

Original Article

Mesh repair of paraumbilical hernia, a study of 50 cases

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Abstract

According to the literature, defects in para-umbilical hernias up to 2 cm in diameter could be sutured primarily. For defects larger than 2 cm in diameters, mesh repair is recommended. The aim of this study is to evaluate the outcome of para-umbilical hernia repair with proline mesh regardless of its size. In this retrospective study, patients with para-umbilical hernia, who were managed by onlay mesh placement were presented, and followed for 1–5 years. Several variables were studied including patients' socio-demographic data, post-operative complications, morbidity and mortality. The series includes 50 patients, the age ranged from 18 to 85 years with median age of 44 years and inter-quartile range of 13.5 years. Mean body mass index was (30.9 ± 4.2) . From 45 female patients; 40 (88.8%) were multipara. Forty four cases (88%) presented for the first time, and 06 cases (12%) had recurrent hernias. Twelve patients (24%) had hernia defect ≤ 2 cm, while 38 patients (76%) had hernia size > 2 cm. Superficial surgical site infections was found in 6 patients (12%). Seroma was found in one female patient (2%). One patient (2%) had recurrent hernia after 19 months. Mesh repair by open surgery can be applied to all sizes of para umbilical hernias, it has low recurrence rate and the rates of morbidity and recurrence are comparable with international standard.

Keywords: Para umbilical hernia, Mesh repair

JSWMC 2019 (9-2) P:24-29

Introduction

Para-umbilical hernia (PUH) results through a defect in the linea alba. It is a common surgical problem consisting of 10% of all primary hernia^{1,2,3}. They are more common in parous, obese, middle aged and elderly women⁴. Obesity and multiparity are important predisposing factors not only for primary, but also for recurrent cases^{5,6}. The content of the hernia sac might be preperitoneal fat tissue, omentum, and small intestine in the majority; sometimes a

combination of those organs may be present⁷. Pain is the most common indication to visit a physician⁸. Elective surgery is a treatment of choice due to recognized risk of obstruction, incarceration and strangulation⁴. A tension free mesh technique has drastically reduced the recurrence rates for all kinds of hernia compared to tissue repair¹¹⁻¹³. Several factors have been implicated for recurrence after PUH repair; large seroma and surgical site infection are classical complications that may result in recurrence. Obesity and excessive weight gain following repair are other factors^{6,14,15}.

The aim of this study is to confirm the effectiveness and outcome of para-umbilical hernia repair with proline mesh regardless of its size.

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2. Patients and methods

2.1. Study design and setting

A retrospective multicenter study of 50 patients, were presented with PUH of different sizes, and treated by placement Synthetic polypropylene mesh, from 2014 to 2017, and followed for 12 months to 5 years. The study protocol was approved by the local ethical committee. Demographic data (age, gender and residency), body mass index (BMI) were recorded. All patients were operated under general anesthesia, in supine position, with a transverse skin incision over the bulge near the umbilicus. The defect containing the hernia contents was identified. The defect was opened along with sac. The sacs were separated and contents were reduced into the abdominal cavity. A proline mesh of adequate size was applied on the fascia and fixed with few non-absorbable stitches (2/0 proline). Haemostasis was secured and wound was closed over a redivac drain placed in the subcutaneous place (for 5–7 days). Incarcerated and strangulated hernias were excluded. A prophylactic antibiotic (1gm intravenous Ceftriaxone) was used for 24h on each patient. Post-operative instructions were given to all patients including early wearing of an abdominal strapping for two weeks, avoiding lifting heavy weights for three months, and not being pregnant for one year. The patients were followed every two months initially in the private clinic, for 6 months and then every six months, until 2 years, and later on by phone call annually.²⁸

2.2. Statistical analysis

After data collection and prior to data entry and analysis, the questions of study were coded. Data entry performed on excel spread sheet then the statistical analysis was performed by Statistical Package for the Social Sciences (SPSS) program, version 21. The data presented in tabular form showing the frequency and relative frequency

distribution of different variables of the study. P values of 0.05 were used as a cut-out point for significance of statistical tests.

