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COMPARATIVE STUDY OF LAPAROSCOPIC TRANS ABDOMINAL PRE-PERITONEAL REPAIR (TAPP) V/S OPEN INGUINAL HERNIA REPAIR MESHPLASTY (A PROSPECTIVE STUDY OF 40 CASES)

Surgery

Dr. Viral G. Sangani M.S., Assistant Professor, Department of General Surgery, M.P.Shah Medical College, Jamnagar, Gujarat, India.

Dr. Dhaval P. Vasava Final Year Resident in Department of General Surgery, M.P. Shah Medical College, Jamnagar, Gujarat, India.

KEYWORDS

INTRODUCTION

Hernia repairs, both inguinal and ventral/incisional, are some of the most common surgeries performed in the world.

The laparoscopic method of tension-free mesh repair appeared to be gaining in popularity in the early 1990s. Early uncontrolled studies claimed that laparoscopic repair was superior to the conventional open repairs regarding postoperative pain, resumption of normal activities. The most scientific way to come to conclusion over superiority of one method over other is evidence-based medicine. Here we compare Lichtenstein tension free open hernioplasty with TAPP comparing the intra operative and early postoperative complications of the two.

AIMS OF THE STUDY

PRIMARY OBJECTIVE

- To compare the intra operative complications of TAPP vs Lichtenstein tension free open hernioplasty in terms of operative time, major visceral or vessel injury and conversion rates.
- To compare the post-operative complications of TAPP vs open hernioplasty in terms of post-operative pain, urinary retention, wound seroma, hematoma, infection, bowel complications.

MATERIALS AND METHODS

Study Population

All cases operated in elective theatre at Government Medical Hospital were included.

Sample Size

• 40 patients (20 CASES OF OPEN HERNIOPLASTY, 20 CASES OF TAPP)

Study Duration

• 6 months (JULY 2021 TO DECEMBER 2021)

Inclusion Criteria

• All cases of primary uncomplicated unilateral direct or indirect inguinal hernia operated electively.
• Patients with bilateral hernia, recurrent hernia.

Exclusion Criteria

• Patients who had an irreducible, obstructed or strangulated hernia.
• Patients with sliding hernia.
• Also patients who had undergone lower abdominal surgery previously are excluded from the study.

TYPE OF STUDY

• Single centre prospective study.

METHODOLOGY

• All cases of uncomplicated primary unilateral inguinal hernia operated in Guru Gobind Singh medical college were considered for the study.
• Intra operative complications were seen and recorded.
• Post-operative pain was recorded based on Visual Analog Scale and requirement of analgesics.
• Post-operative complications like urinary retention, wound seroma, wound hematoma, wound infection, port site infection, recurrence, mesh infection, bowel complication was collected and complications recorded.
• The total duration of hospital stay is also noted.

OBSERVATIONS AND RESULTS

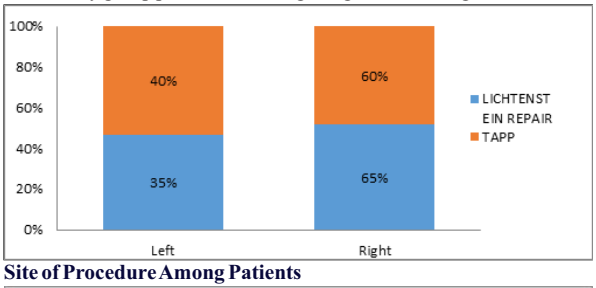
1. Age Distribution:- Association Between Age Distribution And Type of Hernia.

Age Group	No. Of Patients
25-30	02 (Indirect-02 , Direct-00)
31-40	05 (Indirect-05 , Direct-00)
41-50	14 (Indirect-14 , Direct-00)
51-60	10 (Indirect-08, Direct-02)
61-70	07 (Indirect-00 , Direct-07)
>70	02 (Indirect-00 , Direct-02)

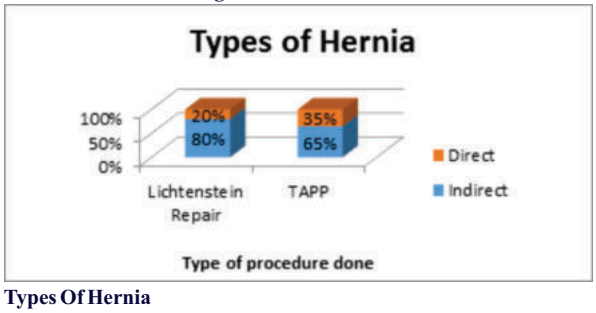
The age distribution of the subjects ranged from 25 to 73 years.

