



A PROSPECTIVE STUDY IN EXTENDED TOTAL EXTRAPERITONEAL REPAIR IN UMBILICAL HERNIA.

General Surgery

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ABSTRACT

Introduction- A minimally invasive technique, popularly known as e-TEP, to place a mesh in retro muscular space has long been under discussion between experts. Several studies have concluded that the laparoscopic approach to ventral hernia repair (LVHR) produces earlier discharge from the hospital, potentially faster recovery, and equivalent recurrence rates in comparison to open approaches. **Objectives-** 1. To identify the variables affecting the outcome of Extended Total Extraperitoneal Repair in Umbilical Hernia 2. To determine complications of Extended Total Extraperitoneal Repair in Umbilical Hernia. **Methodology-** A prospective study was conducted on 10 patients with umbilical hernias admitted to a tertiary care hospital. All the details about age, sex, intra-operative parameters like defect width, operative time, etc. & post-operative complications were noted. **Results-** In our study, the mean age was 42.7 ± 10.5 yrs. Male (60%) preponderance was seen. The average defect width was 3.8 ± 2.2 cm. While the mean operative time was 97 min. & mean duration of hospital stay was 3.5 ± 0.9 days. Co-morbidities were seen in 30% of patients. The mean of post-operative VAS score was 1.9 ± 0.2 days. Out of the total of 10 patients, a single patient developed a seroma at the umbilicus. None of the patients developed any other complication. **Conclusion-** Our study is an addition to the evidence that Extended Total Extraperitoneal Repair improves outcomes of patients with an umbilical hernia. Precise knowledge of anatomy is inevitable for a safe and effective repair.

KEYWORDS

Complications, Extended TEP Repair, Outcome, Umbilical hernia.

INTRODUCTION

Umbilical hernias account for approximately 6% to 14% of all abdominal wall hernias in adults, and almost 90% of adult umbilical hernias are acquired^{1,2}. Despite umbilical hernia being common, there are no set surgical guidelines for its repair and there is no consensus on the best type of repair³. Recurrence rates range from 1% to 43%, but the literature offers little consensus on factors that affect recurrence. Asolati et al¹ found that type 2 diabetes, hyperlipidemia, and human immunodeficiency virus-positive status may be a factor in increased recurrence rates. Obesity (body mass index [BMI]; calculated as weight in kilograms divided by height in meters squared) >30) has also been associated with higher rates of recurrence^{4,5}.

In addition, studies have shown that hernia defects larger than 2 cm have increased rates of recurrence and that mesh repairs may decrease rates of recurrence^{6,7}. A recent study⁸ found that patients with another known hernia at the time of repair were at increased risk of recurrence. The totally extraperitoneal (TEP) technique for repair of inguinal hernia was first reported in 1992 by Dulucq⁹ and has since been continuously refined and standardized. In fact, it has become one of the gold standard procedures for the treatment of inguinal hernia in adults. The extraperitoneal space of the lower abdomen and pelvis has a loose structure that can provide adequate space for performing large area mesh reinforcement, making it an ideal approach in the treatment of inguinal hernias.

We hypothesize that the concept of totally endoscopic anatomical repair may also be applied to treat other umbilical wall hernias. Hence the aim of the present study was to test the efficacy of TEP, various factors related to patient outcomes and the complications of TEP in treating umbilical hernias.

Methodology

This prospective study was conducted in a tertiary care medical centre and was approved by the institutional ethical review board. The inclusion criteria were as follows both males and females in the age range of 32-68 years, patients with Umbilical hernia admit in tertiary care centre, those willing to provide written informed consent. Preoperatively, all patients underwent whole-abdomen computed tomography (CT) to measure the hernia defect and aid with the operative planning. Complete medical history and physical examinations were obtained to identify any abnormalities that could affect the surgery. All patients provided informed consent

preoperatively. Patient demographics, hernia size, intraoperative findings, operative details, and perioperative and postoperative data were collected prospectively. The main outcome of the study included operative difficulties, postoperative complication rates and hernia recurrences. Complications including hematoma, infection, seroma, wound dehiscence or any serious adverse event as well as postoperative pain scores were recorded and analysed. All patients underwent clinical examination 2 weeks after surgery and were subsequently followed up by a telephone interview every 2 months during the follow-up period. A routine postoperative CT scan was performed at the second-week clinic visit to detect any complications. During the follow-up period, if a problem was identified during the telephone interview, the patient was requested to visit the hospital for further examination. Continuous variables are presented as means/standard deviations, while categorical variables are presented as numbers/percentages.

