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MESH VERSUS SIMPLE ANATOMICAL REPAIR OF EPIGASTRIC AND PARAUMBILICAL HERNIAS

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ABSTRACT

BACKGROUND: The standard method of repair of Para-umbilical hernia (PUH) and Epigastric hernia is by the Mayo technique, using a double-breasted flap of the rectus sheath. The result of this technique in the hands of others is highly variable. The present study describes and evaluates the comparison of a Prolene mesh versus simple anatomical repair of (PUH) and Epigastric hernias. The use of a Prolene mesh in hernia repair is not a new concept with previous investigators yielding consistently excellent results in the repair of Para-umbilical and Epigastric Hernias.

OBJECTIVE: To compare the outcomes of the two modalities of surgical procedures (mesh versus simple anatomical repair) in terms of post-operative complications, hospital stay and rate of recurrence in two groups of Para-umbilical and epigastric hernia patients.

MATERIAL AND METHODS: This comparative prospective study was conducted in the Department of Surgery Saidu group of teaching Hospital Saidu Sharif Swat KPK. One Hundred and Thirty two consecutive patients having large size, Para umbilical and epigastric hernia were included for the study, from Feb 2010 to Feb 2014 in two groups, 72 (group A) for mesh repair and 60 (group B) for simple anatomical repair. All patients of these type hernias were admitted throughout patient department (OPD). Less than 4cm size hernia, Pregnant ladies, patients having strangulated hernia presented as emergency and patient unfit for general anesthesia were excluded from study.

RESULTS: Majority of patients 63% belong to age of 35 to 60 years and 87 % were females. Supra umbilical swelling was the commonest presentation 80%.Cough impulse and reducibility was positive in 90% of cases (some Epigastric hernias were irreducible). Contents of sac were omentum in 74% to 83% and small intestine 17% to 26%. Operative time was longer in group A (mesh repair) ranged from 60 to 90 minutes while that was 50 to 70 minutes in group B (simple anatomical repair). Post-operative evaluation took place after 2weeks then, 1, 2, 3months then 6monthly for 30 months (average 18 months). The number of complications requiring treatment was the primary aim. There were three recurrences observed in group A (4.16%) but six cases of group B (10%) presented with recurrence in which simple anatomical repaired was performed. The mean hospital stay for group A was 3.7 days and for group B, 4.6 days.

CONCLUSION: Mesh repair compare to simple anatomical repair, is with less hospital stay and less recurrence for Para umbilical and epigastric hernia having a defect of more than4 cm in leneaAlba.

KEYWORDS: Para-umbilical hernia, simple repair, meshplasty, complications, recuurence.

INTRODUCTION

The common ventral abdominal hernias include Para-umbilical, incisional, umbilical, and epigastric hernias. All varieties of ventral hernias are characterized by a defect in the anterior abdominal wall. A number of factors are postulated as predisposing factors for these common ventral hernias such as obesity, pregnancy, post-operative wound infection, diabetes mellitus, steroids, smoking and faulty surgical technique. Para-umbilical hernias are at the periphery of the umbilicus and hence are referred to as Para-umbilical hernias. This is five times more common in women than men and usually occur after the age of 35 years[1]. Repeated pregnancy is proposed to be a predisposing

factor for Para umbilical hernias[2]. The definition of an epigastric hernia is a protrusion of extra peritoneal fat, with or without a peritoneal pouch, between the decussating fibers or through a perforating vessel lacunae of the linea alba abdominalis, occurring from the xyphoid to the umbilical ring, without the orifice in the linea alba being connected to the umbilical ring[3]. The evidence that Para-umbilical and epigastric hernias must be repaired using a mesh, is like all other hernias [4, 5,6,7,8]. The type of mesh and the plane, in which it is inserted, is a matter of debate among surgeons over the last 3 decades and results remain variable. Until recently the mesh was inserted outside the peritoneal cavity to avoid adhesions to, and erosions into the intestines. The use of a mesh in large hernias reduces the risk of recurrence from approximately 15-40%to 1-10%[9, 10, 11]. However, less research has been performed if this also applies to small hernias. To date, most small hernias are still closed with primary sutures, because of the sometimes difficult pre-peritoneal plane in which the mesh should be placed.

Therefore, we present the study results of surgery on the large Para umbilical and epigastric Hernia, comparing Mesh versus simple anatomical repair.

