



CONVERSION OF TOTAL EXTRAPERITONEAL (TEP) TO TRANSABDOMINAL PREPERITONEAL (TAPP) FOR REPAIR OF INGUINAL HERNIA; FREQUENCY AND CAUSES.

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ABSTRACT... Objectives: Our study aims to determine the incidence of and reasons for the conversion of hernia operations from laparoscopic guided total extraperitoneal (TEP) to transabdominal preperitoneal inguinal hernia repair (TEPP). **Study Design:** Cross-sectional study. **Setting:** KVSS Site Hospital Karachi, Pakistan. **Period:** From August 2016 to November 2018. **Material & Methods:** The sampling technique utilized was consecutive non-probability sampling. The study population consisted of patients between the ages of 22 and 50 years, males, having unilateral inguinal hernia, both direct and indirect presentation. A complete history and physical examination was performed and recorded in a pre-designed proforma for all the patients. Laboratory investigations were performed per routine. The patients underwent laparoscopic total extraperitoneal hernia repair and were noted for complications and conversion to transabdominal preperitoneal inguinal hernia repair. Data was analyzed using IBM SPSS statistics version 20. Chi-square test was used to analyze categorical variables, while mean and percentages were used for numerical data. A p value of less than 0.05 is considered to be statistically significant. **Results:** The study population was n= 150, mean age of the patients was 36.25 +/- 7.08 with a minimum of 22 and a maximum of 50 years. The direct hernia was present in 47.33% (71 patients) while an indirect hernia was present in 52.67% (79 patients). Out of the total patient population, 21 (14%) of the patients (having a p-value of 0.013) were converted to the TAPP procedure of which 10 (14.08%) has a direct hernia and 11 (13.92%) had an indirect hernia respectively (having a p-value of 0.953). The most common reason for conversion was peritoneal tear, hemorrhage and instrument failure. **Conclusion:** According to the results of our study, 14% of cases of direct and indirect hernia had to convert from TEP to TAPP procedure, and the main reasons for this conversion were found to be hemorrhage, peritoneal tear and instrument failure.

Key words: Hernia Repair, Inguinal Hernia, TEP, TEPP, Total Extra Peritoneal, Trans Abdominal Preperitoneal Inguinal Hernia Repair.

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INTRODUCTION

Symptoms of an inguinal hernia can be found in 66% of the patients, however, in the rest of the population, it is symptomless.¹

These symptoms include discomfort and pain of varying degrees exacerbated by certain activities such as exercise, coughing and constipation among others. The most common type of spontaneous herniae is the inguinal hernia, occurring in about 90% of the patient population.²

Hernia can be managed conservatively, or

through surgery. Pain and strangulation are the major factors that prompt the surgeon to perform the repair operation.³

There are two methods for repair of hernia namely the open tension-free repair by Lichtenstein repair and the second one being a laparoscopic procedure.⁴

The laparoscopic procedure is used in the treatment of recurring hernias as there is minimal scar tissue formation after the procedure which facilitates dissection and placement of the

mesh. The most commonly used techniques for laparoscopic repair are the total extra peritoneal (TEP) and trans abdominal preperitoneal inguinal hernia repair (TAPP).^{5,6}

Many surgeons prefer the total extraperitoneal technique (TEP) as the results are better, however, the procedure requires precision and careful technique as the working space is narrow and the pelvic anatomy might be unfamiliar to some surgeons.^{7,8,9,10}

For patients who have undergone prior abdominal surgeries such as radical prostatectomy or cesarian section, the TEP procedure becomes difficult for the surgeons to perform. In this study, we have focused on the conversion of total extra peritoneal repair to trans abdominal preperitoneal inguinal hernia repair discussing the various aspects surrounding this change of procedure, which is prevalent in 11% of the TEP procedures.^{11,12}

We hope to enlighten the surgical community around this conversion of procedure and hopefully provide a few recommendations as well.

MATERIAL & METHODS

The type of study is a cross-sectional study conducted at a large tertiary care hospital in Karachi Pakistan from August 2016 to November 2018. The ethics approval for the study was provided by the ethics committee. The sampling technique utilized was consecutive non-probability sampling. The study population consisted of patients between the ages of 22 and 50 years, males, having unilateral inguinal hernia, both direct and indirect presentation. The patients who were excluded were those who were obese a BMI of greater than 30 kg/m², previous lower abdominal surgical procedures, transurethral electrovaporization of the prostate (TVP) and appendectomy, patients with comorbidities, terminally ill and chronic conditions such as known cardiovascular, respiratory and psychiatric diseases. All the patients signed informed consent to participate in the study in a language they could comprehend.

