



Original Research Article

## Umbilical Hernia: Which Technique in Which Defect Size?

Mustafa SIT<sup>1\*</sup>, Ahmet Serkan Ilgun<sup>2</sup>, Edip Erdal Yilmaz<sup>3</sup>

<sup>1</sup> Abant İzzet Baysal University Hospital Department of General Surgery, Bolu, Turkey.

<sup>2</sup> Cayeli State Hospital, Department of General Surgery, Rize, Turkey.

<sup>3</sup> Dicle University Hospital Department of General Surgery, Diyarbakır, Turkey.

\*Correspondence Email: drmustafasit@yahoo.com.tr

Received: 11/09/2013

Revised: 01/10/2013

Accepted: 02/10/2013

### ABSTRACT

**Purpose:** Umbilical hernias make 6% of abdominal wall hernias in adults. There is no consensus on how large should mesh be in treatment of umbilical hernias. We aimed to analyse the outcomes of the patients undergone surgery for umbilical hernias.

**Methods:** We retrospectively analysed the data of 121 patients undergone umbilical hernia surgery between November 2007 and August 2011. We obtained the demographical features of the patients, size of the hernia defect, surgical technique, and informations about development of infection, recurrence and seroma formation from hospital's database

**Results:** Recurrence rate was significantly different in mesh repair compared to mayo repair or primary suturization ( $p < 0.0001$ ). There was a statistically significant difference between groups in terms of seroma development ( $p = 0.04$ ).

**Conclusion:** Our results show that, Mayo repair or primary suturization are safe in patients with  $< 2$ cm defect but not proper for patients with  $> 2$ cm defect. In mesh repair, we suggest to place prolen mesh after dissection of  $> 3$ cm of fascia around hernia sac.

**Keywords:** umbilical hernia, seroma, recurrence, defect size, mesh size.

### INTRODUCTION

Umbilical hernias make 6% of abdominal wall hernias in adults.<sup>[1]</sup> Surgical interventions for umbilical and paraumbilical hernias are on rise.<sup>[2]</sup> Primary suture, mayo repair, mesh repair and laparoscopic interventions are treatment options for umbilical hernia. It is controversial which is the most successful technique. Recurrence rate after mayo repair and primary suture is about 10-40%.<sup>[3-5]</sup> After Prolen mesh found to be successful in

repairment of inguinal hernias, surgeons suggest prolen mesh for repairment of umbilical hernias.<sup>[6,1]</sup> There has been accumulating reports in the literature comparing primary suturization with mayo repair and mesh repair in treatment of umbilical hernias. There is no consensus on how large should mesh be in treatment of umbilical hernias. We aimed to analyse the outcomes of the patients undergone surgery for umbilical hernias.

## **MATERIALS AND METHODS**

We retrospectively analyzed the data of 121 patients who undergone umbilical hernia surgery between November 2007 and August 2011. All patients had disturbing or cosmetically unacceptable umbilical hernias. All of the patients undergone surgery with general or spinal anesthesia. Surgical interventions performed by the same general surgeons. Patients are prescribed prophylactic 1g of cefazolin pre-operatively.

We obtained the demographical features of the patients, size of the hernia defect, surgical technique, and information about development of infection, recurrence and seroma formation from hospital's database.

Semicircular incision under umbilicus and epi and under umbilicus median incision performed for operations. Hernia bag separated and excised. 00 and 0 prolens sutures used in mayo repair and primary suturization. Vest-over-pants repair performed classically for mayo repair. Hernia defect primarily closed in mesh repair. Then, intact fascia dissected and mesh placed. Mesh fastens up to fascia with 00 prolens sutures. 2 cm of fascia around hernia bag dissected and sutured in both mayo repair and primary suturization. 3cm and over 5 cm dissections performed in mesh repair. Mesh placed on rectus sheath in mesh repair procedure. Umbilicus fasten with 000 vicryl in all patients. Aspiration catheter placed if dissection was wider than 3 cm. subcutaneous tissue sutured with 000 vicryl and skin sutured with 000 prolens.

### ***Statistical analyses***

Evaluation of the data was performed by "SPSS for Windows 15" software. Normal distribution of variables was determined using the Kolmogorov-Smirnov test. Normally distributed continuous variables, which show the mean  $\pm$  standard deviation, median not show a normal distribution (25% - 75% percentile) in the

form specified. Categorical variables were expressed as numbers and percentages. Student's t-test for continuous variables that show a normal distribution, normal distribution, the Mann-Whitney U test was used to not show. Categorical variables, Pearson's chi-square and Fisher's exact test was used for the evaluation. Analysis and  $p < 0.05$  was considered statistically significant.

## **RESULTS**

Of the 121 patients, 91 were female and 30 were male. General characteristics of the study population are summarized in table 1. Patients were divided into two groups based on surgery technique as follows; group 1: 60 patients treated with mayo repair or primary suturization and group 2: 61 patients treated with mesh repair. Mesh placed after 5cm dissection around hernia bag in 56 and after 3cm dissection around hernia bag in 5 of 61 patients treated with mesh repair. Recurrence occurred in 23 of 60 patients treated with mayo repair or primary suturization. Recurrence occurred in 1 of 22 patients with 1cm or smaller defects, in 2 of 23 patients with 2cm of defects and in all 15 patients with 3 cm or larger defects. Defect size of 5 patients received mesh repair dissected 3 cm around hernia sac was 2cm in two, 3 cm in two and 6 cm in one patient. All of these 5 patients had recurrence. Mesh placed after 5cm or larger dissection in 56 of 61 patients treated with mesh repair. Only one of these 56 patients had recurrent hernia. Same surgeon repaired the recurrent hernias with mesh repair. Recurrence rate was significantly different in mesh repair compared to mayo repair or primary suturization ( $p < 0.0001$ ).

