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Comparative evaluation of lichtenstein tension free hernia repair vs laparoscopic tep repair of inguinal hernia

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ABSTRACT

Introduction: During the last several decades numerous innovative and creative techniques have been introduced in an effort to manage patients with inguinal hernia. Despite the development of many newer technologies including that of optics, the treatment of inguinal hernia by laparoscopic method has still eluded many of our patients. **Aim:** The study was undertaken to compare efficacy, safety and patient satisfaction between these two procedures. **Materials and methods:** This prospective analytical study conducted in 100 consecutive cases of inguinal hernia were included. All patients underwent either Lichtenstein tension free hernia repair or laparoscopic TEP repair. The age/sex incidence, types of hernia, postoperative complications, post operative pain, hospital stay, and time to return to normal activities and recurrence were all evaluated .**Results:** The incidence of post operative complications was 18% and 4% between the open and laparoscopic group respectively. The incidence of severe post operative pain was 5 in open group and 1 in the laparoscopic group. The overall incidence of post operative pain was significantly less in the laparoscopic group. The mean duration of hospital stay was found to be 3.84 days for the Lichtenstein Tension Free Hernia Repair group compared to the Laparoscopic TEP repair of Inguinal Hernia group which was around 3.44 days. Mean duration of time to return to normal activities was found to be 9.74 days for the Lichtenstein Tension Free Hernia Repair group compared to the Laparoscopic TEP Repair of Inguinal Hernia group which was around 8.22 days. There were no recurrences in either group. **Conclusion:** The laparoscopic TEP repair of inguinal hernia is a safe and acceptable procedure for repair of inguinal hernias.

Key words: Inguinal hernia; TEP; Lichtenstein tension free repair; post operative complications

Introduction

Of the study of the many operations available in a general surgeon's armamentarium, that of hernia repairs has been written about repeatedly[1].The rapid changes that have been witnessed in open approach surgeries, prosthetic materials and laparoscopic surgeries have made hernia surgery a most interesting field of endeavor that demands renewed discipline and dedication[2]. Though a variety of procedures are performed none can be termed as an ideal procedure as each one is accompanied by varied early and late complications, the most significant being recurrence. In 1981, William Bull, one of the most prominent surgeons, wrote of hernia repairs, "It is wise to estimate the value of given procedures by the relative proportions of relapses"[3].In our institution, inguinal hernia repair is one of the common surgeries performed daily. This study aims at studying the efficiency in terms of post operative complications, post operative pain, duration of hospital stay, time to return to normal activities and recurrence between the open Lichtenstein Tension Free Inguinal Hernia repair and laparoscopic TEP inguinal hernia repair surgeries and to arrive at a conclusion as to the best modality of treatment after comparison of morbidity and recurrence among these procedures. The present study is to compare the two operative methods Lichtenstein Tension Free Inguinal Hernia repair Vs laparoscopic TEP inguinal hernia repair on the following secondary outcomes: Post operative complications: Pain, Hospital stay, Time to return to normal activities, Recurrence of hernia.

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Methodology

This was a prospective analytical study conducted at tertiary care hospital (Tirumala Multi Speciality Hospitals) recognized for DNB course by National Board of Examinations, Vizianagaram from June 2012 to May 2013.

Data obtained from 100 patients admitted to the surgical ward in the hospital where the study is done. All patients were followed up over a period of 1year.

Inclusion criteria : All adults aged 18-75 yrs with primary unilateral inguinal hernia, Patients with ASA grade<III were included.

Exclusion criteria: Patients with previous history of pelvic irradiation, active infection/inflammatory process, incarcerated hernias/strangulated hernias/irreducible hernias, ASA grade>III who were otherwise unfit for general anaesthesia, Pregnant ladies, history of >2 lower abdominal/pelvic operations, morbidly obese (BMI>30kg/m2) and mental disorders and language difficulties were excluded from the study.The diagnosis of inguinal hernia was made by clinical examination. The data of eligible patients was collected in the prepared proforma. All patients underwent routine pre-op evaluation and investigations in the form of Routine Hemogram, Blood Sugar random, Renal Function Tests, and CXR PA view, ECG, HIV, HBsAg, Urine routine examination and BT, CT. Wherever it required preoperative treatment of infections and stabilization of co morbidities of the patients was done. The types of anaesthesia used were spinal/general anaesthesia

Post operative care and complications:After surgery, all patients were monitored carefully for pain, bleeding, wound infection, seroma, hydrocele, neuralgia and ileus.