MATERIAL & METHODS

This comparative, prospective study was carried out on patients admitted for the treatment of Para umbilical and epigastric hernia in a Tertiary Care hospital in Malakand division swat KPK Pakistan. The data of patient were recorded on a specially prepared proforma for this study. Informed written consent was obtained from the patients after full explanation of the details of the disease process, options of treatment, possible side effects and complications and chances of recurrences in either group. They were informed of their right to withdraw from the trial at any stage. The protocol was approved by the Institutional Ethics Committee of SGTH, SMC.

In our surgical department the consecutive patients of Para umbilical and epigastric hernia were divided in to two groups, A and B. The size of hernia were recorded by sonologist and peroperatively. The hernia defect was classified using the classification proposed by the European Hernia Society, i.e. small hernias diameter (<2 cm), medium size hernias diameter between (2–4 cm) and large hernias diameter (>4 cm)[12.] Pain Intensity, Can be broadly categorized as, mild, moderate and severe. It is common to use a visual analogue (numeric scale) to rate pain intensity where 0 = no pain and 10 is the worst pain imaginable, Mild, < 4/10, Moderate, 5-7/10, Severe, >7/10.

Meshplasty was carried out on group A (72 patients) and simple anatomical repair was performed on group B (60 patients). Prophylactic intravenous one gram Ceftriaxone antibiotic was used in all patients and continued for three days postoperatively. The information collected from both the groups included: age, gender, site of hernia, size of hernial defect, technique of repair and hospital stay. A comparison was made between two groups in terms of, pain, septic complications, hospital stay and recurrence.

The data collected was analyzed using the Statistical Package for Social Science (SPSS®), version 22. The study population was statistically described using absolute case numbers and percentages, while central tendencies were described using means, medians, standard deviations and ranges.

The required routine work up was carried out on all patients and fitness for anesthesia was discussed with anesthetist before surgery. All operations were performed under general anesthesia. After the required skin incision, the hernial sac was dissected free from surrounding structures by standard operating technique. In cases of simple anatomical repair, the edges of the fascial defect were approximated with interrupted polypropylene suture No 1 (Prolene, Ethicon®) in a tension free manner. In cases of mesh repair the fascial defect was closed first

with non-absorbable suture. An on-lay polypropylene mesh technique was used with at least 3 cm overlap from the margin of the initial defect employing 2/0 polypropylene (Prolene, Ethicon®) suture for fixation. Suction drain was retained in all mesh and selective anatomical repair cases for 2-5 days.

Patients were encouraged to move as soon as possible after surgery. The wound was inspected daily for signs of infection during hospital stay. All patients were provided with verbal and written instructions upon discharge to avoid factors predisposing to recurrence. Follow up visit was carried out in the outpatient clinic, 2 weeks after surgery, then every month for 3months and then 6monthly for an average of 18 months (range 6-30 months). A thorough history and physical examination, with particular attention to the operative site, were undertaken on every visit. Investigations, including relevant imaging studies, were carried out if clinical features were suggestive of a possible recurrence.

RESULTS

Total of 150 patients were included in the start of the study but during follow up visits 18 patients were lost to follow up (15 females and 3 males) .The remaining (132) patients consisting of 115(87%) females patients and 17(13 %) males were followed up. In group A, 72 patients {65 females (90%) and 7 males (10%) underwent only mesh repair in addition to primary repaired of defect. Age range was 35 to 60 years. All females were multiparous. The operation time was 60-90 minutes. Redivac suction drains were placed subcutaneously in all cases for an average of 2-5 days.

In group B, 60 patients {50 females (83%), 10 males (17%) underwent simple interrupted anatomical closure of hernia defect. Age range was 30 to 57 years. The operative time was 50-70 minutes. Subcutaneous redivac suction drains were placed selectively depending on the amount of dissection performed. The average hospital stay for group A was 3.7 days and for group B was 4.6 days.

All patients were called by surgeon, 2 weeks postoperatively for routine follow up to examined for any evidence of complications like pain, wound infection, seroma formation and wound hematomas and then monthly for 3 months and then 6 monthly for an average of 18 months for any recurrence (range 6-30 months).

On first visit, the patients of group A, 73% complaint of mild pain, 14.5% moderate and 2 % severe pain, while in group B only 8% patients presented with moderate pain, these were managed with oral NSAID.

Wound infection was found in 9 (12.5%) in group A and 6 (10%) in group B, these were treated with antibiotics and local wound care. Seromas developed in 3 females (4%) patients in group A and 4 patients (6.6%) three females, one male in group B. These were aspirated. In 8 (11%) females' patients of group A and 3 (5%) females of group B, we found wound hematomas, which were managed conservatively. After an average of 18 months (range 6-30 months), 3(4%) females patients in group A and 6 (10 %) patients, five females and one male of group B, presented with recurrence, of hernia.

