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Fixation Verses Non-Fixation of Mesh in Transabdominal Preperitoneal Mesh Hernia Repair

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Abstract

Background: Transabdominal Preperitoneal mesh hernia repair is one of the most popular laparoscopic surgery performed in inguinal hernias. Now a days mesh was fixed using tackers, that causes more Operative time postoperative pain, hospital stay and chronic groin pain The main aim of our study is whether fixation of mesh can be avoided in TAPP.

Objectives: The aims and objectives of the study is to analyze the comparison between mesh fixation verses non mesh fixation in TAPP. In terms of- Operative time, Postoperative pain, length of hospital stay, chronic groin pain and recurrence.

Methods: The study includes 60 patients of hernia admitted in general surgery between January 2021 to July 2022 in UPUMS, Saifai Etawah. All patients were fulfilling the inclusion criteria and randomized in two groups. Follow up had done at 1week,1month,3months and 6months.

Result: Out of 60 patients 30 patients underwent fixation of mesh and 30 patients without mesh fixation. In fixation group mean operative time was 53 minutes. In the non-fixation group mean operative time was 48 minutes. In Mesh fixation group mean hospital stay was 1.634 days and in non-fixation group mean hospital stay was 1.267 days.

Conclusion: With the results of our study, we conclude that the patients did better in non- fixation group in terms of postoperative and chronic groin pain. Operative time & hospital stay was also less in non- fixation group. Although, there was no significant difference in testicular pain, swelling and testicular atrophy,

recurrence, mesh infection. So mesh fixation can be avoided in TAPP.

Keywords: Hernia, Fixation, Non-fixation and pain.

Abbreviations: TAPP, VAS

Introduction

The term "Hernia" is derived from the Latin word for rupture. An inguinal hernia is a protrusion of abdominal-cavity contents through the inguinal canal.[1]

Groin hernias account for approximately 75% of all abdominal wall hernias with a lifetime risk of an inguinal hernia in males and females being 27% and 3% respectively.[2]

Men account for about 90% of all repairs performed. Considering both operated and non-operated inguinal hernias, the lifetime prevalence rate is 47% for men up till the age of 75.[3]

Non-fixation of the mesh is theoretically a predisposing factor for hernia recurrence due to the risk of mesh displacement. Some authors advocate the methodical fixation of the synthetic mesh as a valuable means to prevent hernia recurrence whereas others have reported no benefit of mesh fixation. [4-7]

The longstanding standard practice for TAPP repair has been to use mesh fixation with tackers to prevent recurrence.

From the experiences of various surgeons, it was derived that although mesh fixation comes with more post-operative pain due to use of tackers or sutures, but it reduces the chances of recurrence. Non fixation on the other hand reduces the operative time, decreases post-operative pain, but some studies showed increase in chances of recurrence due to mesh migration. Hence, we conducted our study in an attempt to resolve this controversy surrounding recurrence with mesh non fixation. The purpose of this study was to determine whether elimination of fixing the mesh during trans-abdominal pre peritoneal inguinal hernia repair results in decreased postoperative pain or complications, or both, without increasing the incidence of hernia recurrence.[8-9]

Methodology

The prospective study includes 60 patients of hernia admitted in general surgery between January 2021 to July 2022 in UP University of medical sciences, Saifai Etawah.

All patients were fulfilling the inclusion criteria.

All patients were randomized in two groups by using odd and even methods.

1-All patients having odd number were in mesh fixation group (30).

2-All patients having even number were in non-mesh fixation group (30).

Follow up had done with respect of following considerations-

Operative time, Postoperative pain, Length of hospital stay and Recurrence

The assessment had done at 1 week, 1 month, 3 months and 6 months.

Inclusion criteria

Uncomplicated inguinal hernia, Patients having Age greater than 18 years were included, Patients not had any previous surgery were included, Patients having ASA grade 1and 2 were included, Patients had given consent for surgery with above methods were included and Patients not had previous surgery were included.

Exclusion criteria

Patients had previous Laparotomies were excluded, Patients having obstructed, strangulated inguinal hernia were excluded, Patients who underwent for open hernia surgery in the past were excluded, Patients having comorbidities like uncontrolled Diabetes, seizure

disorders and uncontrolled hypertension were excluded, Obese patients having BMI >30 were excluded, Patients having high anaesthetic risk were excluded, Patients who lost in fallow up were excluded and Patients having Age below 18 years were excluded.

Result: Total number of patients observed in the study was 60. Among this 60, 30 patients underwent mesh fixation in Transabdominal preperitoneal mesh hernia repair (TAPP) and 30 patients underwent non-mesh fixation group in TAPP. Intraoperatively, in fixation group mean operative time was 53 minutes. In the non-fixation group mean operative time was 48 minutes. There was no significant difference between fixation of mesh and non -fixation of mesh intra operatively in terms of Vas injury, Vascular injury, Bladder injury, and Visceral injury.

