International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

Comparison between Transabdominal Preperitoneal Repair (TAPP) vs Totally Extraperitoneal Repair (TEP) in Terms of Post - Operative Recovery and Psychological Satisfaction in Inguinal Hernia Patients

Ankur Avesthi[1], Sanjay Singhal[2], Ankur Kothari[3]

[1, 3]PG Resident, Mahatma Gandhi Medical College and Hospital Jaipur

[2]Professor Gen. Surgery Mahatma Gandhi Medical College and Hospital Jaipur

Abstract: ***Laparoscopic hernia repair has emerged as safe and effective method in treating inguinal hernia under experienced hands. This study aims to compare TAPP vs TEP to select the most ideal and efficacious procedure for treatment of inguinal hernias. In our study both TEP and TAPP techniques of laparoscopic repair of inguinal hernia have comparable short term and long-term outcomes in terms of operative time, post-operative pain, time to resume normal activity and satisfaction level post op.***

Keywords: TAPP, TEP, Inguinal Hernia

1. Introduction

The hernia surgery has gone through a major evolution from the days of truss and castration to present day laparoscopic hernia surgery.

Transabdominal preperitoneal hernioplasty (TAPP), the revolutionary concept in laparoscopic hernia surgery was introduced by Arregui[1] and Dion[2] in early 1990s'. The recurrence rate with TAPP was very low and was projected as a standard procedure.

Mckernan[3] from USA and Dulucq[4] from France introduced a new concept of TEP repair which avoided entry into the abdominal cavity. Now TEP is considered as the standard in laparoscopic hernia repair.

With <1% recurrence rates in 10 years of experience with repairs using TAPP or TEP[5], the myths & controversies regarding the effectiveness of laparoscopic hernia repair have been laid to rest.

As recurrences are no longer the sole criteria of a successful repair, the analysis of outcomes of various techniques of inguinal hernia repair will include time to recovery of normal activities and psychological satisfaction of the patient.

Prospective studies between TAPP and TEP are very limited in number in India. There is therefore a need to study the various aspects of these two approaches.The present study was undertaken to evaluate these aspects in our hospital.

2. Material and Methods

We included cases of inguinal hernia admitted in Surgery Department, Mahatma Gandhi Medical College and Hospital from July-2014 to June 2016 above 18 years of age, fit from cardio pulmonary point of view to undergo surgery under general anaesthesia and gave informed consent to undergo the surgery and were available for follow up.

During this period 15 patients underwent TAPP repair. These were matched in age and gender to 15 patients who underwent TEP repair in the same time period. All procedures were performed by a single expert laparoscopic surgeon.

All patients unfit for general anaesthesia, having active infection or inflammatory process e.g. peritonitis, patients with strangulated and obstructed inguinal hernias, patients not able to afford the cost of disposable articles and patients who have undergone prior pelvic lymph node dissection or other pelvic surgeries or groin irradiation were excluded from the study.

Patients were grouped randomly into either TEP group or TAPP group. Fully informed consent was obtained from the patient and the relatives about participation in the study. Consent for conversion of laparoscopic to open repair was taken before both laparoscopic hernia surgeries.Patients were given a list of disposable articles for the surgery including prosthetic mesh (15x15 cm), endoanchor/tacker.

In TAPP peritoneal cavity is entered and mesh is placed through a peritoneal incision over possible hernia sites. TEP is different in that the peritoneal cavity is not entered and mesh is used to seal the hernia from outside the peritoneum.

Patients were advised to follow up after 7 post operative days in the OPD. The patients were clinically examined for all possible post operative complications. Patients were asked if they had resumed work and if not why. The day they resumed work was noted. The patients are asked about their satisfaction with surgery and wound cosmesis. Skin sutures or staples were removed. Any persistent or fresh complaints were noted and subsequently dealt. If deemed necessary, patients were called to follow again the next week, otherwise if patient was comfortable, asymptomatic and satisfied he was contacted by telephone/ mobile/ mail. Patients were kept in follow up for two months. Those who reported any complaint or recurrence were recalled in the OPD.