3. Results

The study included 50 patients, age ranged between 18 and 85 years, with mean age of (45.1 ± 13.6) years. The peak incidence was between 18 and 44 years (51.7%). Forty five (90%) cases were female and 5 (10%) cases were male (P value: <0.001). The predisposing factors, like obesity: 03 patients (6%) had normal BMI, 27 patients (54%) were overweight, 20 patients (40%) were obese, with mean BMI of (30.9 ± 4.2) , and (P value: <0.001). Parity was also found to be a predisposing factor; from 45 female patients; 40 (88.9%) were multiparous and 5 (11.1%) were not multiparous (P value: <0.001). But there was no real factor relating to lifting of heavy weights; from 50 patients; 47 (94%) had usual work, and 3 (6%) had strenuous duties like workers and porter (Table 1). Forty four cases (88%) presented for first time, and 06 cases (12%) had recurrent hernia; all of these cases had been repaired by simple suturing or Mayo repair, without mesh. Twelve patients (24%) had hernia defect of ≤ 2 cm, while 38 patients (76%) had hernial size > 2 cm. The patients followed up for at least 2 years: 23 patients (46%) for up to 2 years, 22 patients (44%) for up to 4 years, and 5 patients (10%) for up to 5 years. Postoperative complications including superficial surgical site infection (SSSI) and seroma were found in 7 patients (14%); 6 females and 1 male, with no significant P value (0.8), regardless of the age, parity, BMI, occupation, size of the hernia and whether it was the first operation, or recurrent (Table 2). Seroma was found in one female (2%). One female patient (2%) had recurrent hernia after 19 months; she was overweight with defect > 2 cm (see Tables 3 and 4).

Table 1: Distribution of patient demographics and predisposing factors

Variable		Frequency	Percentage (%)	P value
Gender	Male	05	10	<0.001
	Female	45	90	
Age	18 – 44 years	26	52	0.2
	45 – 60 years	20	40	
	> 60 years	04	8	
Parity	Multipara	40	88.9	<0.001
	Non-multipara	05	11.1	
BMI	Normal	03	06	<0.001
	Over weight	27	54	
	Obese	20	40	
Occupation	Hard work	3	06	<0.001
	Non-hard work	47	94	

Table 2: Distribution of superficial surgical site infection (SSSI) and seroma

Variable		SSSI		P value	Seroma		P value
		No	Yes		No	Yes	
Gender	Male	04	1	0.66	05	0	0.67
	Female	40	5		44	1	
Age	18 -44 years	23	3	0.98	26	0	0.38
	45 – 60 years	18	2		19	1	
	> 60 yrs	03	1		04	0	
Parity	Multi-para	34	6	0.33	39	1	0.71
	Non multi-para	5	0		5	0	
Obesity	Normal	4	0	0.57	4	0	0.54
	Over-weight	24	2		25	1	
	Obese	24	4		28	0	
Occupation	Hard work	03	0	0.45	3	0	0.71
	Non hard work	41	6		45	2	
Size of defect	<2 cm	10	2	0.54	40	0	0.46
	>2 cm	34	4		9	1	

4. Discussion

In general, PUHs are more common in women than men²⁰, in our study, also female patients were more affected (90% and 10%) with P value of (<0.001). It is believed that adipose deposition differs between genders and this contributes to gender difference in hernia formation²⁹. In a study conducted by Daudpoto and associates, they found that majority of patients were above the age of 40 years²³ and in another study the mean age was (42.7, SD 12)³⁰, in this study the mean age was (45.1 ± 13.6) years and the peak incidence was between 18 and 44 years (51.7%).

Table 3 : Comparison between two groups (defect <2 cm and >2 cm) regarding wound infection, seroma, and recurrence.