Table 1: Demographic Variables

Variable	Mean $\pm$ SD	Range
Age	42.7 ± 10.5 years	32-68 years
BMI	27.9 kg/m^2	$25-29.9 \text{ kg/m}^2$
Defect width	3.8 ± 2.2 cm	4.7-8.5 cm
Defect area	46.1 cm^2	$25.3-67.1 \text{ cm}^2$
Mesh size	540 cm^2	$335-725 \text{ cm}^2$
Operating time	97 min	90-190 min
Duration of stay	3.5 ± 0.9 days	2-5 days
VAS score	1.9 ± 0.2	1-2

RESULTS

Ten patients (06 men and 04 women; age 32–68 years) participated in this study. All operations were successfully performed without serious intraoperative complications or conversion to open surgery. The mean operative time (skin to skin) was 97 min (range 90–190 min). Patient's general demographics and perioperative data are listed in Table 1. All the anterior defects were closed using a 2-0 barbed suture. A $15 \times 9\text{-cm}^2$ self-gripping mesh was used to repair the defect. Intraoperative bleeding was minimal. Postoperative pain was qualitatively mild with the average pain visual analogue scale score under physical stress of 1.9 ± 0.2 (range 1–3) on the first postoperative day. None of the patients required intravenous analgesics. Patients were allowed an oral diet and early ambulation after recovering fully from the anaesthesia. The average postoperative length of hospital stay was 3.5 ± 0.9 days (range

1–3 days). A total of 30% presented with co-morbidities, 2 patients were suffering from hypertension and 1 had diabetics. Seroma was seen as a post operative complication in 1 patient. 40% (4 patients) were treated by extended total extraperitoneal repair by Rives and Stoppa method (eTEP-RS) and the rest 60% (6 patients) were treated by extended- total extraperitoneal repair by transversus abdominis release (eTEP-TAR). There was no need of fixation in any case. Majority of the subjects had a VAS score of 2, accounting for 70% of the cases (7 patients).

DISCUSSION

Umbilical hernias are a common problem encountered by general surgeons. Despite umbilical hernias being common, little has changed in their indications and methods of repair for many years.

Umbilical or epigastric hernias, regardless of size, with concomitant rectus abdominis diastasis require mesh repair owing to unacceptably higher recurrence rates. Hence, we hypothesized the use of e-TEP-RS and e-TEPTAR repair for umbilical hernias¹⁰.

In our patient cohort, there were 6 males and 4 females, the mean age was 42.7 years. Similar findings were documented by certain other studies where they found that fifth- and sixth-decade people were commonly effected¹⁰.

Asolati et al¹ found that type 2 diabetes, hyperlipidemia, and human immunodeficiency virus–positive status may be a factor in increased recurrence rates. In our study, 2 patients were hypertensive and 1 was diabetic, but the study was not followed up for a long period of time hence the association of co-morbidities to recurrence could not be studied.

The mean of operating time was 97 minutes and it kept on reducing with the expertise of the surgeon. e-TEP steep learning curve and the extended length of the operation time are among the disadvantages¹¹. Similar findings were reported in another study, where the mean operation time was 103.3 min (range 85–145 min)¹². e-TEP access do not require penetrating fixation. In our study also, none of the patients require fixation¹².

The mean duration of hospital stay was 3.5±0.9 days. Systemic post operative complications and duration of surgery defines the period of hospital stay, as suggested by M. Akinci et al¹³. Since the operating time was adequate and also, we did not notice any post operative complications in majority of the patients, except one patient who presented with seroma, and was discharged after 4.4 days.

Seroma occurred as a post operative complication in one patient. It was painful and causing discomfort and hence it was drained. It needed single aspiration and a tight corset for a month to which it responded satisfactorily.

Post operative pain assessment was done by visual analogue scale, Majority of the patients presented with a mean VAS of 2. The post operative pain was less due to the fact there was no utility of fixation in the cases. Similar findings were speculated in a study by Li B et al¹².

CONCLUSIONS

The Extended Total Extraperitoneal Repair improves outcomes of patients with an umbilical hernia. TEP remains an excellent repair with caveats of serious complications which are rare at < 0.5% however, they must be discussed and be part of the consent process prior to any repair taking place. This technique preserves the anatomical and physiological structure of the abdominal wall and may significantly reduce trauma and postoperative complications. However, the precise knowledge of the anatomy is crucial.

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