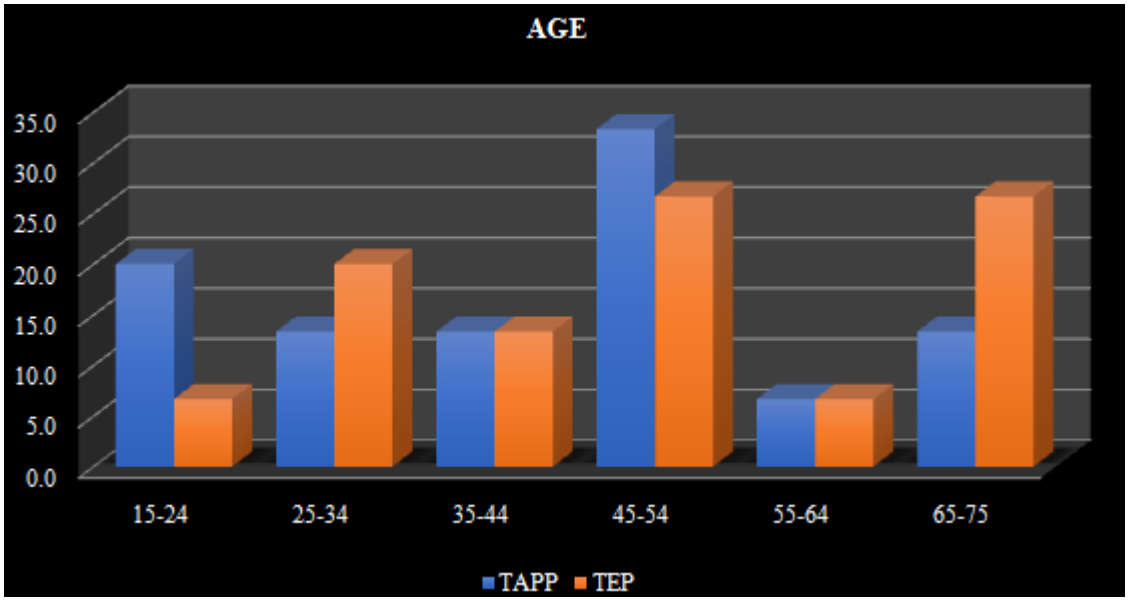
Statistical analysis was done using SPSS 17 system. Continuous data was expressed as mean ± SD. To compare continuous variables, an independent and/or paired sample t test was performed. Statistical significance was defined as p value < 0.05.

3. Observation and Results

All patients were Male (100%)it was unintentional. The patients were in the age group of 18 to 70 years. Mean age in the TAPP group was 42.1±15.7 years and in the TEP group was 47.1 ±17.1years (p value – 0.411)

Table 1: Age distribution in all hernia cases

	TAPP		TEP	
Row Labels	No.	%	No.	%
15-24	3	20.0	1	6.7
25-34	2	13.3	3	20.0
35-44	2	13.3	2	13.3
45-54	5	33.3	4	26.7
55-64	1	6.7	1	6.7
65-75	2	13.3	4	26.7
Grand Total	15	100.0	15	100.0
Mean	42.1		47.1	
S.D	15.7		17.1	



All the hernias in the study were inguinal hernias (100%) Out of the 15 patients in TAPP group; 7 had right sided, 4 had left sided and 4 had bilateral hernias. Out of the 15 patients in TEP group; 8 had right sided, 5 had left sided and 2 had bilateral hernias.

Table 2: Type of Hernia(Right/Left/Bilateral)

