Total	6	38

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5)Procedure and Duration of stay

Procedure	3-4 days	5-7days	>7 days
B/L Lichtenstein	3	15	3
Stoppa	0	17	6
Total	3	32	9

6)Procedure and Recurrence rate.

Procedure	Recurrence present	Recurrence absent
B/L Lichtenstein	0	21
Stoppa	2	21
Total	2	42

III. DISCUSSION

For the bilateral Lichenstein procedure, two teams performed the procedure simultaneously, with each unit performing on each side. For the Stoppa procedure, a single unit was performing the procedure. Each team had a chief surgeon, assistant surgeon, and staff nurse.Time was calculated from the time of incision to the complete closure of the skin. The starting time for surgery was taken as the incision time because the other steps, like anaesthesia, cleaning, and draping, were common in both the type of surgeries.Twenty-one patients took up the bilateral Lichenstein procedure, and the mean duration of surgery was 48.48 minutes with aminimum period of 40 minutes and a maximum duration of 60 minutes. In Stoppa repair, 23 patients underwent surgery, and the mean duration of surgery was 69.48 minutes with a minimum duration of 61 minutes and a maximum period of 79 minutes. Recurrent hernias took a longer duration in both groups due todistorted anatomy, adhesions and fibrosis. The reduced time of surgery in the bilateral Lichenstein group was due to the small surgery area, limited anatomy, limited dissection,and exclusion of myopectineal orifice of Fruchaud. Though there is a difference in the mean value of about 20 minutes, the p-value is 0.058, which is not significant proving that there is no significant time difference between the groups, showing thatStoppa procedure as an excellent alternative to the usual Lichenstein repair.

Pain is a subjective phenomenon and was analyzed on postoperative day one, 24hours after surgery, being treated only with non-steroidal anti-inflammatory drugs, twice a day. On a score of 0 to 10, patients usually didn't complain of severe pain. The score was divided into 0 to 2; 3 to 4; 5 to 6; and seven and above. Most patients were in the range of 3 to 4, with 29 patients and 14 patients in the field of 5 to 6. One of the young males had a pain score of 2 who underwent bilateral Lichenstein repair. Patients never complained of a pain score of 7 and above. All patients who had a pain of 5 to 6 had reduced pain in postoperative day two. The pain was found to be an early indicator of seroma, and surgical site infection in some of the patients through a proper study is needed. Though they had some pain reduction in postoperative day two, these patients still had some discomfort. 34.09 % of patients had Stoppa procedure and had pain in a range of 3 to 4. 18.18% of patients had Stoppa and had pain in a range of 5 to 6. 31.82% had bilateral Lichenstein repair and had pain in a range of 3 to 4. 13.64% had bilateral Lichenstein repair and pain in a range of 5 to 6. 2.27% had bilateral Lichenstein repair and pain of 0 to 2. Though the Stoppa group had more pain than the bilateral Lichenstein group, there was no significant pain difference statistically. Stoppa group had relatively more pain due to high dissection and bigger incision.

Seroma was found to be present in 14 patients overall. Seroma is a packet of clear serous fluid that sometimes develops in the body after surgery. This fluid is composed of blood plasma seeped out of ruptured small blood vessels and the inflammatory fluid produced by injured and dying cells. The patient typically complains of swelling in

the region of surgery, suspecting recurrence. The wound appears swollen up but is mildlyinflamedand tender. Usually, seroma appears on the fourth to fifth postoperative day.28.12 % had seroma in the Stoppa group, and 23.80% had seroma in the bilateral Lichenstein group. Ultrasound can be done to identify and quantify the amount of seroma.The increase in seroma in the Stoppa group is due to highdissection. The recurrent cases and complex cases had a higher incidence of seroma collection. Proper controlof haemostasis is crucial intraoperatively to reduce the chance of seroma.Seroma can be minimized by placing a suction drain in complex and recurrent cases, especially in the Stoppa group. The suction drain should be removed only when the output is less than 10 ml for two consecutive days. For the bilateral Lichenstein group, the suction drain can be placed on the side of recurrence or complex hernias. The tight dressing can be done with dynaplast to compress or obliterate the dead space.Seroma patients had pain for more duration. Five patients out of 14 patients had seroma and surgical site infection. In all cases, seroma was treatedconservatively with drainage and antibiotics and chymerol forte. Incidence of seroma can be reduced byplacing drain from more days in complex and recurrent hernias and proper dressing with dynaplast.