A complete history and physical examination was performed and recorded in a pre-designed proforma for all the patients. Laboratory investigations were performed per routine such as complete blood count, lipid profile, liver function tests, urea, creatinine and electrolytes among others. Specific examinations and investigations for the surgical procedure were performed using a standard technique.¹³

The patients underwent laparoscopic total extraperitoneal hernia repair and were noted for complications and conversion to transabdominal preperitoneal inguinal hernia repair. Data were analyzed using IBM SPSS statistics version 20. Chi-square test was used to analyze categorical variables, while mean and percentages were used for numerical data. A p value of less than 0.05 is considered to be statistically significant.

RESULTS

The study population was n= 150 (all male patients), the mean age of the patients was 36.25 +/- 7.5 with a minimum of 22 and a maximum of 50 years. The majority of the patients were residents of urban areas that is 90 (60%) while the rest were from surrounding rural 60 (40%), 72 (48%) were smokers while the rest were non-smokers. 48 (32%) were hypertensive while the rest were normotensive. Direct hernia was present in 47.33% (71 patients) while indirect hernia was present in 52.67% (79 patients). The patient demographics according to age group is 41(27.33%) patients in between 22 and 30 years of age, 70(46.66%) of patients between 31 and 40 years of age and 39(26%) of patients between 41 and 50 years of age respectively.

Out of the total patient population, 21 (14%) of the patients (having a p-value of 0.013) were converted to the TAPP procedure of which 10 (14.08%) has direct hernia, and 11 (13.92%) had indirect hernia respectively (having a p-value of 0.953). The most common reason for conversion was peritoneal tear, other variables can be found in Table-I.

Variable	Conversion to TAPP	
	Yes	No
Age Group		
22 to 30 years	6 (14.6%)	36 (87.80%)
31 to 40 years	5 (7.14%)	66 (94.28%)
41 to 50 years	10 (25.64%)	30 (76.92%)
Type of Hernia		
Direct hernia	10 (14.08%)	61 (85.91%)
Indirect hernia	11 (13.92%)	69 (87.34%)
	Type of Hernia	
	Direct	Indirect
Reason for Conversion		
Hemorrhage		
Yes	4 (5.63%)	4 (5.06%)
No	67 (94.36%)	76 (96.20%)
Peritoneal Tear		
Yes	5 (7.04%)	6 (7.59%)
No	66 (83.54%)	74 (93.67%)
Instrument Failure		
Yes	1 (1.4%)	1 (1.26%)
No	70 (98.59%)	78 (98.73%)

Table-I. Patient demographics and other study variables.

DISCUSSION

In our study all the patients studied were male having a mean age of 36.25 +/- 7.5 years and age range of 28 years with a lower limit of 22 and an upper limit of 50 years respectively. The type of hernia was a direct hernia in 71 (47.33%) patients and an indirect hernia in 79 (52.66%) of the patients. In a similar study by Dulucq et al indirect hernias were more common than a direct hernia.^{14,15} In a study by Ates et al they found the frequency of conversion of the procedure to be 11% while in our study the conversion rate was found to be 14%, the reasons for the conversion were hemorrhage secondary to injury to the inferior epigastric vessel, which causes obstruction to the field of vision. Peritoneal tear and instrumental failure were also the major reasons for conversion to TAPP procedure as surgeons were not able to perform the procedure in a narrow environment and the instruments were not able to function properly. When it comes to reasons for conversion to TAPP procedure hemorrhage 8(5.33%) was the major culprit,

it was present in 4(5.06%) of patients indirect hernia and 4(5.6%) of patients with direct hernia, the p-value of this conversion was found to be 0.862. Peritoneal tear was found in 11(7.33%) of patients among whom 5(7.04%) had direct hernia and 6(7.59%) had indirect hernia respectively having a p-value of 0.9140. Instrument failure was present in 2(1.33%) of patients among whom 1(1.4%) had direct hernia, and 1(1.26%) had indirect hernia having a p-value of 0.933. In a recent large meta-analysis comparing the two procedures the authors studied the results of ten randomized controlled trials and observed that patients undergoing TEP procedure showed no significant difference between operation time, hospital stay time, recovery period and rate of complications as compared to TAPP. There was no significant association between recurrence rates and postoperative pain scores respectively. They found both the procedures to be equally safe.^{15,16} We propose that surgeons be well prepared in advance for a conversion, and inform the patient about possible conversion of the procedure along with the possible complications. The main limitation of our study was a small sample size and the inclusion of only male patients.

CONCLUSION

According to the results of our study, 14% of cases of direct and indirect hernia had to convert from TEP to TAPP procedure, and the main reasons for this conversion were found to be hemorrhage, peritoneal tear and instrument failure.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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