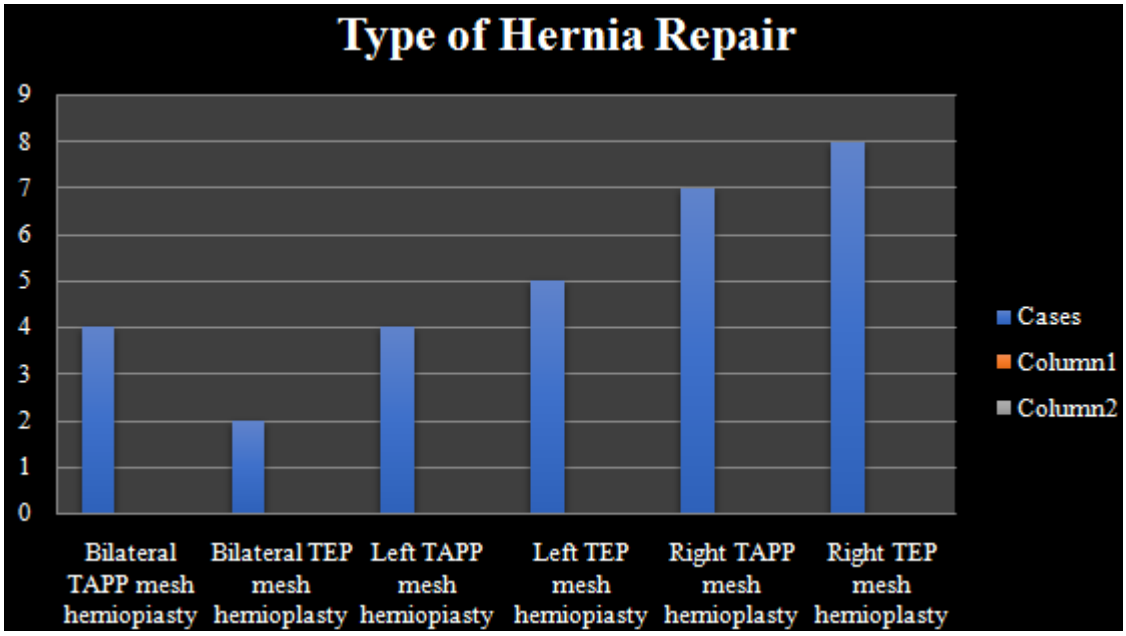
SIDE	TAPP	TEP
Right	7(46.6%)	8(53.3%)
Left	4(26.6%)	5(33.3%)
Bilateral	4(26.6%)	2(13.3%)

Type of Hernia Repair done

Table 3: Type of hernia repair

	No.	TAPP		TEP
	4	26.7		
Bilateral TEP mesh hernioplasty			2	13.3
Left TAPP mesh herniopiasty	4	26.7		
Left TEP mesh herniopiasty			5	33.3
Right TAPP mesh hernioplasty	7	46.7		
Right TEP mesh hemioplasty			8	53.3
Grand Total	15	100.0	15	100.0

In our study, Of the cases operated in TAPP 4 were Bilateral,4 were left sided and 7 were right side. Of the TEP operated 2 were Bilateral,5 were left and 8 were right sided.



Operative Time

Table 4: Operative Time on Unilateral hernia

	TAPP(n=11)	TEP(n=13)
Mean	76.36	60.76
Range	40-120	35-120

In TAPP group the operative time for doing unilateral repairs ranged from 40 mins to 120 mins. Mean time taken was 76.36 mins.

In TEP group the operative time for doing unilateral repairs ranged from 35 mins to 120 mins. Mean time taken was60.76 mins.

Table 5: Operative time in Bilateral hernia

	TAPP(n=4)	TEP(n=2)
Mean	150	135
Range	105-180	90-180

Operative time taken to carry out 4 bilateral repairs by TAPP ranged from 105-180 mins, mean time taken was 150 min.

Operative time taken to carry out 2 bilateral repairs by TEP was 90-180 mins . mean time taken were also 135 min.

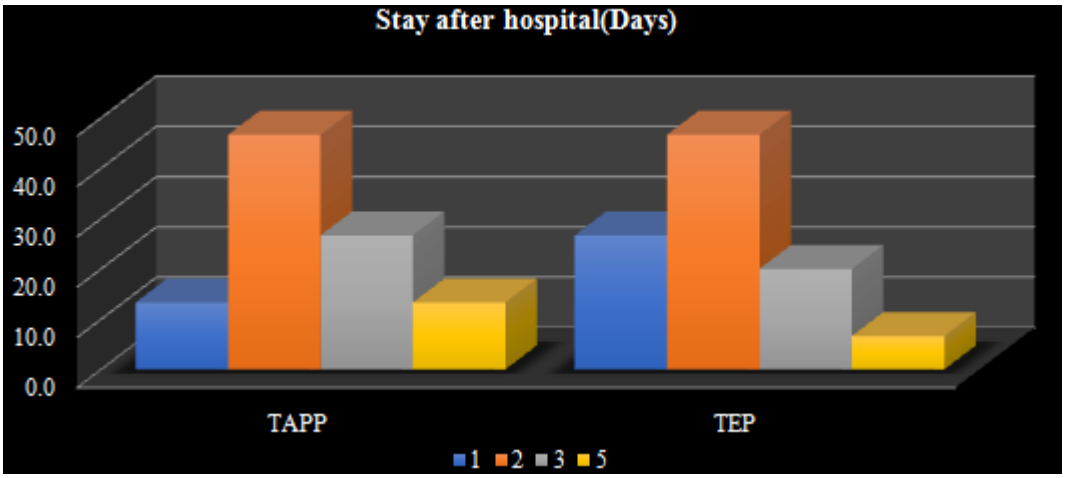
The mean operative time in cases of TAPP(Unilateral and Bilateral) was 87.7±48.1 and in TEP(Unilateral and Bilateral) was 70.7±40.2 (p value - 0.3022).