Particulars of Patients

Variable		Group A, n-72	Group B, n-60	P- value
Age(range)years		35-60	30-57	NS
Gender(male : female)		01:9.3	01:05	NS
Hernia type	PUH	63	43	
	Epigastric	09	17	
Operative time(minutes)		60-90	50-70	NS
Hospital stay(average in days)		3.7	4.6	NS

NS-not significant

Postoperative Complications

Type	N-132				Action	P.value
Early & late complication	Group-A n-72		Group-B n-60			
Moderate to severe pain	12	16.6 %	5	8%	Given pain killer(NSAID)	<.003
Wound infection	9	12.5 %	6	10 %	Daily wound dressing+Antibiotic	<.043
Seroma	3	4%	4	6.6 %	Aseptic aspiration	NS*
Heamatoma	8	11%	3	5%	Conservative management	<.002
Sinus formation(stitch)	0		0			NS*
Hernial recurrence	3	4%	6	10 %	Reoperation	<.025

NS*-not significant

DISCUSSION

Although many surgical repair technique have been described in the literature, herniorrhaphy using simple suturing and mayo,s technique are still the most frequently used methods, but all these methods have high recurrence rate(25-50%)[13]. The incidence of these hernias is highest after the 4th decade of life with a female preponderance[1]. The high female preponderance can be attributed to multiparty and obesity .This compares favorably with our results, where most of the patients (87%) were females [2, 14, 15].

Surgical techniques for the repair of Epigastric and Para umbilical hernias continue to evolve with advances in prosthetic materials and minimally invasive technology. However, the optimal technique for mesh placement has not been established and remains controversial. The main issue is increased risk of infection with the placement of a foreign body in the form of a mesh. In our study the infection rate was 12.5% in meshplasty versus 10% in simple anatomical repair. Comparable results have been shown in studies by Daudpoto and Anjum and colleagues, who reported wound infection in 11.11% and 20% respectively when they used mesh[16,17], while Kiran and colleagues in a local study also mentioned 12% versus 10% infection rate [18]. Aggressive efforts to identify infection and treat it early may prevent abscess formation and subsequent recurrent hernia [14, 19, 20].

Seroma was noted in 4 % (meshplasty) versus 6.6% (simple anatomical repair) and hematoma 11% versus 5% patients in this study. Munir k and colleagues noted seroma in 0% versus 7.14% and hematoma in 0% versus 10.71% patients [18], while in study by Murtaza and colleagues none of these complications occurred in their meshplasty patients [14].

12 patients (16.6%) of meshplasty and 5 patients (8%) of simple anatomical repaired presented with moderate to severe pain in the first 3 days but no long term pain was noted in this study. Lau and Patil stated in their study that there is no difference in pain scores when comparing suture vs mesh repair of Para umbilical hernias by postoperative day 3[21]. Long-term pains has not been reported by patients at follow-up visits extending between 1 and 24months after the repair[21].

In the present study the average hospital stay for mesh repair was 3.7 days and for simple anatomical repair 4.6 days. In a local study by Murtaza and colleagues[14], their patients stayed in hospital for the same period. Approximately the same stay in hospital has been shown in the studies by Daudpoto and Munir K and colleagues [17, 18].

Though Mayo's repair or anatomical herniorrhaphy is still widely used [11, 21], due to simplicity and Cost effectiveness. Higher recurrence rates have been a major drawback for Mayo's and anatomical repair as compared to other techniques, as reported in literature. Lau and Patel [21] reported recurrence rate of 8.7% in simple anatomical repair whereas Sanjay et al [11] reported 11.5 % recurrence after Mayo/anatomical herniorrhaphy as compared to none after mesh repair. Our series has recurrence rate of 4% versus 10%. Venclauskas L and collegues[22] studied the factors responsible for recurrence and found out that the bigger size of hernia (greater than 2 cm) and higher body mass

index (BMI) are more important than the repair undertaken. However Mayo's and suture repair offer an important advantage of being able to be accomplished under local anesthesia safely. This distinct feature besides being cost effective has the potential to avoid complications like obstruction and strangulation due to delay, while awaiting the surgical procedures under GA as stated by Menon and Brown [20].

Recurrence rate of hernias in our study was 4 % for mesh repair and 10%for simple anatomical repair during an average follow up for 18 months (range 6-30 months). Munir K &colleagues noted recurrence after one year in 2.27% versus 10.72% respectively [18].

CONCLUSION

Mesh hernioplasty is superior to simple suture repair for treating these hernias in terms of significantly reduced recurrence rates. However to further endorse these results; a longer follow up is required.

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