Table 1: Operative time

Days	Mesh fixation(N=30)		Without mesh fixation(N=30)	
	No	%	No	%
1	14	46.67	22	56.67
2	13	43.33	8	40
3	3	10	0	3.33

Chi-square value=5.968, p-value=0.051

In Mesh fixation group mean hospital stay was1.634 days but in non-fixation group it was 1.267 days. No one had recurrence, mesh infection, testicular atrophy in both groups in the fallow up.

Table 2: Hospital stay

Time	Fixation		Without Fixation	
	No	%	No	%
<45 minutes	14	46.67	24	80.00
45-60 minutes	16	53.33	6	20.00

Chi-square value=7.177, P-value =0.007

There was more post operative pain in fixation group as compare to non -fixation group.

Table 3: Post operative pain

VAS	Mesh fixation (N=30)		Without mesh fixation(N=30)	
	No.	%	No.	%
VAS=0	0	0.00	0	0.00
VAS=1-3	18	60.00	26	86.67
VAS=4-6	12	40.00	4	13.33

Chi-square value =5.4545, p-value= 0.0195

There were no significant differences in fallow up with respect of testicular pain and swelling, Recurrence, Mesh infection and Testicular atrophy, at one month, three months, and six months but in terms of chronic groin pain there was significant difference in between mesh fixation and non-mesh fixation group. 9(30%) patients had chronic groin pain in fixation group but in non-fixation group only 1(3.33%) patient had chronic groin pain, with p-value of 0.005584.

Table 4: Chronic groin pain

	Fixation of mesh(N=30)		Without mesh fixation(N-30)		Chi- square value	p-Value
	No.	%	No.	%		
Present	9	30.00	1	3.33	7.68	0.005584
Absent	21	70.00	29	96.67		

Chi square value=7.68, P value=0.005584

Discussion

Transabdominal preperitoneal mesh hernia repair has become the preferable option in inguinal hernias. In laparoscopic inguinal hernia repair several techniques were used since the early 1990s, such as staples, tacks and sutures but any mechanical anchoring adds to risk of temporary or permanent pain, or can even damage sensitive structure such as, nerves, vessels. The need for mesh fixation is to prevent recurrence of hernias following TAPP. The main aim of this study to determine the effect of fixation of mesh verses non fixation of mesh in Transabdominal preperitoneal mesh hernia repair to know intraoperative time, incidence of chronic groin pain, hospital stay and recurrence within 6 months. All the patients were males in fixation group and in non-fixation group only one patient was female. This indicates inguinal hernias are more common in males than females. Maximum patients were 21-50 years age group in both fixation and non-fixation groups. The mean hospital stay time in both fixation and non-fixation groups was 1.67 days. In a similar study conducted by

Amirzargar MA et al [10] operative time for mesh fixation and non- fixation was 64±20 min and 58±30 minutes. Mohamad Hossam et al[11]: On comparing mesh fixation and non-fixation in TAPP, we recommend the technique without mesh fixation as there were no differences in the complications, hospital stay, recurrence, but longer operative time and higher cost were seen in mesh fixation technique.

In our study the average hospital stay was 1.967days in fixation group and in non-fixation group 1.267 days with P-value was 0.051 which is statistically insignificant indicating there is difference of hospital stay between mesh fixation and non-fixation groups. Suresh Babu T et al[12]: the average hospital stay was in 2.5 days in fixation and 1.8 days in non-fixation group.

In our study, we had compared pain between fixation and non-fixation group using VAS it was more in fixation group with P-value was 0.0195 which indicates there was significant difference in term of post-operative pain between fixation and non-fixation of mesh in TAPP. Pain was reduced in follow up in both the groups. In this study we observed some other post operative complications like 7 patients had seroma in fixation group and 4 patients had seroma in non-fixation group, hematoma and urinary retention.

Dinesh Prashad et al[13]: There is no significant difference in recurrence rate in the both study groups fixation and Non-fixation. Hatem Mohammad et al [14]: the operative time, acute pain score, and incidence of chronic pain were longer in the fixation group. Kalidarei, Behrooz et al[15]: Mesh non-fixation causes less postoperative complications and pain in patients undergoing TAPP. Baiomy, Taha A et al[16]: Mesh fixation as a routine appears to be unnecessary in TAPP. It is associated with increased chronic groin pain without increasing the risk for early hernia recurrence. There is no significant

difference in pain at one month in the both study groups either with fixation or without fixation. There is more pain (visual analogue scale more than two) at three months after operation in fixation group as compared to non- fixation group.

In our study, there was decrease in chronic groin pain in fixation group at 6 months.

Conclusion

With the results of our study, we conclude that the patients did better in non- fixation group in terms of postoperative and chronic groin pain (VAS score). Operative time & hospital stay was also less in non-fixation group. Although, there was no significant difference in testicular pain, swelling and testicular atrophy, recurrence, and mesh infection with short term fallow up of six months.

So mesh fixation can be avoided in transabdominal preperitoneal mesh hernia repair.

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