

A Long-Term Follow-Up: Suture Versus Mesh Repair for Adult Umbilical Hernia in Saudi Patients. A Single Center Prospective Study

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Abstract

Objective: To report results of mesh repair vs. the modified Mayo's suture overlap in the surgical treatment of adult umbilical and paraumbilical hernias in our medical center. **Patients & Methods:** The study is a Saudi single center single surgeon trial composed of sixty two patients. It was performed in the Surgical Department of King Abdul-Aziz University Hospital at Jeddah. The patients were randomly assigned into 2 groups. Group A patients underwent onlay mesh repair while modified Mayo's repair was used in group B patients. Median follow-up was 28 months, and data were collected regarding size of hernia, type of the operation, complications, length of follow-up and the recurrence rate. Chi square test was used to compare results at 0.05 levels. **Results:** Complication was reported in 17% in group A and 8% in group B. There was no difference in scar pain, cosmetic result, and overall patient satisfaction between both groups. The recurrence rate was 10% for mesh repair and 18.8% for suture repair. **Conclusions:** Despite higher complication rate, mesh repair is superior to suture repair due to lower recurrence rate. Suture repair still has a place under certain circumstances, also it is simple less costly and has insignificant infection rate.

Keywords: Umbilical Hernia; Paraumbilical; Mesh Repair; Suture Repair

1. Introduction

Umbilical and para-umbilical hernias are common problems in the Kingdom of Saudi Arabia. Obesity and multiparity are important predisposing factors not only for primary, but also for recurrent cases [1-4]. About 10% of umbilical hernias in adults have a congenital etiology but manifest later in adulthood. The rest are acquired and contribute to many abdominal emergencies with substantial morbidity and mortality. Multiparity, increased abdominal pressure and a single midline decession are other predisposing causes [5,6]. The choice of the appropriate surgical procedure is still subject to debate. The simplest and most established is the modified Mayo's overlap using non absorbable material without a mesh or a drain [7,8]. The use of mesh in umbilical hernia repair resulted in reduction of short term recurrence rates [9], but the risk of infection increases with prosthesis use. The use of antimicrobial meshes reduced postoperative infection risks, as has the adoption of the laparoscopic approach [10]. Umbilical hernia repair may give rise to persistent abdominal pain and unsatisfactory esthetic

results [11]. In this study we examined the long term outcomes of suture versus mesh repair for adult umbilical hernia in patients electively treated in our medical center in Jeddah.

2. Patients and Methods

This study was approved by the ethics committee of King Abdul-Aziz University Hospital, and all patients provided informed consents to participate in this study. From January 2006 through May 2009, 62 consecutive patients were enrolled. Their demographic information as well as the predisposing factors is shown in **Table 1**. The indication for intervention was cumbersome or unsightly hernia and/or the occurrence of complications. Exclusion criteria were previous recurrence, obesity (BMI of 30 and above) diabetes mellitus, anti-coagulation and steroid therapy. Patients were randomly chosen to undergo open onlay mesh repair (Group A) or the classical Mayo's suture overlap repair (Group B). For the mesh group closure of the hernia defect with 00 prolene followed by an onlay polypropylene mesh,

Table 1. Clinical, operative and postoperative data.

Item	Mesh Group A (n = 30)	Overlap Group B (n = 32)
(1) Age (years)	17-76 (mean 55)	
(2) Gender	Males 46	Females 16
(3) Predisposing Factors (Both Groups)		
Item	No.	%
Obesity	37	59
Multiparity	11	30
Ch. Cough	12	19
Previous surgery	9	14.5
BPH	7	11
Ascites	3	4.8
Lifting Heavy Objects	2	3
Malignancy	2	3
Hypothyroidism	1	1.6
(4) Mean Hernia Size (cm)	6	5
(5) Hospital Stay (Average in Days)	5.6	4.6
(6) Percentage of PO Complications (n = 29)	17%	8%
Wound infection	7	4.3
Seroma formation	7	1
Chest infection	2	2.8
Hematoma	3.2	-
DVT + PE	1.6	-
(7) Period of follow up (Mean in months)	28	28
(8) Recurrence (Total = 9 cases)	3	6

while for the suture overlap group the classical steps were applied with a minor personal modification aiming to reduce postoperative patient inconvenience. The modification entails placement of the interrupted mattress stitches so that the knots lie between the two overlapping layers and not under the skin. The same staff surgeon operated on all of the patients and twenty six of them (42%) were treated in our ambulatory surgical center and discharged on the same day of surgery. Comparison between the 2 groups was by the Chi-Square test (χ^2) at 5% level of significance. Follow-up was performed during return visits, by telephone calls, and by questionnaire surveys sent by ordinary or e-mail.

