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TRANS ABDOMINAL PRE PERITONEAL (TAPP) VERSUS OPEN HERNIOPLASTY – 1 YEAR FOLLOWUP IN A TERTIARY CARE TEACHING HOSPITAL IN NORTH EAST INDIA

Surgery

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ABSTRACT

Introduction: Trans Abdominal Pre Peritoneal repair versus Open hernioplasty remains a debated question especially in resource limited setups. Our data will help in evaluating the outcome of these procedures and formulating management decisions.

Methods: OT records of a three year span of patients who were followed up for at least 1 year were analysed. Patients who underwent TAPP were compared to a control group and various outcome parameters were evaluated.

Results: 30 patients were listed (males = 20, females = 10). Significant difference was found in duration of surgery, rates of surgical site infection, seroma formation, pain at discharge and duration of hospital stay. No significant difference was found in terms of chronic pain, recurrence and mesh infection.

Conclusion: TAPP offers excellent benefits against open hernioplasty even with conventional instruments. Long term results need to be evaluated with studies with longer follow ups.

KEYWORDS

TAPP, Lichtenstein Hernioplasty, Post hernioplasty complications

INTRODUCTION

Inguinal hernia remains an eternally current problem in surgery, with changing trends especially in management. Globally, more than 20 million groin hernia surgeries are performed worldwide(Simons, 2016) . Lifetime occurrence of groin hernia is 27 to 43% in men and 3 to 6% in women. Community based incidence and risk analysis studies are lacking from India and especially from the north eastern part of the country. A study from a similar centre in India had found that abdominal wall hernias constituted 22% of the operative workload of the general surgery department, out of which close to 80% were inguinal hernias.(Sangwan, Mahendirutta, Garg, Sangwan, & Garg, 2013). Studies have reported good results for laparoscopic as well as open hernia repair surgeries and even in the present time, the question of open versus laparoscopic hernia repairs have been a matter of debate in both Western but particularly in developing countries. Compared to Open hernioplasty, TEP and TAPP hernia repairs are challenging surgical procedures with clear learning curves and more possibility of life-threatening complications. Recurrence rates after laparoscopic repair are strongly dependent to the surgeon's experience.(B Nsadi, Detry, & Arung, 2017) Surgeons have also questioned the need for minimally invasive techniques when procedures under local or regional anaesthesia have produced the same results.(Morrison, 2018)

In the modern times of advanced minimally invasive surgery, hernia repair techniques have progressed in complexity and precision, including robotic methods. However, due to constraint of resources, conventional instruments and methods remain a mainstay in the operating rooms of developing countries. The results obtained from studies from these centres are important in establishing whether hernia surgery by minimal access techniques hold advantage over open surgery.

The outcome of hernia surgery is primarily measured by the incidence of post operative complications, especially pain and recurrence. Typical reported rates of recurrence in large prospective or retrospective studies range from 0.5 to 5% . (Jacob, Davis, Dakin, & Bates, 2019)Our study is a retrospective analysis of TAPP procedures done in a tertiary care teaching hospital in the north eastern part of India comparing them with open procedures.

METHODS

Our study is a retrospective case control study of all TAPP cases done from February 2015 to January 2018 in the department of General Surgery, Assam Medical College. Secondary data was taken from inpatient and outpatient records and operative notes. Firstly, all cases in the mentioned duration between the age groups of 18 to 60 years with no concurrent surgical co-morbidity, who had undergone TAPP were listed and their medical records were examined in detail. Then, suitable controls were randomly selected from the patients who had undergone open hernioplasty in the same duration, matching for age, sex, co-morbidities and the surgical unit and examined. Patients presenting with complicated hernia were excluded. Patient records were followed up for a period of 1 year from discharge.

The patients were then compared in the following aspects: operative time, intraop and postop complications, morbidity at discharge, duration of hospital stay and morbidity at followup.

Appropriate inferential statistical methods were applied (t test and chi square test). P value less than 0.05 was considered as significant.

Operative procedures followed: Preoperative antibiotic shot was given at time of incision For open repair: Lichtenstein mesh repair(Simons, 2016) was done in all controls with a 15x7.6 cm polypropylene mesh cut into appropriate size and fixed with 2-0 round body prolene sutures under spinal anesthesia.

For Laparoscopic repair: TAPP(Jacob et al., 2019) was done using an infraumbilical 10mm port for camera and two 5mm working ports just below the level of the umbilicus at the lateral border of the rectus sheaths under general anesthesia. Mesh used was 15 x 15 cm polypropylene mesh cut to 12 x 15cm and fixation was done by absorbable tackers or sutures. If deemed necessary, a 14F ryles tube drain was placed. In direct hernias, the sac itself was tacked to prevent seroma formation.

Only monopolar electrocautery was used as an energy source in both the approaches.

All patients were discharged after satisfactory postoperative recovery with a short course of oral antibiotics, analgesics on an as-needed basis and scrotal support application for two months. Patients were called for follow up at 2 weeks, 6 weeks and 6 months and 1 year.

RESULTS

A total of 30 cases of TAPP were included in the study in the study period following out of which 20 were males and 10 were females.

