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Surgery

AIM: EVALUATION OF RESULT OF POLYPROPYLENE VERSUS POLYESTER MESH FOR LAPAROSCOPIC INGUINAL HERNIA REPAIR [A RANDOMIZED CONTROL STUDY]

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ABSTRACT Now a days we have three big groups of material concerning non- resorbable meshes: polypropylene, polyester and poly-tetrafluoroethylene. Still in literature there is no consensus which material has the best biocompatibility in humans. Our aim is to compare the result of laparoscopic inguinal hernia repair of polypropylene versus polyester Our study concludes that both polypropylene and polyester mesh in laparoscopic repair of inguinal hernia have comparable short term and long-term outcomes in terms of operative time, intraoperative complications, post-operative pain, time to resume normal activity, and recurrence. Although we observed short period of hospital stay in polyester mess than in polypropylene but more large-scale studies are needed to confirm this fact. that the laparoscopic approach is a viable option for inguinal hernia repair, especially when the surgeon is experienced, the need for improved meshes is strong. The ease of using polyester as the material for mesh for laparoscopic repair may help to shorten the learning curve by making the placement easier and to reduce foreign body reaction, development of wound seroma formation and chronic pain. Both the approaches are acceptable modalities for hernia repair and the results are comparable in terms of patient outcome. The choice of mesh is surgeon specific and dependent on his/her expertise and learning curve.

KEYWORDS :

INTRODUCTION

A hernia, an abnormal protrusion of an organ or tissue through a defect in its surrounding wall is a very common surgical problem [1]. Various sites of the body are vulnerable to the occurrence of hernia, but the abdominal wall particularly the inguinal region is most commonly involved region [2]. Approximately seventy percent (75%) of all hernias are usually groin hernias, among which 95% are inguinal region hernias and the remainder being femoral canal defects. Inguinal hernias being very common in men than in women can be either indirect or direct [3,4].

The aims of successful hernia repair include, achieving an effective repair with lowest possible recurrence rate, minimal per and postoperative complications, rapid return to normal work, and performing a cost-effective procedure. To achieve these goals, various methods of repair have been employed which have progressed from open repair to various laparoscopic approaches [5].

The various approach of laparoscopic hernia repair includes ring closure technique (initially championed by GER), plug and mesh repair (P and M), Intraperitoneal on-lay patch repair (IPOM), extra peritoneal mesh technique (EPMR), transabdominal pre-peritoneal repair (TAPP) and total extraperitoneal (TEP).

Until 1958, the treatment for abdominal wall hernias are suture based and the major problem faced by the then surgeons were the increased recurrence of hernia [6]. To overcome this, the concept of using a mesh was introduced in 1958 by Usher.

Currently, about one million meshes are used per year world-wide [7]. Therefore, surgical repair of hernia turned to be a hot area of research for keeping the recurrence rates low with few complications.

Now a days we have three big groups of material concerning non-resorbable meshes: polypropylene, polyester and polytetraflu oroethylene. Still in literature there is no consensus which material has the best biocompatibility in humans.

Our aim is to compare the result of laparoscopic inguinal hernia repair of polypropylene versus polyester mesh, by assessing:

1. Serious adverse event (including visceral and vascular injuries)
2. Persisting pain
3. Hernia recurrence
4. Hematoma \ seroma
5. Wound \ superficial infection
6. Mesh \ deep infection
7. Length of hospital stay (day)
8. Time to return to routine activities (day)
9. Persisting numbness

MATERIAL AND METHODS:

This study was conducted on patients coming to surgical ward through surgical outpatient department of S.N. Medical college and hospital, Agra .this is a prospective study consist of 80 patient of inguinal hernia treated with laparoscopic hernia repair ,40 patient was randomly selected and treated by polypropylene mesh and the remaining 40 cases were treated by polyester mesh repair from January 2016 to August 2018 followed by three month of follow up.

We include: All patients with sign symptoms of uncomplicated inguinal hernia, Patient with ASA grade – I & II, Patient age 18 years to 75 years either unilateral or bilateral inguinal hernia. And Patient given written consent to be a part of study. We exclude Recurrent inguinal hernia, who require emergency exploration for complicated inguinal hernia e.g. obstructed and strangulated inguinal hernia, Patient having stoma, Patient having active infection, sinus, or fistula at hernial site related to previous surgery, Patient with malignancy, Unwilling patient, Failed laparoscopic repair of hernia repair.;

THE METHOD OF STUDY CONSISTS OF:

All the patients were admitted, and a detailed history and clinical examination was done. preoperatively patients were randomly selected for meshes of choice namely polypropylene and polyester. The patients were educated about the advantages, disadvantages, type of anaesthesia, and also the approximate cost of each of the procedure. After taking the consent for the procedure, the patients were investigated thoroughly. Once the patient deemed fit for surgery, consent was taken for the same.