- Pain was assessed using visual analogue scale

-Bleeding was defined as subcutaneous hematoma which can result from loose ties.

-A wound infection ranged from minimal discharge of pus from a single cutaneous suture to extensive and invasive process requiring lengthy hospitalization and intravenous antibiotics.

-Seroma included serous collection requiring no intervention to resolve spontaneously to evacuation.

-Neuralgia was post operative pain lasting few days to resolve spontaneously to last more than a month requiring analgesics.

-Ileus was abdominal distension with discomfort requiring no intervention to prescribing prokinetics.

After discharge from the hospital, all the patients were asked to follow up after 15 days, 1 month, 3 months, 6 months and 1 year with advice to the patients to return to pre-hernia lifestyle. All the patients were followed up for post-operative pain, interference with activities of daily living, use of analgesics, visit to a GP, occurrence of any infection/sinus at the operated site and recurrence of hernia. Correction of anemia /Weight reduction if obese, improvement of nutritional status, and treatment of respiratory infection if any, abstinence from smoking / alcohol, and advice regarding breathing exercise. Statistical analysis was done using SPSS for windows version 17.01. Descriptive Statistics, Independent samples T-test, Chi-Square test variables were done.

Results

Table 1: Comparison of demographic data

HERNIA	Age in years Mean +_ SD	Sex (M&F)
Lichetenstein Tension Free Hernia Repair(Open)	54.64± 9.89	48 & 02
Laparoscopic TEP Repair Of Inguinal Hernia(TEP)	51.50 ± 7.07	50 & 00

The Mean & Standard Deviation of Age in the Lichtenstein Tension Free Hernia Repair (N=50) is 54.7± 9.844 years and in the Laparoscopic TEP Repair of Inguinal Hernia (N=50) is 51.44 ± 7.1 years. (Table 1)(P-Value=0.061)>0.05 there is no significance difference between the two groups of age. There were 100 patients in our study of which 98 were males and two females. Both the females were in the open Lichtenstein tension free mesh hernia repair. This represents the low incidence of inguinal hernia in female in general population. (Table 1)(P-Value=0.158)>0.05 there is no significant difference between the males and females in the two groups.

Table 2: Distribution of types of hernia

Site of Hernia		Frequency	Percent
Left Hernia	Direct	14	14%
	Indirect	24	24%
Right Hernia	Direct	28	28%
	Indirect	34	34%
Type of Hernia			
TEP	Direct	21	21%
	Indirect	29	29%
Open	Direct	21	21%
	Indirect	29	29%

There were total of 62 cases of right sided hernias, 34 being indirect and 28 direct. There were 38 left sided hernias, 24 indirect and 14 direct. Right sided indirect hernias were most common seen in 34 cases being the most frequent type while left sided direct 14 cases being least. (Table 2)

Table 3: Post operative complications

Complications	Open		TEP	
	No. of patients	Percentage (%)	No. of patients	Percentage (%)
Ileus	2	4	1	2
Hematoma	3	6	0	0
Wound Infection	1	2	0	0
Seroma	3	6	0	0
Hydrocele	0	0	0	0
Neuralgia	0	0	1	2

In the present study, 3 cases each of Seroma & Hematoma, 2 case of ileus and 1 case of wound infection were found in Lichtenstein Tension Free Hernia Repair group and 1 case each of ileus and Neuralgia in Laparoscopic TEP Repair of Inguinal Hernia. Post operative complications were fewer in Laparoscopic TEP Repair of Inguinal Hernia. There were no major complications.(Table 3)P-Value is >0.05 which is not significant in post operative complications. So there is no difference between the two groups in regard to Post Operative complications

Table 4: Post operative pain

Type of Pain	Open		TEP	
	No Of Patients	Percentage (%)	No Of Patients	Percentage (%)
Mild	23	46%	30	60%
Moderate	22	44%	19	38%
Severe	5	10%	1	2%
Total	50	100%	50	100%