2. Diagnosis :-

Each of the cases were clinically examined and diagnosed as per the European Hernia Society classification. Among the 40 cases studied 15 cases were found to have left sided inguinal hernia, whereas 25 cases were having right sided hernia. In our study we found that right inguinal hernia was more common then the left inguinal hernia. 62.5% of the study group presented with right inguinal swelling.



Site of Procedure Among Patients



Types Of Hernia

Among the 40 cases studied 29(72.5%) were Indirect inguinal hernia, 11(27.5%) were direct inguinal hernia. Indirect hernia was seen in 29 cases being the most frequent type while compared to direct inguinal hernia. Although all hernias were preoperatively evaluated, most of the diagnosis on the type of the hernia was made intra-operatively.

3. Intraoperative Complications :-

Intra-operative complications like major vessel injury or bladder injury were observed. No intra-operative complications were encountered during the study period in any of the groups.

4.Urinary Retention:- Association Between Procedure And Occurrence Of Urinary Retention

Post-operative urinary retention was found only in a two cases of Lichtenstein tension free hernioplasty and this required bladder

catherization. All cases of laparoscopic hernioplasty were catheterized pre-operatively to avoid bladder injury and catheter retained till post-operative day 1, hence urinary retention could not be assessed.

Urinary retention	Lichtenstein repair	TAPP	Total
YES	2(10%)	0	2
NO	18(90%)	20(100%)	38
Total	20	20	40
Fisher exact test value – 0.4872 ,p value > 0.05 . results is not Statistically significant			

5. Seroma:- Relation Between Seroma Formation And Procedure Done Among Patients

Procedure	Seroma Formation		Total
	YES	NO	
Lichtenstein repair	4(20%)	16(80%)	20
TAPP	1(05%)	19(95%)	20
TOTAL			40
X^2 with yate's correction value is 0.914 and p value is 0.3390 . The results is not Statistically significant at 0.05.			

Post-operative seroma was observed in both Lichtenstein tension free open hernioplasty & TAPP. 20 % of cases developed seroma in Lichtenstein repair & 5% of cases develpoed seroma in TAPP which required drainage. This caused prolonged hospital stay and wound infections.

6. Hematoma:-

No post-operative hematoma was occured during the study period

7. Wound Infection:-

Procedure	Wound Infection		Total
	YES	NO	
Lichtenstein repair	1 (5%)	19(95%)	20
TAPP	0	20(100%)	20
TOTAL			40

Wound infection was also observed only in cases of open hernioplasty procedure. Wound culture and sensitivity showed Staph. aureus, managed with antibiotic and drainage.

8. Duration Of Early Discharge:-

In TAPP all patients were discharged on 2nd post operative day while in open inguinal hernia repair average discharging time was 3rd or 4th post operative day.

9. Duration of Surgery:-

Comparison Of Mean Duration Of Time Taken In Two Procedure

Procedure	Mean Duration of Surgery	
	Mean	SD
Lichtenstein repair	55.75	±8.47
TAPP	111	±7.1
Unpaired T test value – 1.460, P value is < 0.05 , This result is statistically significant		

Above table shows comparison between mean duration of time for surgery is less in Lichenstein procedure as compare to TAPP. This results are statistically significant.

10.Post Operative Pain & Requirement Of Analgesics:-

Procedure	Post of pain score		Total
	Severe pain	Mild to moderate pain	
Lichtenstein repair	12(60%)	08(40%)	20
TAPP	4(20%)	16(80%)	20
			40
X^2 = 6.4 , P value – 0.00982, This is results statistically significant.			

The post-operative pain was measured using Visual Analog Scale (VAS) 6 hours after the surgery. The patient was given a dose of Injection Tramadol 100mg in after the surgery. The next dose of analgesic was given based on the VAS score. The pain scores were analysed with Chi square and the difference found to be statistically significant.

Lichtenstein tension free open hernioplasty was found to have increased post-operative pain when compared to laparoscopic repair.

Analgesics Requirement:-

Open inguinal hernia repair: Minimum 5 days required.

TAPP: 2 days only

11. Recurrence:-

No recurrence were encountered during the study period in any of the groups.

DISCUSSION

1.Age:-

The cumulative prevalence of inguinal hernia in males aged 25–30 years is 5 %, rising to 17.5 % for age 31–40 years, 35% for age 41–50 years, 25 % for age 51 -60 years, 17.5 % for age 61–70 years, and finally 5 % for males of age 71 years or more . Inguinal hernias occur eight times as often in men as in women, and consequently approximately 90 % of all inguinal hernia repairs are performed in male patients.