Duration of Post Operative Hospital stay

Table 6: Duration of hospital stay

Stay after hospital(Days)	TAPP		TEP	
	No.	%	No.	%
1	2	13.3	4	26.7
2	7	46.7	7	46.7
3	4	26.7	3	20.0
5	2	13.3	1	6.7
Grand Total	15	100.0	15	100.0

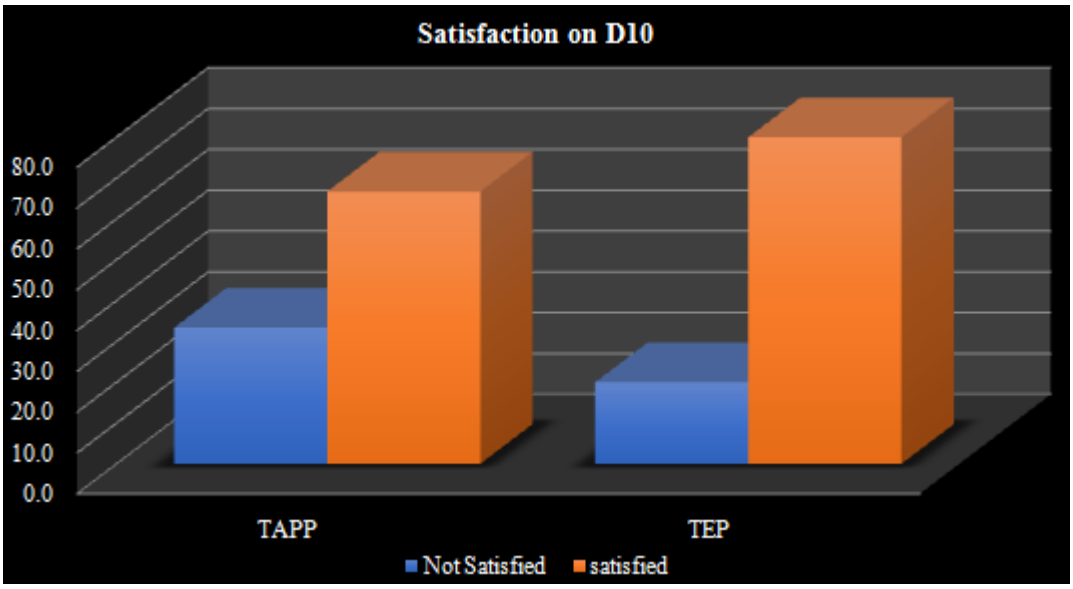
The mean post operative stay in TAPP was 2.5 ±1.2 and for TEP was 2.1 ±1.1 and p value was 0.338.



Post operative Day 10 Satisfaction level

Table 7: Satisfaction After day ten

Satisfaction on D10	TAPP		TEP	
	No.	TAPP		TEP
Not Satisfied	5	33.3	3	20.0
Satisfied	10	66.7	12	80.0
Grand Total	15	100.0	15	100.0