Severe pain was complained of in 5 cases in Lichtenstein Tension Free Hernia Repair and 1 case in Laparoscopic TEP repair of Inguinal Hernia. 30 cases of Laparoscopic TEP Repair of Inguinal Hernia had mild pain post operatively whereas 23 cases of Lichtenstein Tension Free Hernia Repair complained of mild pain. 19 cases of Laparoscopic TEP Repair of Inguinal Hernia had moderate pain post operatively against 22 cases of Lichtenstein Tension Free Hernia Repair. 1 patient in Laparoscopic TEP Repair of Inguinal Hernia group had severe pain post operatively whereas 05 cases of Lichtenstein Tension Free Hernia Repair complained of severe post operative pain. (Table 4)(P-Value=0.035) is <0.05 which is significant in all post operative pain cases. So there is a significance difference between two groups of Post operative pain

Table 5: Hospital stay and time to return to normal activities

Variable	Open	TEP
	Mean	Mean
Hospital stay	3.84	3.44
Time to return to normal activities	9.74	8.22

The mean duration of hospital stay was found to be 3.84 days for the Lichtenstein Tension Free Hernia Repair group compared to the Laparoscopic TEP repair of Inguinal Hernia group which was around 3.44 days. (Table 5)(P-Value=0.004) is <0.05 which is significant in all cases. So there is a significance difference between two groups of hospital stay days. Mean duration of time to return to normal activities was found to be 9.74 days for the Lichtenstein Tension Free Hernia Repair group compared to the Laparoscopic TEP Repair of Inguinal Hernia group which was around 8.22 days. (Table 5)(P-Value=0.000) is <0.05 which is significant in all cases. So there is a significance difference between two groups of time to return to normal activities. There has been no recurrence in either of the two groups. Recurrence is almost always attributed to less experience and occurs early in the learning curve.

Discussion

During the last several decades numerous innovative and creative techniques have been introduced in an effort to manage patients with inguinal hernia. Despite the development of many newer technologies including that of optics, the treatment of inguinal hernia by laparoscopic method has still eluded many of our patients. The long learning curve of laparoscopic repair of inguinal hernia coupled with lack of proper documentation has and is delaying the proficient application of this procedure to the masses though several large published series have reported their experience with laparoscopic mesh repair of inguinal hernia. There are two types of repair of inguinal hernia namely laparoscopic repair and open repair, both of which have evolved over a period of different times with a distinct conflict regarding the superiority of one type over the other. Lack of documentation and minimum published literature comparing the two and hence inability to arrive at standardizing the procedure protocol have resulted in all the more controversies. Of the open repairs, in current times the accepted method for open repair is the Lichtenstein Tension free open mesh repair and of the laparoscopic methods, the TEP differs in technique in regard to the placement of mesh in the extra peritoneal space to reinforce the transversal is fascia versus placement of mesh over the conjoint tendon for the former. The following study was undertaken in an effort to identify the better of the two methods of laparoscopic TEP repair and Lichtenstein Tension free mesh repair of inguinal hernia. This was a comparative study consisting of 100 patients, with 50 patients in laparoscopic TEP repair group and 50 patients in Lichtenstein Tension free mesh repair group undergoing surgical repair of inguinal hernia conducted in Tirumala Multispecialty Hospitals, Vizianagaram which included a minimum of one year of follow-up. The study was undertaken to compare efficacy, safety and patient satisfaction between the two procedures. A comparative study with regard to following parameters was made: Post operative complications, Post operative pain, Hospital stay, Time to return to normal activities and Recurrence. The Mean & Standard Deviation of Age in the Lichtenstein Tension Free Hernia Repair (N=50) is 54.64± 9.844 years and in the Laparoscopic TEP Repair of Inguinal Hernia (N=50) is 51.44 ± 7.1 years. There were100 patients in our study of which 98 were males and two females. Both the females were in the open Lichtenstein tension free mesh hernia repair. This represents the low incidence of inguinal hernia in female in general population. In a study by Ira M Rutkow et al[4], 90% of total cases were male and 10% female. In a study by Martin Kurzer et al[5], 97% cases were male and 3% female. In our study there are 98% males and 2% females which is comparable with the study by Martin Kurzer et al[5].There were total of 62 cases of right sided hernias, 34 being indirect and 28 direct. There were 38 left sided hernias, 24 indirect and 14 direct. Right sided indirect hernias were most common seen in 34 cases being the most frequent type while left sided direct 14 cases being least. The incidence of different types of hernia in our study is consistent with the analysis of the hernia centres 8 year series of 2861 primary hernias[4].In the study done by Udwadia Tehemton[6] et al, wound infection rates were significantly lower after laparoscopic techniques (1%) than after the Lichtenstein operation (2.7%). The incidence of inguinal hematoma was found to be significantly lower after the laparoscopic repairs (13.1%) than after the Lichtenstein repair (16%) . In a study by Liem et al[7], the complications in laparoscopic group were less compared to open group