Complications		Size of defect		P value
		<2 cm	>2 cm	
Wound infection	Yes	2	4	0.95
	No	10	34	
Seroma	Yes	0	1	0.46
	No	12	37	
Recurrence	Yes	0	1	0.46
	No	12	37	

Table 4 : Comparison between recurrent and non-recurrent patients regarding wound infection and seroma

Complications		Operation		P value
		First time	Recurrent	
Wound infection	Yes	4	2	0.34
	No	40	4	
Seroma	Yes	0	1	0.63
	No	50	49	
Recurrence	Yes	1	0	0.63
	No	49	50	

Obesity and multiparity are regarded as predisposing factors^{5,23,31,32}, also in the current study obesity and multiparity were prevalent; (54%) of the patients were overweight, (20%) were obese, with mean MBI of (30.9 ± 4.2), and (P value:<0.001), and from 45 female patients; 40 (88.9%) were multiparous and 5 (11.1%) were not multiparous. (P-value:<0.001). Although physical strain regarded as an aetiological factors in the development of PUH which raises intra-

abdominal pressure, like powerful muscular effort³³, but we found that (94%) had usual work, and only (06%) had strenuous duties. In Abdul Qayoom and his colleague study²³; they classified the size of the hernia defects to 2–4cm which were found in (63–78%) of the cases, and 4–6cm which were found in (21–36%). Wassenbergetal. classified the hernia defects to small size (1–2cm) which were found in (62.5%), and medium defects (2–4cm) which were found in (37.5%)³⁴. The hernia defects were classified using the classification proposed by the European Hernia Society, in which small hernias had diameters <2cm, medium size hernias had diameters between 2 and 4cm and large hernias had diameters >4cm³⁵. In this study we divided them to ≤ 2 cm as small size, which were found in (24%) of patients, and >2cm as large size and found in (76%) of the patients. The use of mesh in umbilical hernia repair results in decreased recurrence and similar wound complications rates compared to tissue repair for primary umbilical hernias⁹. Onlay mesh repair by open surgery is simple, safe and effective with acceptable recurrence rate and a short learning curve^{22,23,36}. Complications of this type of surgery include: wound infection, seroma and pain at the site of the operation^{14,15}. These complications were found in (14%) in this series, regardless of the technique used, the risk of mesh infection remains a serious problem. The incidence of mesh infection in open surgery found to be relatively high (6%–10%)^{37,38}, because of being superficial. In the study done by Arroyo et al., rates of early complications such as seroma, haematoma or wound infection were similar in both simple suturing and mesh repair³⁸. There was no mesh infection in this series, but SSSI found in six patients (12%), and there was no significant difference regarding different varieties, it is comparable to (11.11%) reported by Qayoom et al.(2013)²³, and somewhat similar to Rajsid dharth, Bantu, et al. study (13.33%)⁴⁰, Malik et al. (8.14%)⁴¹, and Wassenberg (8.3%)³⁴. These

patients were treated with regular dressing and appropriate antibiotics, and no patient required removal of the mesh, because the infection was superficial and responded well to the treatment. Seroma formation may complicate onlay technique. These may be explained by the fact that onlay techniques require subcutaneous dissection to place the mesh, which lead to devitalization of the tissue, and it happened in one female patient (2%) in this series, which nearly similar to 2.71% in Abdul Qayoom et al. (2013)²³, and less than 5% in Bessa et al. (2015)⁴². Chronic pain was not found in this series.

Clinical trials revealed that the recurrence rate was lower after mesh repair than that after suture repair (1% vs. 11%) in a 64-month mean postoperative follow-up³⁹. Also in a retrospective clinical series of 100 patients, the recurrence rates for the suture and mesh repair groups were 11.5% and 0%, respectively ($p=0.007$), with similar results in the infection rate in favor of mesh repair³⁶. In this series, one patient had recurrent hernia after 19 months; she was overweight with defect >2cm, with recurrence rate of (2%), the rate of recurrence in this series was less to 2.7% reported by Qayoom et al (2013)²³, 3.4% rate reported by Kingsnorth et al. in UK17 shows recurrence in mesh onlay repair⁴³, 4.1% rate reported by Wassenberg, Dirk, et al.³⁴, and 10% reported by Kensarah et al (2011)³⁰. There are several limitations regarding this study. First, the study design is poor regarding question has been addressed. Second, the sample size is small. Lastly, the data collection (retrospective) is a cause of missing data.

5. Conclusion

Onlay mesh repair is a simple, safe and effective. It can be applied to all size of para umbilical hernias with low recurrence rate. Morbidity, infection and recurrence are comparable international standard.

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