ORIGINAL ARTICLE

TAPP Repair of Inguinal Hernia: Learning Curve and Complications in a general hospital

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ABSTRACT

Aim: To study our experience TAPP repair of inguinal hernia in surgeons who have started this procedure from the very beginning independently and outcome regarding postoperative complications in TAPP repair of inguinal hernias especially comparing the use of absorbable tackers in one group and non-absorbable tackers in another group.

Methods: We described our standard TAPP technique and evaluated the results of post-operative outcome regarding pain and complications.

Results: We retrospectively reviewed our surgical unit experience of TAPP; we included in our study 63 patients. The sample was divided in to two groups: TAPP using absorbable tackers and TAPP using non-absorbable tackers. The group in which absorbable tackers were used are 44 in number and group with non-absorbable tackers were 19 in number. Mean follow up for patients was 12 months regarding post-operative complications. The recurrence rate was up to 5.2% in all patients. That high rate is the cause of early learning curve of the operating surgeon and improper mesh fixation. There was no major vascular but one case of small bowel injury which later died in due course of treatment of this complication. Mean operative time was average of 91 minutes. Postoperative pain in group in which non-absorbable tackers were used was not significantly higher than group with absorbable tackers. Recurrence was reported in 3 cases and all were within third week of surgery.

Conclusion: In our experience TAPP procedure is safe and feasible procedure and there is a significant difference in postoperative pain when non-absorbable tackers are used, and post- operative complications in the early phase of learning curve do happen and its advisable to go through this phase under supervision of experienced surgeon over a period of at least one year.

Keywords: TAPP, inguinal hernia, tacker

INTRODUCTION

Minimal invasive approach in surgery ensures better aesthetic results, faster return to work and a lesser post-operative pain[1,5,8]. Aim of the study is to evaluate the feasibility of our technique and the success and complications encountered in learning curve of surgeons.

METHODS

Our work is retrospective study conducted at King Faisal Medical Complex, Taif, Saudi Arabia. In the beginning we described our technique in detail. We reviewed our experienced from March 2016 to March 2018, in patients, who underwent TAPP. All procedures were conducted by surgeons who got certified training in TAPP and started the procedure first time independently as a consultant in our hospital.

We used polypropylene light weight mesh[4] in all cases and fixation of mesh was done in some cases by absorbable tacks and in other cases by non-absorbable tacks. The results of study were based on outcome regarding patient satisfaction and complications. Post-operative complications were divided into, early (recurrence, seroma, scrotal hematoma, major vascular injury, urinary bladder or bowel injury), and late (recurrence, chronic pain, incisional hernia, mesh infection, intra-abdominal infection).

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Surgical technique: Pneumoperitoneum created by Veress needle after 1cm left paraumbilical incision, where later 10mm camera port inserted. Intra-abdomen pressure is maintained at 12mmHg. Two 5mm trocars in left and right lumbar areas. Peritoneal incision from anterior superior iliac spine to median ligament. Dissection down till upper side of Psoas muscle. Dissection of sac till complete reduction of sac, taking care of vas deference. In bilateral hernias separate pockets were made for each side and mesh placement and fixation finished individually one after the other.

Mesh used are Ultrapro light weight mesh with size 11*13cm, which is rolled and pushed via camera port and placed in such a way that all potential hernial orifices are covered in inguinal , femoral and obturator canals areas. Mesh fixed by tacks in 44 cases by absorbable tackers and in 19 cases bynon-absorbable tackers according to availability of stock, which is included in the study a factor for chronic pain.On average mesh is fixed by two tackers at pubic bone on same side and one tacker at area between inferior epigastric artery and median umbilical ligament and two tackers lateral to inferior epigastric artery and avoiding the dooms triangle (internal iliac vessels) and angle of pain. Peritoneum closed over the mesh by tackers as well using counter pressure each time.

RESULTS

Cases of inguinal hernia repair done laparoscopically in King Faisal Medical complex, in Taif city of Kingdom of Saudi Arabia, from January 2016 to November 2017 using TAPP approach were included in the study. The total number of patients was 63. 44 patients were operated

using absorbable tacks and 19 patients were operated using non-absorbable tacks. Average age of patients were 47-50 years and mostly patients were male 93% to 94%. Patients were chosen with BMI of 25-26.

70% to 84% of patients were having unilateral hernia and most of them were left sided, and only 15% to 20% of patients were having bilateral hernia in absorbable and non-absorbable tacks group respectively. Total 5 patients of recurrent hernia which previously operated by open technique of inguinal hernioplasty.

