

Original Article

COMPARISON OF TAPP AND OPEN MESH HERNIOPLASTY FOR INGUINAL HERNIAS

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Background: The objective is to determine the outcome of TAPP and Open Methods (Lichtenstein) for inguinal Hernia repair in terms of post operative pain, hospital stay, wound infection and recurrence. TAPP technique is newer modality in the treatment of laparoscopic hernia repair. With advantages over open methods of repair and various potential complications along with greater learning curve it has point of interest for various studies. This study focuses on 100 patients undergoing hernia repair by either method, and elaborating the outcome in terms of pain, operative time, wound infection and recurrence.

Materials and Method: A total of 100 patients were operated on between July 2005 and August 2010. They were divided into group A for TAPP mesh hernioplasty and group B for Lichtenstein tension free mesh hernioplasty, 50 patients in each group. All the patients were followed up at 1, 6, 12 and 24 months for outcome measures.

Results: A total of 100 male patients with mean age 50.4 underwent hernia repair. There were 58 indirect, 31 direct and 11% mixed types of inguinal hernias. The mean operating time for TAPP was 104.7 higher than in the open technique Mean=35.7 minutes. Post operative pain in majority of TAPP group was mild in 40 (80%) patients and for open technique was moderate in 27 (54%). The infection rate for the Open technique was 10%. Of the TAPP group 4 patients (8%) had early recurrence, and 1 (2%) patient in the open technique presented with recurrence after 12 months follow up.

Conclusion: TAPP technique for inguinal hernia repair is better than Open repair with regards to less pain and early mobilization of patients. The rate of infection is also less. The disadvantages include longer learning curve but it tends to vary in various centers. So the emphasis remains on the need for developing a learning environment for such techniques in order to provide better patient care.

Keywords: TAPP, Mesh Hernioplasty, Lichtenstein tension free repair.

Introduction

Hernia is the protrusion of a viscus or a part of viscus with its covering through the cavity containing it. Inguinal hernias occur in the region of inguinal canal and are divided into Direct and Indirect depending upon their relationship with the inferior epigastric artery.¹ More common in males and prevalent in the older age group; hernias are a source of nuisance to the patient due to swelling, pain and tendency to strangulate². The principles of inguinal hernia repair are reduction/excision of the sac and defect closure under minimal tension. Various methods have been described with variable success rates. Of these the most commonly employed methods are: the Lichtenstein technique, where a piece of polypropylene mesh is used to repair and reinforce the abdominal wall.³ This operation is easy, gives earlier mobility with very low recurrence.^{4,5} It is, however, associated with a slightly increased risk of infection.²

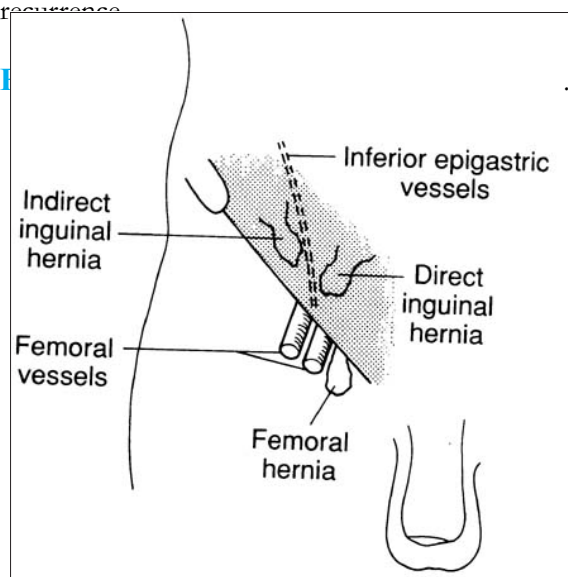
Since the advent of laparoscopy, laparoscopic hernia repair has become one of the commoner laparoscopic procedures. Various studies have shown it to be advantageous over open methods due to less post operative pain and earlier⁶⁻⁸ and earlier return to routine activities.^{9,10} Furthermore, it offers virgin areas when dealing with recurrent hernias. Bilateral hernias can be repaired without further incisions and earlier recovery. However, it has longer learning curve before the operation time can become equal to open procedures. The laparoscopic operation can expose patients to visceral injuries unlike open repairs but these can be overcome by experience.¹¹ These drawbacks compared to results and outcomes are point of debate among various authors. The purpose of this study was to determine the outcome of TAPP and Open method of Mesh hernioplasty in terms of post operative pain, operation time, wound infection, and recurrence.

infection, and recurrence.

Patients And Methods

This prospective study was carried out on 100 patients having primary or recurrent inguinal hernias, admitted in National Hospital and Medical center, Lahore from July 2005 to August 2010, through OPD. Informed consent was taken from the patients. Patients of all ages were included. Patients with Strangulated hernias, or patients with high risk (ASA 3 or above) were excluded from the study.