Table 1: Demographics

Broad parameter	Subcategory	No. of cases
No of cases		30
Average age		45.5 years
Gender	Males	20
	Females	10

History	Average Duration of symptoms before presentation in months	9
Primary/Recurrent	Primary Hernia	28
	Recurrent Hernia	2
Laterality	Unilateral	26
	Bilateral	4
Direct/ Indirect	Direct	6
	Indirect	14
	Mixed	10
Anthropometry	Average weight in kg	54
	Average BMI	25.6
Comorbidities	Hypertension	12
	Diabetes	7
	Obesity	8

Table 2: Operative results

Category	Parameter	TAPP group	Control (LHP) group	Whether difference is significant? (p<0.05)
Intra Op	Mean duration of surgery in minutes	98.85 (+/-32.83)	50.50(+/-15.64)	Yes
	No. of cases with intra operative complications	0	0	No
During Hospital Stay	Median Pain (VAS) at 6 hours	2	3	No
	Urinary Retention	4	4	No
	Surgical site infection	1	4	Yes
	Seroma formation	3	7	Yes
	Testicular pain or swelling	2	6	Yes
	Median Pain (VAS) at discharge	0	2	Yes
Duration of hospital Stay	2.20 (SD=0.70)	4.15 (SD=1.50)	Yes	
During follow up	Chronic pain	8 (26.67%)	6 (20%)	No
	Mesh infection	0	1	No
	Recurrence	1	0	No

In the TAPP group, in two cases there was an injury to the inferior epigastric artery which was controlled with clips.

The surgical site infection cases seen with the TAPP group (2 cases) were both in the 10mm port and managed conservatively.

Only one patient had come with recurrence within the follow up period of 1 year, in the TAPP group. This patient was later treated with LHP and has had no complications since then.

DISCUSSION

The results are a rough picture of the clinicoepidemiological profile of patients who are operated for inguinal hernia in our setup. As the patients are given a choice of laparoscopic and open approaches in out setup and they take their pick mostly based on financial constraints, and also because of the matching, the epidemiological profile does not accurately associate with the type of surgery done for these patients. Hence the discussion will be limited to an observational value for the clinical parameters and a comparative analysis is valid only for the operative and post operative results.

Duration of surgery: Clearly, the duration of TAPP is significantly longer than LHP. This is universally seen throughout literature and is associated with the steep learning curve for TAPP.(Arung, Dinganga, Ngoie, Odimba, & Detry, 2015; Bansal, Krishna, Misra, & Kumar, 2016) Our values of LHP at an average of 50.50(+/-15.64) min and TAPP at 98.85 (+/-32.83) min agrees with Hamza et al, 2010 (Hamza, Gabr, Hammadi, & Khalil, 2010)and Salma et al, 2015(Salma, Ahmed, & Ishtiaq, 2015). Results are however indicative of slightly longer times than in centres from developed countries. This can be attributed to the limited range of energy sources and lower case volume in our setup due to affordability issues.

There was no major intraoperative complication in any of the cases. This showed the feasibility of TAPP in a growing centre in experienced hands even with conventional instruments. Similar results were found by Singh et al in 2016 from a centre in the same state.(Singh, Prakash, & Singh, 2016)

Pain in the postoperative period after surgery during admission was well tolerated in both groups. Studies in nearby developing countries have shown similar results (Koju, Koju, Malla, Dongol, & Thapa, 2017; Salma et al., 2015). Early pain in TAPP is usually deep abdominal type on day 0 and 1.(TOLVER, ROSENBERG, & BISGAARD, 2012) At discharge, the pain in the TAPP group had a median value of 0 and that of the control had a median pain of 2. This shows that patients in the TAPP group were conferred the benefits of laparoscopic surgery.

Duration of hospital stay was also less in the TAPP group compared to that of the control group. Shakya et al ion 2014 in a study from Nepal had found comparable results(Shakya, Sood, Bhattarai, Agrawal, & Adhikary, 2014). However, the literature for this parameter is debated(B Nsadi et al., 2017; Berthier Nsadi, Detry, & Arung, 2017), where they had found no difference in hospital stay and postoperative morbidity and advocate that in developing countries, the role of LHP is still more advantageous than TAPP. In our study, the duration of hospital stay was 2.20 (SD=0.70) days in the TAPP group and 4.15 (SD=1.50) days in the control group.

The rate of early complications like seroma formation, testicular pain and surgical site infection were less in the TAPP group than in the control group. This corresponds well to both recent and early studies (Cai, Foster, Kethman, Weiser, & Forrester, 2018; Muschalla, Schwarz, & Bittner, 2016) and show that laparoscopic surgery is still a better option for immediate postoperative results in the hospital period.(McCormack et al., 2005)

Comparisons of outcomes assessed at follow up included chronic pain, (defined as pain lasting beyond 12 weeks(Manangi, Shivashankar, & Vijayakumar, 2014)), deep (mesh) infection and recurrence. Our data on chronic pain (no significant difference between TAPP and control group) show no difference between the two groups, inc contrast to large meta analyses like that of Scheuerman et al in 2017(Scheuermann, Niebisch, Lyros, Jansen-Winkeln, & Gockel, 2017) but a significant incidence rate of 6.7% in TAPP group and 10% in control group. Various other reviews have pegged these values at 31% after Lichtenstein repair and in 15% after TAPP repair(Koninger, Redecke, & Butters, 2004)

The incidence of recurrent hernia after primary repair of a groin hernia varies from 1% in specialized centers to 30% in general surveys.(Gopal & Warrier, 2013). In our study, only 1 patient in the TAPP group had recurrence, but our study is limited in terms of follow up time and hence proper comparison of recurrence rates cannot be commented upon.

CONCLUSION

Laparoscopic hernia repair by TAPP method is a safe and feasible option even in centres with conventional facilities and offer excellent post operative and long term results. The healthcare related cost is also reduced due to a shorter length of hospital stay. Studies with longer followup times are needed to assess the procedure better. With time and better healthcare policies, more and more patients can be offered minimally invasive methods for treatment of inguinal hernia.

No conflict of interest are declared by any of the authors.

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