IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 1 Ver. IV (January. 2017), PP 123-128
www.iosrjournals.org

Comparative Study of Chronic Pain Status after Transinguinal Preperitoneal Technique (TIPP) with Lichtenstein's method for Inguinal Hernia Repair

Lakshman Agarwal[1], Laxmi Narayan Meena[2], Abhishek Krishna[3], Sumita Jain[4], Vineet Sharma[3], Abhay Sikaria[3], Mohit Jain[5]

[1]*Hod, Department of Surgery,SMS Medical College,Jaipur,*
[2]*Associate Professor, Department of Surgery,SMS Medical College,Jaipur,*
[3]*Resident,Department of Surgery,SMS Medical College,Jaipur, ,*
[4]*Senior Professor, Department of Surgery,SMS Medical College,Jaipur*
[5]*Assistant Professor, Department of Surgery,SMS Medical College,Jaipur*

Abstract
Aim: *To compare the incidence of chronic pain after Transinguinal preperitoneal (TIPP) mesh repair versus Lichtenstein mesh repair in unilateral inguinal hernia.*
Methods: *Patients presenting with Primary unilateral groin hernia and Age between 18 and 80 years were included in the study while patients with Recurrent hernia, Acute Incarcerated inguinal hernia , History of previous preperitoneal surgery (eg. radical prostatectomy) were excluded from the study. All the cases were divided by Alternate Allocation method. Follow-up was done after 3months and 6 months.*
Results: *A total of 308 patients were randomized to TIPP (154) or Lichtenstein (154) repair. Baseline characteristics were comparable in the two groups. Significantly fewer patients in the TIPP group had continuous*
Moderate chronic pain *(VAS between 3-6) 3 months after surgery; 8 patients(5.19%) versus 23 patients (14.9%) in the Lichtenstein group (P= 0.01) and at 6 months after surgery; 4 patients(2.6%) in TIPP versus 18 patients(11.75) in the Lichtenstein group.*
Comparable patients experienced ***Mild chronic pain*** *(VAS between 1-2), 38 patients (24.6%) in Lichtenstein group versus 37patients (24%) in TIPP group at 3 months and 11 patients (7.14%) each in Lichtenstein group as well as TIPP group at 6 months post operatively.*
Conclusion: *Fewer patients had continuous Moderate chronic pain at 3 months and 6 months after TIPP mesh inguinal hernia repair compared with Lichtenstein's repair while incidence of Mild chronic pain was almost comparable.*
Keywords: *Chronic pain, Preperitoneal space,, TIPP*

I. Introduction

Hernia is derived from the Latin word for rupture. A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. Although a hernia can occur at various sites of the body, these defects most commonly involve the abdominal wall. Amongst the hernias involving the abdominal wall, seventy-five percent occur in the groin. Indirect hernias outnumber direct hernias by about 2:1, with femoral hernias making up a much smaller proportion.[5] Inguinal hernias are one of the most common diseases that a surgeon has to manage. The repair of an inguinal hernia is one of the most common procedure performed in general surgery. Among the surgical approaches available for repair of an inguinal hernia, anterior repairs are the most common, with a wide variety of techniques for the same. Since its inception, the Lichtenstein tension free mesh hernioplasty has been the most commonly performed technique for hernia repair and is used as the gold standard to which other techniques are compared. The lichtenstein technique(tension free mesh repair) is currently the reference technique for inguinal hernia treatment worldwide.

The lichtenstein repair has reduced the incidence of recurrent inguinal hernia to2-5% as compared with anterior non-mesh techniques. However chronic postoperative pain, currently the main complication after lichtenstein repair has been reported in 15-40% of patients. **Chronic pain** has been defined by international association for the study of pain as: "A**ny VAS{visual analogue scale} score above ZERO which lasts for more than THREE MONTHS**. It may be continuous as described as by patients as an ongoing awareness of pain. It may be activity related pain occurring only during activity like cycling, running, kneeling, walking up stairs, gardening, lifting at work.

Chronic pain may be caused by-

Nerve damage during surgery,

Stretching or suturing (tissue injury),
Major efforts to reduce chronic postoperative pain by exploring various strategies such as

Surgical approach: Laparoscopic v/s Open,
Type of mesh: Light weight v/s Heavy
Self-gripping v/s traditional
Mesh position : Pre-peritoneal v/s Inguinal canal
Transinguinal preperitoneal (TIPP) hernia repair combines the safe anterior approach with a preperitoneal sutureless mesh position using annulus internus as the entrance into the preperitoneal space. Currently there are no evidence – based inguinal hernia repair techniques that prevent postoperative chronic pain, however , hypothetically , TIPP may be associated with less chronic postoperative pain than Lichtenstein's technique.