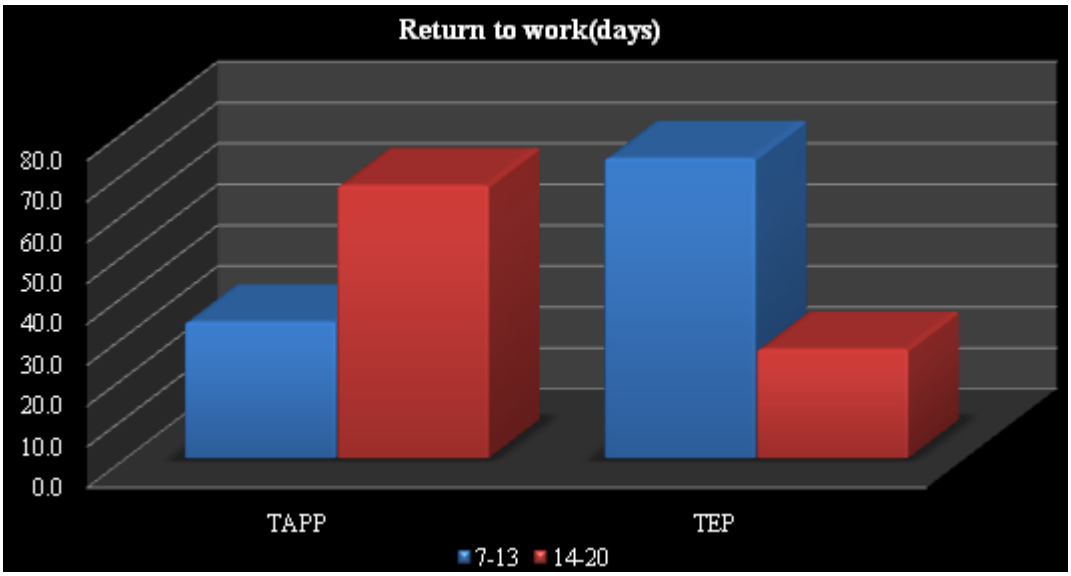
Return to Work

Table 8: Return to daily Activity

Return to work(days)	TAPP		TEP	
	No.	TAPP		TEP
7-13	5	33.3	11	73.3
14-20	10	66.7	4	26.7
Grand Total	15	100.0	15	100.0

In our study in TAPP group 5 patients returned to work in 7 -13 days(33.3%) whereas 10 patients returned to work on 14-20 days(66.7%)

In our study in TEP group 11 patients returned to work in 7 -13 days(73.3%).wheras 4 patients returned to work on 14-20 days(26.7%). The mean time to return to work in TAPP was 14.6± 4.0 and in TEP 11.9 ±4.6 was the p value was 0.1020



4. Discussion

All the patients in the study were males. In literature, the prevalence of hernia is stated to be more in Males by ratio of 7:1.The prevalence of hernia in males is clearly age dependent and right sided groin hernia are more common than the left.[6]

Mean age in the TAPP group (42.1±15.7 years) was lesser than TEP group (47.1 ±17.1years), statistically not

significant. Four patients were younger than 20 years and 6 were more than 65 years in age.

Operative times in TEP group for doing unilateral repairs were much less than TAPP. One of the important factors for this was that good reperitonealisation in TAPP required additional time and skills like intracorporeal suturing. The mean operative times in the study by Schrenk et al[7] in minutes were (mean/SD) 46.0 (9.2) for TAPP and 52.3 (13.9) for TEP. Ramshaw BJ et al[8]reported similar mean operative times for TAPP (81.2 mins) and TEP (92.9 mins).

The mean post operative stay in TAPP was2.5 ±1.2 and for TEP was 2.1 ±1.1 and p value was 0338.In various comparative studies length of stay was shorter in the TEP group[59]. Length of hospital stay in days reported by Schrenk et al[7] was (mean/SD) 3.7 (1.4) and 4.4 (0.9) respectively for TAPP and TEP (statistically significant).According to Khoury N et al[9] hospital stay was shorter for the TEP group: 57% were discharged the same day and 98% were discharged within 24 h of their operations for the TEP group compared to 10 and 84%, respectively, for the TAPP ($p < 0.05$).In the study by Cohen et al[10] there was no difference in hospital stay (mean of 30 h) between the two groups. Kapiris et al[11] reported a mean hospitalization of 0.9 nights after TAPP repair.

Mean time in days taken to return to work was less in TEP, but statistically not significant. In our study, it seems that return to work in our patients was not only dependent on less pain and early physical recovery but also the psycho-social factors like opinion of family members, reimbursement of leave by Government and traditional beliefs like obligatory rest after any type of surgery in Indian patients. Many patients voluntarily refrain from joining work after surgery for variable periods particularly uneducated rural class and Government servants as interpreted from follow up interview.These factors are difficult to measure and eliminate. Lai et al[12] stated that patient counseling is important for early return to work as patients in the Indian setup have an old thinking that after hernia surgery, heavy work should be avoided to prevent recurrence.In the study conducted by Kapiris[11] et al median return to normal activities was 7 days after TAPP repair.Return to work reported by Cohen et al for TAPP was 7 days and for TEP was 5.5 days.
A higher percentage of patients (33.3%) who underwent TAPP were not satisfied as compared to only 20% of TEP cases. These patients had neuralgia or seromas requiring multiple aspirations in the follow up period. The nagging discomfort, inguinoscrotal swelling and multiple aspirations were the main causes for their being unsatisfied.Lai et al[12] reported that 80% patients were highly satisfied with the surgery and 100% with the cosmetic result in TEP group.