The mean operative time was 91 minutes in absorbable group and 89 minutes in non-absorbable group. There was no major vascular injury and only in one case there was minor vessel injury in group where we use non-absorbable tacks. There was one case of nerve injury in absorbable group and two cases of nerve injury in non-absorbable group. One case of small bowel injury due extensive intra abdominal adhesions secondary to previous surgery (appendectomy) diagnosed intra operatively repaired and later leaked again and patient went into sepsis and died after a long hospital stay.

Most of the cases were booked as day case discharged home safely and few admitted due to persistent post-operativepain and average hospital stay was 1.5 to 2 days. Early recurrence within week of surgery was noted in total 3 cases which were operated by open technique and total of 8 cases got seroma formation which was managed conservatively and resolved over 3-6 weeks. Two patients in non-absorbable tacks developed scrotal hematoma and echymosis also managed conservatively.

Total 5 patients developed chronic pain but the ratio was more 21% in patients with non-absorbable tacks, and main complaint of patient remain and long standing discomfort in the lower abdomen in groin area.

Table 1 Demographic data

	Absorbable tacks	**Non-absorbable tacks**
Age	50(27-73)	47(31-64)
Sex M/F	41/3	18/1
BMI	26	25

Table 2 Types of defect

	Absorbable tacks	**Non-absorbable tacks**
Unilateral inguinal hernia	31/44 (70.4%)	16/19 (84.2%)
Bilateral inguinal hernia	9/44 (20.4%)	3/19 (15.7%)
Recurrent hernia	4/44 (9.0%)	1/19 (5.2%)

Table 3 Intraoperative complications

	Absorbable tacks	**Non-absorbable tacks**
Mean operative time	91	89
Major vascular injury	0	0
Minor vascular injury	0	1/19 (5.2%)
Nerve injury	1/44 (2.2%)	2/19 (10.5%)
Bowel injury	1/44 (2.2%)	0

Table 4 Early postoperative complications

	Absorbable tacks	**Non-absorbable tacks**
Total hospital stay	1.5 (days)	2 (days)
Early recurrence	2/44 (4.5%)	1/19 (5.2%)
Seroma	5/44 (11.3%)	3/19 (15.7%)
Scrotal hematoma /ecchymosis	0/44	2/19 (10.5%)

Table 5 Late complications

	Absorbable tacks	**Non-absorbable tacks**
Chronic pain	3/44 (6.8%)	4/19 (21.0%)
Late recurrence	2/44 (4.5%)	1/19 (5.2%)
Port site hernia	0	0
Late reoperation rate	2/44 (4.5%)	1/19 (5.2%)

DISCUSSION

Laparoscopic groin hernia repair is a difficult procedure which require adequate learning curve and background of experience in laparoscopic surgery other than groin hernias[1]. But it is logical that laparoscopic hernia repair should be part of the surgical training in futureto come[2]. In our experience in hands of surgeons in the initial period of their learning curve, if selection of patients is good in terms of age and size of hernia the results in terms of operative time and complications are acceptable and are comparable to experienced centers.

As expected, complications like chronic pain and major or minor vascular injuries, associated with non-absorbable tacks, were seen in the study and it is agreed that non-absorbable tacks if possible should be avoided in groin hernias for fixation of mesh and later covering of peritonium it lead to chronic groin pain.

The short term and long-term complications are in agreement with literature and the young surgeons can be allowed to perform TAPP repair of groin hernias but under supervision with proper selection of patients in terms of age, size of sac and comorbid illness and obesity. In our study most of the patients were not in extreme of age with no co morbid illnesses and none of patients were having coagulation disorder.

In our study the emphasis was given to meticulous and bloodless dissection of peritoneum and reduction of hernia sac, taking adequate time and very clear operative field. Furthermore the mesh was fixed properly and left no gaps in closure of peritoneum.

Surgery in recurrent open hernia cases and in elderly was more difficult especially in reduction of sac, but remain most of time safe, although took more time in these cases. The only case of bowel injury with subsequent death was in an elderly male with history of previous intra-abdominal surgery and intra-abdomen adhesions. But in rest of elderly patients the TAPP remain a safe approach for groin hernia repair[16,17].

CONCLUSION

In conclusion TAPP repair for groin hernias is safe technique and should be part of learning in young surgeons and the type tacks used should be absorbable and non-absorbable should be avoided if possible. In our study non-absorbable tacks were used due to lack of supply of absorbable tacks and only available stock of non-absorbable tacks, which gave us opportunity study its effects on patient outcome and complications. Wound infection is not reported in any of the cases and early mobility were also the factors comparable to literature.

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