3. Results

The age range was 17 - 76 years (mean 42.7, SD 12) and male to female ratio was 2.8:1 ($n = 46$ and 16 respectively). Five patients had their hernia since childhood and in 6 patients the hernia developed following laparoscopic cholecystectomy. In the remaining 51 patients (>82%) the hernia developed following different predisposing factors (**Table 1**), relative obesity and multiparity being the commonest (59% and 30% respectively). Other causes included chronic cough (19%), incisional hernia (14.5%), prostatic disease (11%), ascites (4.8%), malignant diseases (3%), and work entailing lifting heavy objects (3%). Within days after surgery the overall compli-

cation rate was 29% including: superficial wound infection (11.3%), seroma formation (8%), chest infection (4.8%) wound hematoma (3.2%) and deep vein thrombosis with a non-fatal pulmonary embolism in 1.6%. The Average hospital stay ranged from 2 to 17 days (mean 4, SD 3.78) and the median follow up period was 28 months, the shortest being 12 months during which there were 9 recurrences (>14.5%). Overall patient satisfaction was built using data collected from a self-administered questionnaire. Its quality was ensured by a research fellow, and indicated by 4 proposed items having the greatest concern by the patients, *viz*: degree of late pain (by visual analog scale), subjective umbilical region discomfort, scar quality, and the final cosmetic result. Surveys were administered during the return visit or mailed to the patients on the 100th day approximately following surgery. Chi square test did not show significant difference between the two sets at 0.05 levels. Two patients declined follow up, and contact was lost with 5 patients, while seven others died of causes that are unrelated to the surgery, before completing the follow-up period.

4. Discussion

According to local statistics, umbilical hernia accounts for about 12% of all hernias in adults. Its repair by the trendy onlay flat mesh is simple, safe and effective with

acceptable recurrence rate and a short learning curve [12]. The classical modified Mayo's overlap is less costly and easier to perform. It is reported to have a higher recurrence potential (40% by Halm in 2005) [13]. The lower recurrence figures reported in some studies are likely due to underestimation or failure to adopt long term follow up [11]. In this single surgeon single institution study, the median follow-up period was 28 months (range 4 - 151) and data were built up by structured interview in addition to clinical examination, in accordance with the recommendations of previously published studies [14]. In our series of 62 cases, 9 recurrences were reported (14.5%) 6 of them are in the suture overlap group and 3 in the onlay mesh group. Though it exceeds the figures of Kingsnorth *et al.* [15] at the UK (as low as 3.4%), the finding of an approximate double recurrence rate in the suture overlap compared to onlay mesh repair may be due the longer follow up period that we undertook with our patients. However, these findings do not mitigate the use of the overlap repair in selected indications. In a recent study by Müller-Riemenschneider *et al.* in 2007 [16], much lower recurrence rates and shorter hospital stay were observed, and if tension is avoided the procedure is less painful and more convenient to the patient [11]. In contrast, Aslani (2010) and Arroyo (2001) reported fewer recurrences with mesh compared to suture repair for small umbilical hernias [17,18]. In the present work, as well as in previous studies, there was no difference in scar quality or scar pain between mesh and suture repair. Reduced mobility of the anterior abdominal wall that was reported with mesh repair (in up to 50% of cases) may be a significant drawback of this surgery [19].

Weight loss in obese patients may help to improve the operative conditions and perhaps may reduce the chances for recurrence, though it may not change the risk of perioperative complications [20]. Expectation of weight loss accomplishment and the time necessary for that is to be balanced with the clinical indication, and a hernia repair simultaneous with gastric bypass or banding may be recommended [21,23,24]. Our results are limited by the small number of patients, and also the loss of contact with patients or their death from other causes.

In summary, our results support the view of Halm and his colleagues for the need to re-evaluate the present clinical guidelines on mesh placement in umbilical hernia repair [13], and under certain circumstances, suture overlap may be preferable.

5. Conclusions

It may be mandatory to re-evaluate present clinical guidelines on umbilical hernia repair, and a *meshless* suture repair should not be totally disqualified. More study is needed to understand the effect of such factors

like obesity, hernia size, smoking, diabetes and hyperlipidemia in this respect [25].

6. Conflict of Interest

This is a single author single center study. No conflict of interest with other people or organizations. Study was neither done under grant nor funding.

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