5. Conclusion

In our study comparing, TAPP procedure (15 patients; 19 repairs) and TEP procedure (15 patients; 17 repairs); the conclusions are:

- Both the procedures are safe when done carefully.
- The operative time taken to perform a TAPP repair is much longer than a TEP repair as precaution to be taken in TAPP was more as well as tackers were placed which consumed much time.

The postoperative hospital stay is slightly longer after TAPP repairs.

The time taken to recover and return to work is same after both of the procedures and difference is statistically insignificant

More number of patients feel satisfied after undergoing TEP repair versus a TAPP repair.

Although we observed short period of hospital stay in TEP technique than in TAPP but more large-scale studies are needed to confirm this fact. Laparoscopic inguinal mesh hernioplasty using either TEP or TAPP is a safe and efficacious method of hernioplasty with no recurrence in the immediate post-operative period and negligible pain. Surgeons all over the world experienced in TEP/TAPP should be encouraged to report their long-term experience so that the true potential of these two techniques can be assessed.

References

[1] Arregui ME, Davis CJ, Yucel O, Nagan RE. Laparoscopic mesh repair of inguinal hernia using a preperitoneal approach: a preliminary report. SurgLaparoscendosc 1992;2:53-8.
[2] Dion YM, Morin J.Laparoscopic inguinal herniorrhaphy. Can J Surg 1992;35:209-12.
[3] McKernan B, HL. Laparoscopic Preperitoneal prosthetic repair of Inguinal Hernias. Surgical Rounds 1992;7:579-610.
[4] Dulucq J. Terres des hernias de laine par miseen place d' un patch prothique sous-peritoneal enretroperitoneoscpie. Cahiers Chir 1991;79:15-16.
[5] Schwab JR, Beaird DA, Ramshaw BJ, Franklin JS, Duncan TD, Wilson RA, Miller J, Mason EM. After 10 years and 1903 inguinal hernias, what is the outcome for the laparoscopic repair? SurgEndosc 2002;16:1201-6.
[6] Malagoni MA, Galgliardi RJ. Hernias. In: Townsend, Beauchamp, Evers and Mattox Sabiston Textbook of Surgery The Biological basis of Modern Surgical Practice, 17th edition ©2004 Elsevier . ;Volume 2 Chapter 42 p 1199-1218.
[7] Schrenk P, Woisetschlager R, Rieger R, Wayand W. Prospective randomised trial comparing postoperative pain and return to physical activity after transabdominal preperitoneal, total preperitoneal or Shouldice technique for inguinal hernia repair. British Journal of Surgery 1996;83(11): 1563-1566.
[8] Ramshaw BJ, Tucker JG, Conner T, et al: A comparison of the approaches to laparoscopic herniorrhaphy. SurgEndosc 10:29,1996.
[9] Khoury N. et al. A comparative study of laparoscopic -extraperitoneal and transabdominal preperitoneal herniorrhaphy.JLaparoendoscSurg, 1995 Dec;5(6):349-55.
[10] Cohen RV, Alvarez G, Roll S, Garcia ME, Kawahara N, Schiavon CA, Schaffa TD, Pereira PR, Margarido NT,

Rodrigues AJ. Transabdominal or totally extraperitoneal laparoscopic hernia repair? SurgLaparoscEndosc. 1998 Aug;8(4):264-8.

[11] Kapiris SA, Brough WA, Royston CM, O'Boyle C, Sedman PC. Laparoscopic transabdominal preperitoneal (TAPP) hernia repair. A 7-year two-center experience in 3017patients. SurgEndosc. 2001 Sep;15(9):972-5.

[12] Lai P, Kajla RK, Chander J, Saha R, Ramteke VK (2003) Randomized controlled study of laparoscopic total extraperitoneal vs open Lichtenstein inguinal hernia repair. Surg Endosc 17: 850-856.