Types of surgery: laparoscopic method of inguinal hernia repair

- Polypropylene mesh
- Polyester mesh

Procedure: The patient was kept fasting overnight. and laparoscopic hernioplasty was performed using different meshes. In Group A flat polypropylene mesh and in Group B polyester mesh is placed in the preperitoneal space.

For postoperative analgesia, patients were administered one ampoule (3ml 50 mg) of Diclofenac Sodium intramuscularly immediately after

surgery in the recovery room of the operation theatre itself followed by rescue analgesic doses. Rescue analgesic doses were administered on demand of patient after assessing VAS at 6,24 and 48 hrs of surgery. Total doses of injectable analgesic (3 ml/50 mg of Diclofenac Sodium) required by each patient were recorded and compared. Patients at the time of their discharge were asked about their experience of surgery both intraoperative and postoperative and results were recorded. Check-up for complications like pain/ discomfort, wound infections, swelling, ambulation and recurrence were carried out in detail on follow up visits and the observation made were recorded. The results were arranged in a tabulated form and analysed.

A: COMPARISION FOR ANALGESIC REQUIRMENT

Sr. no.	No. of dose of injection	Group A	Group B
1.	2-3	24	36
2.	4-5	14	4
3.	>6	2	-
4.	Total	40	40
5.	Range	2-8	2-5
6.	Mean + SD	3.48+1.30	2.45+0.75
7.	T & P	-4.340 & <0.0001	-4.340 & <0.0001
8.	Significance	Significant	

B: COMPLICATION [EARLY]

S. No.	Complication	Group A	Group B
1.	Scrotal swelling	1	1
2.	Hematoma	2	2
3.	Vascular injury	1	1
4.	Wound seroma	4	1
5.	Wound infection	-	1
6.	Mesh \ deep infection	2	0
7.	Urinary retention	1	2
8.	recurrence	1	0

C: COMPLICATION [DURING FOLLEW UP]

S. No.	Complication	Group A	Group B
1.	Pain\discomfort	3	0
2.	Wound infection	0	0
3.	Ambulation	Normal	Normal
4.	Swelling	0	0
5.	Recurrence	1	0

TABLE D: HOSPITAL STAY COMPARISION

S. No.	Post op hospital stay (in days)	Group A	Group B
1.	1-2	30	37
2.	3-4	4	3
3.	5-6	6	-
4.	>6	-	-
5.	Total	40	40
6.	Range	1-6	1-4
7.	Mean + SD	2.58 + 1.50	1.40 + 0.71
8.	T & P	-4.497 & <0.0001	-4.497& <0.0001
9.	SIGNIFICANCE	Significant	

SUMMARY AND CONCLUSION

When summarising our findings and the results, it can be stated that the search for the ideal mesh is still going on.

80 Patients of inguinal hernia were included in this study. They were divided into two groups. In group A, 40 patients were operated by laparoscopic technique using polypropylene mesh and in Group B, 40 patients were operated by polyester mesh. All patients were operated under general anaesthesia.

Patient of less than 18 yrs. and more than 75 yrs. age were not undertaken in this study. Maximum patient 52(65%) were found among 45-60 years of age group, while only (10%) among 18-30yrs of age group. all patients were male. Mean age group for Group A was 48.38yrs and for Group B, 48.36 yrs.

- Right side of inguinal hernias were more common, 52 cases (65%) than of left side 20 cases (25%).
- Mean time to allow patients orally after, operation was almost equal in both groups.
- Group B patients required analgesic for less number of days than Group A patients (2.45 days versus 3.48 days) post operatively.
- Hospital stay was shorter for Group B patients in comparison to Group A patients (1.8 days versus 2 days).
- In Group B patients resumed their normal activities before than Group A Patients (1.40 days versus 2.58 days).
- In group A postoperative recurrence was seen in 1 case out of 40, which account for 2.5 %.
- In group A postoperative wound seroma was seen in 4 case out of 40, which account for 10 %.

CONCLUSION

The results of our study show following conclusion:-
In our study inguinal hernia is found much more frequently in males than females, and thus no female patient is there in this study.

inguinal hernia is more common on right side (65%) than left side (25%).

Our study concludes that both polypropylene and polyester mesh in laparoscopic repair of inguinal hernia have comparable short term and long-term outcomes in terms of operative time, intraoperative complications, post-operative pain, time to resume normal activity, and recurrence. Although we observed short period of hospital stay in polyester mess than in polypropylene but more large-scale studies are needed to confirm this fact.

The early return to work, less post op-pain result makes polyester mess for groin hernia repair.

As most surgeons now agree that the laparoscopic approach is a viable option for inguinal hernia repair, especially when the surgeon is experienced, the need for improved meshes is strong. The ease of using polyester as the material for mesh for laparoscopic repair may help to shorten the learning curve by making the placement easier and to reduce foreign body reaction, development of wound seroma formation and chronic pain.

Both the approaches are acceptable modalities for hernia repair and the results are comparable in terms of patient outcome. The choice of mesh is surgeon specific and dependent on his/her expertise and learning curve.

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