II. Materials And Methods

Study Area: The study was conducted in the general surgery department of S.M.S Hospital & Attached Group of Hospitals, Jaipur .
Study Design: The present study was a hospital based prospective randomised study
Study Period: The study period was from March 2015 to November 2016.
Sample Size : Sample size was calculated 154 subjects for each group at alpha-error-0.05 and power 80% assuming proportion of patient with chronic pain in TIPP and lichtenstein's method as 3.5% and 12.9% respectively (as per seed article)
Study Population: The participants for this study were the patients reporting to OPD of General Surgery Department of S.M.S Hospital and Attached group of hospitals, Jaipur.

Selection Criteria:
Inclusion Criteria:-
- Primary unilateral groin hernia
- Age between 18 and 80 years
- American Society of Anaesthesiologists(ASA) grade I-III.
- Signed informed consent letter.

Exclusion Criteria:-
- Patients not giving consent.
- Recurrent hernia
- Acute Incarcerated inguinal herina
- Psychiatric illness or other reason making follow-up or questionnaires unreliable
- Previous preperitoneal surgery((such as radical prostatectomy)

All patients were enquired about any significant history regarding predisposing factors like chronic cough, constipation, difficulty in micturition, smoking etc. Past history of previous hernia surgery was taken. Any history of hypertension, bronchial asthma, diabetes mellitus and ischemic heart disease was taken. Thorough general physical examination was done. Hernia was examined for size, shape, reducibility, contents and descent. Tone of the abdominal muscles was assessed as well. P.R. examination was done to assess the size of the prostate and find out any organic cause of examination. After all routine investigations and pre-anesthetic evaluation had been done, patients were subjected to surgery. A single pre-operative dose of antibiotic was given intravenously half hour before surgery. All the cases were divided by chit box method of randomisation, into patients who would undergo a Lichtenstein mesh hernioplasty (Group A) and those who would undergo a Transinguinal preperitoneal(TIPP) mesh repair (Group B).Patients were followed up after 3 months and 6 months to analyze whether they are having chronic postoperative pain or not.

Patients were blinded to the intervention and were followed up in the outpatient department. They were also asked to keep a VAS pain diary. The VAS is a validated instrument for evaluation of postoperative pain in inguinal surgery. The VAS score was determined on a scale from 0(no pain) to 10(worst pain imaginable).

III. Discussion

A Total of 308 patients were involved in the study. They were randomised among the two groups, those in which the hernia was repaired by conventional Lichenstein technique (Group A) and those in which TIPP repair was done (Group B). Baseline characteristics like age, sex, personal history and pre-disposing factors were comparable in both groups. Majority(54.54%) of the patients in our study were in the 15-50 year

age group. The mean age was 47.52 years and Median Age was 50 years. Mean age in Lichtenstein group was 47.88 years and in TIPP group was 47.1 years. In both Lichtenstein as well as TIPP group maximum no. Of patients were in the age group 15-30yrs,35(22.7%) and 37(24.2%) respectively. In Lichtenstein group, 152 patients were male while only 2 patients were female while in TIPP group,147 patients were male and 7 patients were female . Yilmaz et al in 2013 did a similar study in which 3 out of 60 cases were females and rest males. This is consistent with the incidence in the literature which states that inguinal hernia is about 25 times more common in males. Ahmed et al also reported 96% incidence in male and 4% incidence in females for inguinal hernia cases. Nyhus et al postulated that a stronger posterior inguinal wall as a result of this decreased incidence.[1]

A total of 187 cases (60.7%) were indirect while 121 (39.3%) were direct inguinal hernias.The mean VAS score of pain at 3 months was significantly High (P value 0.01) in Lichtenstein group (0.97; +/- S.D 1.56) as compared to TIPP group (0.51; +/- S.D 1.05). The mean VAS score of pain at 6 months was also significantly High (P value 0.005) in Lichtenstein group (0.48; +/- S.D 0.93) as compared to TIPP group (0.19; +/- S.D 0.93). The mean Post-op pain (VAS score) significantly reduced from 3 months (0.96; +/- S.D 1.35) to 6 months (0.48; +/- S.D 0.94) in Lichtenstein group with a value of P value of 0.01.Similarly, the mean Post-op pain (VAS score) was also significantly reduced from 3 months (0.53; +/- S.D 1.35) to 6 months(0.19; +/- S.D 0.94) in TIPP group with a value of P value of 0.01.