(5% vs 19.5% respectively) which is comparable to our study.In our study the incidence of overall post operative complication is considerably low in the laparoscopic group (4% vs 18%); this could be explained due to the exhaustive experience of 20 years of laparoscopic hernia repair.In a meta analysis by Bobo Z[8]et al and in a study by Eklund et al (SMIL[9]there was no significant difference in the post operative complications. Severe pain was complained of in 5 cases in Lichtenstein Tension Free Hernia Repair and 1 case in Laparoscopic TEP repair of Inguinal Hernia. 30 cases of Laparoscopic TEP Repair of Inguinal Hernia had mild pain post operatively whereas 23 cases of Lichtenstein Tension Free Hernia Repair complained of mild pain. 19 cases of Laparoscopic TEP Repair of Inguinal Hernia had moderate pain post operatively against 22 cases of Lichtenstein Tension Free Hernia Repair. 1 patient in Laparoscopic TEP Repair of Inguinal Hernia group had severe pain post operatively whereas 05 cases of Lichtenstein Tension Free Hernia Repair complained of severe post operative pain. All patients received Inj Diclofenac 50mg IM BD and then converted to oral Tab Diclofenac as soon as alimentation was allowed. The patients with severe pain were in addition given Inj Tramadol 50 mg IV for 03-05days following surgery and then stopped. The laparoscopic group experienced better outcome in terms of post operative pain. In a RCT comparing short term results after laparoscopic with open Lichtenstein repair by Liem et al[7] , the incidence of post operative pain was significantly less which is comparable to our study. In studies by Mc Cormack et al[10], Eklund et al[9]and MRC hernia group[11], the post operative pain was considerably less in the TEP group compared to the Lichtenstein group which is comparable with our study.The duration of hospital stay was statistically significant with mean of 3.44 days for TEP versus 3.84 for Lichtenstein tension free hernia repair. The duration of hospital stay in a study by Yassar et al[12] and by Palanivelu[13] was 1 day for TEP. This is not comparable to our study but could be explained since ours is a teaching institution and the minimum time taken from admission to surgery is around 1 day hence making the duration of stay in both groups apparently longer. The laparoscopic group could have been discharged one day earlier but ours being a referral institute with patients from far flung areas with little or no medical facilities, it was decided to keep patients in hospital one day more. In a RCT comparing short term results after laparoscopic with open Lichtenstein repair by Liem et al[7], the duration of hospital stay was significantly less in the laparoscopic group which is comparable to our study. The time taken to return to normal activities was 8.22 in the TEP group versus 9.44 in the Lichtenstein tension free hernia repair group in our study. In a study by Yassar Hamaza et al[12], the time to return to normal activities was 13.22 days which is more than our study. In a RCT comparing short term results after laparoscopic with open Lichtenstein repair by Liem et [7], the time to return to normal activities was significantly less in TEP group which is comparable to our study. In studies by Eklund et al[9] (7 vs 20 days), Mc Cormack et al[10](7 days shorter) and MRC hernia trail group[11] (28 vs 42 days) the time taken to return to normal activities were considerably less in the laparoscopic group which is comparable with our study.There has been no recurrence in either of the two groups. Recurrence is almost always attributed to less experience and occurs early in the learning curve[14].This can be explained due to the exhaustive experience of 20 years of laparoscopic hernia repairs of the surgeon. In a study by Yassar Hamaza et al[12], the recurrence was 4% and in Mastery of Surgery[15]. 0.3% in the TEP group. In studies by Eklund et al[9](2.3% vs 2.8%) and Liem et al[7](4.9% vs 10%), the rate of recurrence in the laparoscopic group was less compared to the open group.

Conclusion

The present study is a prospective study between Lichtenstein tension free hernia repair and laparoscopic TEP repair of unilateral inguinal hernia. Our study supports the view that laparoscopic TEP hernia repair is safe and efficacious compared to Lichtenstein tension free hernia repair in comparison to reduced post operative pain, hospital stay, time to return to normal activities. Once the surgeon is beyond the learning curve with ample experience, the laparoscopic TEP is better than the Lichtenstein tension free hernia repair.

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