2.Comorbidities :-

Several comorbidities, some of which are associated with altered collagen metabolism, have been proposed to be associated with inguinal hernia formation. Patients diagnosed with aortic abdominal aneurism or thoracic aortic disease are predisposed to inguinal hernia formation, but the evidence on this is inadequate.

Prostatic hypertrophy, diagnosed by physical examination, proposedly increases the risk of inguinal hernia in men.

In one study chronic obstructive pulmonary disease and coughing is a risk factor for inguinal hernia.

In our study diabetes, hypertension and COPD was evaluated. It was found that preoperative diabetes was associated with in increased post-operative complications. Also in presence of cardiopulmonary comorbid patients were preferably subjected to open hernioplasty. Cases of hernia with prostatic hyperplasia were referred to Urology department and were excluded from the study.

3. Operating time :-

Laparoscopic inguinal hernia repair takes longer than open mesh repair.In our study, the mean duration for a Lichtenstein tension free open hernioplasty was 55 minutes. Whereas mean operating time for TAPP was 106 minutes. This is due to the prolonged learning curve required for laparoscopic repair compared to open repair.

4. Conversion Rate :-

Conversion rate of TAPP to Lichtenstein repair is 0%.

5. Postoperative Pain:-

Some degree of immediate postoperative pain is common and expected following surgery. Chronic pain has been defined as surgical site pain persisting beyond 3 months. The incidence of chronic pain following open inguinal hernia repair has been reported at 18 %. Meanwhile the incidence following laparoscopic repair is 6 %. Etiology of chronic pain is unclear, but is thought to include inguinal nerve irritation by suture or mesh, inflammatory reaction to mesh and foreign material, scaring incorporating inguinal nerves, and abdominal wall compliance reduction. According to studies,laparoscopy seems to reduce chronic postoperative pain compared to open repair.

In our study although the mean pain score in the post-operative period was 7, open hernioplasty patients had a statistically significant increased postoperative pain.

6. Complications :-

Study demonstrated a higher postoperative complication rate following Lichtenstein repair in comparison to TAPP repair. When comparing TEP versus Lichtenstein repair, the data demonstrated a postoperative bleeding rate of 1.16 % versus 2.46 %, a seroma rate of 0.51 % versus 1.48 %, wound infection rate of 0.06 % versus 0.26 %, and wound healing disorders of 0.07 % versus 0.35 %, respectively . The above study failed to demonstrate a difference in intraoperative complication rates when assessing for vascular injury, bowel injury, and bladder injury, with overall rates <0.28 %. However, intraoperative bleeding was higher in the TAPP repair group (0.76 %) compared to 0.41 % in the Lichtenstein repair group.

Overall, it appears laparoscopic techniques have lower postoperative complications relative to open techniques.

In our study the surgical site complications like seroma, hematoma and wound infection were unique to Lichtenstein tension free open

hernioplasty due to the larger incision. There was a single case of recurrence following Lichtenstein hernia repair which was detected in the immediate post-operative period.

6. Time Of Discharge :-

Majority of patients can perform normal activities at one week whether after open or laparoscopic surgery. Data regarding time to return to activity are rather subjective. Patient who is doing desk job in office will return to work earlier than a patent with a job that entails heavy lifting.

Because of the unreliability in accurately measuring the time of return to normal activity, we have taken the time of discharge as a parameter. The mean time of discharge was found to be 4 days in Lichtenstein tension free open hernioplasty & 2 days for laparoscopic TAPP repair.

CONCLUSION

Primary unilateral inguinal hernia without complications can be treated with Lichtenstein tension free open hernioplasty or laparoscopic trans abdominal preperitoneal hernioplasty .

Bilateral & Recurrent inguinal hernia are the indications of Laparoscopic transabdominal pre-peritoneal hernioplasty.

Lichtenstein open hernioplasty has advantage over laparoscopic repair in terms of shorter duration of surgery and learning curve. Although no major intra operative complications were noticed in the present study, literature shows evidence of major vessel and organ damage, even mortality following laparoscopic procedures.

OT setup like laparoscope & trolly is required for the laparoscopic transabdominal pre-peritoneal hernioplasty.

Costs for inguinal hernia repair have beeen shown to be significantally lower for open inguinal hernia repair as compared to laparoscopic inguinal hernia repair.

Laparoscopic hernia repair outscores Lichtenstein repair in terms of post-operative complications and early discharge of the patient.

Hence according to the present study TAPP is the best method of hernioplasty for an uncomplicated inguinal hernia.

However, large scale studies and long-term follow-up studies are required to evaluate for the chronic pain, recurrence rates and learning curve in laparoscopic hernia repair.

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