Significantly fewer patients in the TIPP group had continuous **Moderate chronic pain** (VAS between 3-6) 3 months after surgery; 8 patients(5.19%) versus 23 patients (14.9%) in the Lichtenstein group (P= 0.01) and at 6 months after surgery; 4 patients(2.6%) in TIPP versus 18 patients(11.75) in the Lichtenstein group.
Comparable patients experienced **Mild chronic pain** (VAS between 1-2), 38 patients (24.6%) in Lichtenstein group versus 37patients (24%) in TIPP group at 3 months and 11 patients (7.14%) each in Lichtenstein group as well as TIPP group at 6 months post operatively.

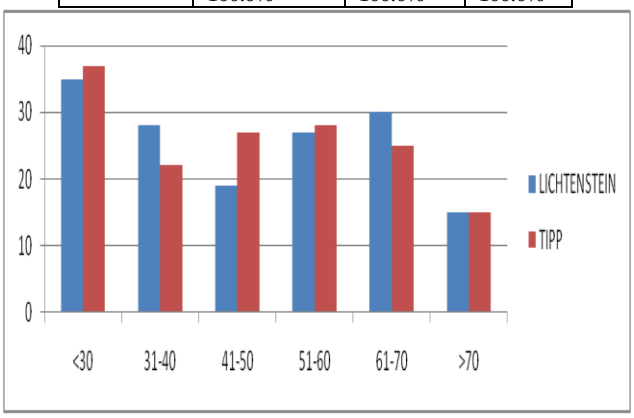
IV. Conclusion

The study was done to know the incidence of chronic pain following two types of open hernia repair i.e Lichtenstein repair vs TIPP repair. The final result is that the incidence of chronic groin pain after 3 and 6 months,is significantly *less* in TIPP group as compared to the Lichtenstein group.

Results

Table 1: Age-Wise Distribution Of Patients

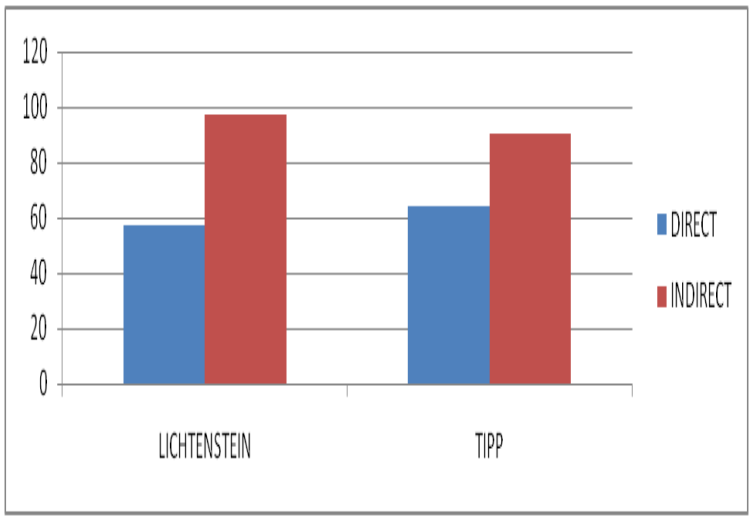
Age (Yrs.)	Procedure		Total
	Lichtenstein	TIPP	
<30	35	37	72
	22.7%	24.2%	23.4%
31-40	28	22	50
	18.2%	14.3%	16.2%
41-50	19	27	46
	12.3%	17.5%	14.9%
51-60	27	28	55
	17.5%	18.2%	17.9%
61-70	30	25	55
	19.5%	16.2%	17.9%
>70	15	15	30
	9.7%	9.7%	9.7%
Total	154	154	308
	100.0%	100.0%	100.0%



Majority(54.54%) of the patients in our study were in the 15-50 year age group. The mean age was 47.52 years and Median Age was 50 years. Mean age in Lichtenstein group was 47.88 years and in TIPP group was 47.1 years.

Table2: Type Of Hernia (Direct/Indirect)

	Procedure		Total
	Lichtenstein	TIPP	
Direct	57	64	121
	37%	41.5%	39.3%
Indirect	97	90	187
	63%	58.5%	60.7%
Total	154	154	308
	100.0%	100.0%	100%



A total of 121(39.3 %) cases were Direct and 187 (60.7%) cases were Indirect

Table 3: Type Of Procedure In Male And Female Subjects

`Sex	Type Of Procedure		Total
	Lichtenstein	**TIPP**	
Female	02	07	09
Male	152	147	299
Total	154	154	308

Table 4: Showing Mean Post-Op Pain(Vas Score) At 3 Months Follow Up

Type Of Procedure	N0 Of Patients	Mean Post OpPain - Vas At 3 Months	P Value
Lichtenstein	154	0.97	**0.01**
Tipp	154	0.51	

P=0.01, The VAS score of pain at 3 months was significantly High in LICHTENSTEIN group.