Surgical site infection was found in 6 patients overall, with three patients in each group. The condition was found to have minimal pus during postoperative days 3 to 5 with the pus content of fewer than 10ml. All patients were treated with drainage and antibiotics. No patients had an infection of mesh or underwent mesh excision. Surgical site infection was equal in both groups and is similar to found in other surgeries. All patients were treated with injection ceftriaxone prophylactically and postoperatively for two days and converted to oral cefixime for three more days and stopped if no complications arise. Surgical site infection can be reduced by adequately following aseptic precautions during surgery and preoperative washing and cleaning the patient's area 48 hours before surgery. Cleaning the area with Povidone-Iodine or chlorhexidine minimizes therisk of surgical site infection. All three patients in the bilateral Lichenstein group had only one side of the wound infected. All patients had swabs with pus for culture and sensitivity, and no significant bacterial growth was found in both groups. The infection got resolved for all patients with surgical site infection once drainage was done and the antibiotic started. The wound was made to heal with delayed closure or secondary healing. Surgical site infection was found in patients who had seroma, and also in patients would didn't have seroma.Surgical site infection is easily avoidable if proper precautions are carried out, and morbidity can be reduced if identified and treated early. Adequate control of blood sugar values in diabetics is a must.

Only three patients were discharged in less than four days; nine patients got discharged only after one week; the remaining 32 patients got discharged in five to seven days. Patients who got discharged after one week was either due to seroma or surgical site infection. These patients were not discharged until the infection or seroma got resolved. The Stoppa group stayed longer than the bilateral Lichenstein group. The three patients who got discharged 4th day were from the bilateral Lichenstein group. The Stoppa group were not discharged early because of their complications, as it is not a commonly done procedure. No significant difference was seen in both the groups while comparing the duration of stay. Duration of stay can be minimized by early discharge by early counselling, early conversion of parenteral to oral antibiotics, and early ambulation of patients.

Overallonly two patients had a recurrence, about 4.55 %, and both the patients wherefrom the Stoppa group. Both the patients had only recurrence on one side. Recurrence was found within one month of surgery in both the patients. No such recurrence was found in the bilateral Lichenstein group. Recurrence can occur anytime, and long-term follow-up is needed to comment on recurrence. Twelve patients with recurrence were included in the study, where everyone underwent Lichenstein repair in previous surgeries. Recurrence can be reduced by using the mesh's proper size, adequate coverage of myopectineal orifice of Fruchaud, bydelineating accurate anatomy, adequate fixation of the mesh to reduce the chance of mesh migration. Due to altered anatomy, patients with recurrence after Lichtenstein repair are good candidates for Stoppa, and patients with recurrence of the Stoppa are good candidates for Lichenstein repair. Recurrence is the worst nightmare that both patients and surgeons fear. Repeat surgery for the same condition will disappoint thepatient to the core. Utmost care has to be taken to prevent a recurrence.Though the difference between the two groups was insignificant, extensive research and a longer follow-up are needed to arrive at a correct conclusion.

Stoppa surgery needed a longer learning curve as it is challenging to learn and practice; every resident should understand theStoppa

procedure to know the inguinal region's precise anatomy, preperitoneal space anatomy, which is needed to deal with total extraperitoneal hernia repair by laparoscopy.

Stoppa is a perfect technique for both recurrent and bilateral inguinal hernias because of littlecomplications compared to bilateral Lichenstein repair. Postoperative Lichenstein recurrence has distorted anatomy, so that Stoppa will be a better procedure. Advantages of Stoppa are clear understanding of the anatomy of hernia, access to posterior inguinal structures, ability to place large mesh behind the weak groin area,Stoppa prevents the future femoral hernia, which lacks in the Lichenstein,physiological advantage of Stoppa according to Pascal's law.

IV. CONCLUSION

1)Stoppa procedure is a promising modality of treatment for complex, bilateral and recurrent hernias due to its preperitoneal approach, clear delineation of anatomy, big size mesh, and physiological advantage based onPascal's law.
2)Though the mean operating time was increased (p >0.05 insignificant), the operational team was lessened by half.
3)Though commonly found in Stoppa, seroma can be reduced by a suction drain, strict hemostasis, and experience.
4)No difference was found in surgical site infection between both the groups.
5)Conservative management is sufficient in both the groups for seroma and surgical site infection.
6)Pain difference between the two groups was insignificant statistically
7)Though recurrence was found in Stoppa, it can be reduced by experience and constant learning.

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