All patients were randomly divided into group A for TAPP mesh hernioplasty and group B for Lichtenstein tension free mesh hernioplasty, 50 patients in each group. Co-morbidities were addressed and treated before surgery. All operations were carried by experienced surgeons well acquainted with both techniques under general anesthesia. The open repair was standard Lichtenstein repair and same mesh (4x6 inch polyester) was used in both groups. The TAPP technique was as follows: closed pneumoperitoneum was created, first 10mm trocar is inserted in sub-umbilical position, visualization of the sac in relation to inferior epigastric artery (Direct- medial, Indirect - Lateral). The two additional 5 mm Trocars are inserted under direct vision. Next step was creating the peritoneal flap followed by sac dissection. The last step was to place the mesh and its anchorage with Endotack®. The authors used a modification in the anchorage that if the sac was large enough i.e. it was inverted and tacked with the abdominal wall to prevent future recurrence.



The outcome variables included: (1) Post operative Pain (2) Operation time (3) Wound infection with purulent discharge and wound dehiscence and (4) Recurrence over 24 months follow up. All patients received 3 doses of prophylactic broad spectrum antibiotics. Follow- up was done at 1, 12, and 24 months for infection and recurrence in both groups.

Results

A total of 100 patients were operated for inguinal hernias from July 2005 to August 2010. All patients were males, with mean age 50.4 (SD=+11.6, Range 22-72) 88 patients had primary and 12 had recurrent hernias following previous repairs. Co-morbid conditions included hypertension (20 patients), Diabetes Mellitus (13 patients) and both in 10 patients. The major risk factor for the inguinal hernias was chronic cough and heavy weight lifting only in the older age group patients. There were 58 indirect, 31 direct and 11% mixed types of inguinal hernias. The mean operating time for TAPP was 104.7(SD=+13.68 minutes, range 85-125minutes) significantly higher than in the open technique Mean=35.7, SD=+8.9 minutes, range 25-53 minutes). Post operative pain in TAPP group was mild in 40 (80%) patients requiring simple analgesia, moderate in 9 (18%) requiring IM pain relief and severe in 1 (2%) requiring IV opiates. The pain in the open technique was mild in 7 (14%), moderate in 27 (54%) and severe in 16 (32%) patients controlled in the same way as that of TAPP. The infection rate for the Open technique was 10%; that was controlled by superficial wound debridement and antibiotic therapy following culture and sensitivity whereas 1 patient has superficial infection requiring antibiotics therapy only, at the umbilical port site in TAPP. There was no

Table-1: Operative time in TAPP and Open techniques.

	TAPP Group A	Open Group B
Operative Time (Minutes)	104.7±13.68	35.7±8.9

Table-2: Post operative pain in patients with TAPP and Open techniques.

Post Operative Pain	TAPP Group A	Open Group B
Mild	40(80%)	7 (14%)
Moderate	9 (18%)	27 (54%)
Severe	1 (2%)	16 (32%)

within 4 weeks, and 1 (2%) patient in the open technique presented with recurrence after 12 months follow up.

Table-3: Infection and recurrence in TAPP patients.

	1st Month	6 Months	12 Months	24 Months
Wound Infection	1(2%)	Nil	Nil	Nil
Recurrence	4 (8%)	Nil	Nil	Nil

Table-4: Infection and recurrence in Open Technique

	1st Month	6 Months	12 Months	24 Months
Wound Infection	10 (20%)	Nil	Nil	Nil
Recurrence	Nil	Nil	Nil	Nil

Discussion

Newer modalities for hernia repair have been a point of interest for many surgeons and have initiated various meta-analysis. One such analysis was done by McCormack K et al¹² in order to identify various outcome measures. According to this analysis, laparoscopic techniques take longer time than the open methods. The risks identified for laparoscopic repair were serious in terms of visceral damage but rare.^{12,13,14}

The operating time has been calculated to be much longer in various centers e.g. mentioned by Paganini AM et al.¹⁵ This enhanced operating time is attributed to the longer laparoscopic learning curve as compared to open technique.

Post operative pain has been lot less in laparoscopic repairs as concluded by Schmedt CG et al¹⁶ and Paganini AM et al.¹⁵ This is due to the smaller size incisions and less dissection involved in approach. This also leads to early mobilization and earlier return to normal activities.^{11,14} In this study pain has been mild to moderate in laparoscopy as compared to open techniques.

In this study the incidence of wound infection was more in open as compared to laparoscopic

technique (20% Vs 2%). This observation was associated with patients having diabetes mellitus that results in poor wound healing. However Sakorafas GH et al¹⁷ reported no infection in their study of laparoscopic hernia repair.

Recurrence rates were variable as compared to mesh and non mesh procedures.¹² According to Kapiris SA et al¹⁴ the recurrence was initially 5% that later got reduced to 0.16% as the surgeons got more familiar with the procedure. This observation has been true in this study due to the same reason. Initially there was recurrence of 25% in first 16 patients (4 recurrences) but no recurrence in the last 34 cases. This observation supports the fact of longer learning curve. In addition a modification was also made by the authors by tacking the large hernial sac to the anterior abdominal wall before applying the mesh. This resulted in greater stability after repair. The recurrence rate of open technique by Lichtenstein repair remained low in this study (2%) as well as in the one performed by Sakorafas GH et al¹⁷ i.e. 0.2% as compared to TAPP. This major difference is due to less sample size.

Conclusion

TAPP technique for inguinal hernia repair is better than Open repair in regards to less pain and early mobilization of patients. The rate of infection is lot less as well. The disadvantages include longer learning curve but it tends to vary in various centers. So the emphasis remains on the need for developing a learning environment for such techniques in order to provide better patient care.

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