Table 5: Showing Mean Post-Op Pain(Vas Score) At 6 Months Follow Up

Type Of Procedure	No.Of Patients	Mean Post OpPain-Vas At 6months	P Value
LICHTENSTEIN	154	0.48	**0.005**
TIPP	154	0.19	

P=0.005, The VAS score of pain at 6 months was significantly High in LICHTENSTEIN group

Table 6: Showing Mean Post-Op Pain(Vas Score) At 3 And 6 Months Follow Up In Lichtenstein Group

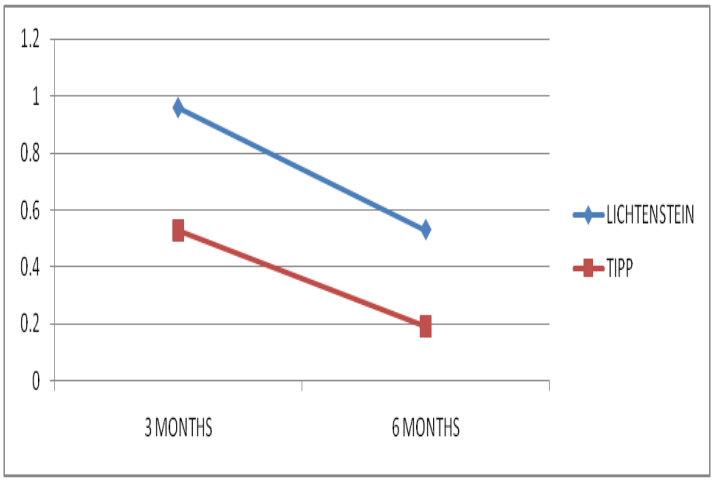
Lichtenstein Method	No Of Patients	Mean Post Op Pain - Vas
At 3 Months	154	0.96
At 6 Months	154	0.48

The pain Reduced significantly in Lichtenstein group from 3 to 6 months (**P VALUE: 0.001)**

Table 7: Showing Mean Post-Op Pain(Vas Score) At 3 And 6 Months Follow Up In Tipp Group

TIPP Repair	No Of Patients	Mean Post Op Pain - Vas
At 3 Months	154	0.53
At 6 Months	154	0.19

The pain Reduced significantly in TIPP group from 3 to 6 months (**P VALUE: 0.001)**



Mean Vas Score At 3 Months And 6 Months

The MEAN VAS score in Lichtenstein group was **0.96** at 3 months and **0.48** at 6 months while in TIPP group was **0.53** at 3months and **0.19** at 6 months. The pain reduced significantly (**P Value: 0.001**) in both the groups from 3 months to 6 months

Table 8: Showing Pain Grading In Both Study Groups At 3 Months Follow Up Period

Pain At 3 Months	Type Of Procedure		Total
	Lichtenstein	TIPP Repair	
No Pain	93	109	202
Mild Pain	38	37	75
Moderate Pain	23	08	31
Total	154	154	308

(Mild Pain: VAS 1-2, Moderate Pain: VAS 3-7)**Chi Square= 8.53** and **P VALUE: 0.01**, Significantly more **Pain(Moderate**) in Lichtenstein group at 3 Months follow up.

Table 9: Showing Pain Grading In Both Study Groups At 6 Months Follow Up Period

Pain At 6 Months	Type Of Procedure		Total
	Lichtenstein	TIPP Repair	
No Pain	125	139	264
Mild Pain	11	11	22
Moderate Pain	18	04	22
Total	154	154	308

(Mild Pain: VAS 1-2, Moderate Pain: VAS 3-7)

Chi Square= 9.65 and **P VALUE: 0.01**, Significantly more **Pain(Moderate**) in Lichtenstein group at 6 Months follow up.

Bibliography:

[1]. Nyhus Lloyd M , Robert E Codon Ed .The pre-peritoneal approach & illiopubic tract repair of inguinal hernia . Hernia J B Lippincott Co philadelphia 1995
[2]. Nicholson S 1999 . Inguinal hernia repair . British journal of surgery 86
[3]. Abrahamson Jack: Hernias, Chapter 14, Maingot's Abdominal operations, In: Michael J. Zinner, Seymur I Schwartz Harold Ellis,USA,Appleton Lange
[4]. Robert J. Fitzgibbons Jr. inguinal hernia, chap 36, Schwartz Principles of surgery,In: Charles Brunicardi, Dana K. Anderson, Mc Graw Hill
[5]. http://www.ncbi.nlm.nih.gov/pubmed/22961514Randomized clinical trial of chronic pain after the transinguinal preperitoneal technique compared with Lichtenstein's method for inguinal hernia repair.