Infection rates in mesh repair and mayo repair or primary suturization groups were 3.2% (2 of 61 patients) and 3.3% (2 of 60 patients), respectively. The difference was not statistically significant ( $p = 0.09$ ).

Seroma rates in mesh repair and mayo repair or primary suturization groups were 11.5% (7 of 61 patients) and 6.7% (4 of 60 patients), respectively. There was a statistically significant difference between groups in terms of seroma development ( $p=0.04$ ).

Table 2 shows Comparison of Mayo or primary repair and mesh repair of the study population.

**Table 1: General characteristics of the patients.**

	Male	Female	Total
Gender (n)	30	91	121
Mean age (years)	32,3	41,5	39,2
Mean Defect Size (cm)	2,8+/-1,6	3+/-1,7	2,9+/-1,7
Mean duration to removal of drainage catheter (days)	1.4+/-1.4	1.4+/-1.7	1.4+/-1.6
Mean hospitalization time	1.9+/-1.2	2.1+/-1.8	2.1+/-1.7

**Table 2. Comparison of Mayo or primary repair and mesh repair.**

	Mayo or primary repair	Mesh repair	P value
Infection rate (%)	3,3	3,2	0,09
Recurrence rate (%)	38,3	9,8	0,0001
Seroma	6,7	11,5	0,04

## DISCUSSION

Hernias in midline located 3 cm above and beneath umbilicus were defined as umbilical hernias by European hernia society.<sup>[7]</sup> Umbilical hernias are not rare in adults and it is an acquired condition in 90% of the patients. Ascites, multiparity, obesity, intraabdominal masses increasing intraabdominal pressure predispose to umbilical hernia formation.<sup>[4,8]</sup> Maltiparity and obesity were the most common causes of hernia in our series. Umbilical hernia is more common in women.<sup>[9-11]</sup> But recent studies indicated that it is more common in men.<sup>[9,5]</sup> Seroma development rate increases in obese and largely dissected patients. We also noticed that seroma was more common in large dissection performed patients in present study. Pressed bandages and aspiration controlled these seromas in our cases. Many surgical procedures identified for umbilical hernia treatment. Open repair is considered as gold standard method by many surgeons. Mayo repair technique,

which described by Mayo about a hundred years ago, is still one of the most preferred techniques in umbilical hernia surgery.<sup>[12,13]</sup> Many other surgical procedures described for umbilical hernia after Mayo but all of them were associated with high recurrence rates.<sup>[14]</sup> Recurrence rates significantly decreased after mesh repair used in treatment.<sup>[15]</sup> Therefore many authors suggested mesh repair in umbilical hernia treatment.<sup>[3,5-14]</sup> Recurrence rate of mesh repair was reported about 0-2% in the literature.<sup>[3,4,1]</sup> Another report pointed that recurrence and wound complications were more common after tissue repair procedures compared to mesh repair in umbilical hernia surgery.<sup>[16]</sup> In our study, recurrence occurred in 23 of 60 patients treated with mayo repair or primary suturization. Defect size was over 2cm in most of the patients with recurrence. All of the 5 patients recurred who treated with mesh after <3m dissection of the fascia. The defects were over 2cm in all these 5 cases. Only one of 56 patients recurred who treated with mesh after >3cm dissection of the fascia. Defect size in that patient was 3cm and recurrence occurred after 2 childbirths. We think that high recurrence rate after primary suturization or mayo repair is associated with the defect size. Recurrence rates of the patients with a defect <1cm, 2cm and >3cm were 4.5%, 30.4% and 100%, respectively. Inadequate resection of the weak fascia around hernia sac was responsible for recurrence in patients treated with mesh repair. Seroma development rate increases in obese and largely dissected patients. In the same line with previous findings, we found that seroma was more common in patients who performed large dissection in the present study. Pressed bandages and aspiration controlled these seromas in our cases. Many surgical procedures identified for umbilical hernia treatment.

## CONCLUSION

In conclusion, we found that mayo repair or primary suturization are safe in patients with <2cm defect but not proper for patients with >2cm defect. In mesh repair, we suggest to place prolene mesh after dissection of >3cm of fascia around hernia sac.

**Conflict of Interest Statement:** Authors M.S., A.S.I., and E.E.Y. have no conflict of interest to disclose.

## REFERENCES

1. Perrakis E, Velimezis G, Vezakis A, Antoniadis J, Savanis G, Patrikakos V. A new tension-free technique for the repair of umbilical hernia, using the Prolene Hernia System-early results from 48 cases. *Hernia*. 2003;7:178-80.
2. Dabbas N, Adams K, Pearson K, Royle G. Frequency of abdominal wall hernias: is classical teaching out of date? *JRSM short reports*. 2011 ; 2.
3. Arroyo A, Garcia P, Perez F, Andreu J, Candela F, Calpena R. Randomized clinical trial comparing suture and mesh repair of umbilical hernia in adults. *British journal of surgery*. 2002; 88:1321-23.
4. Courtney CA, Lee AC, Wilson C, O'Dwyer PJ. Ventral hernia repair: a study of current practice. *Hernia*. 2003; 7:44-46.
5. Sinha SN, Keith T. Mesh plug repair for paraumbilical hernia. *The surgeon : journal of the Royal Colleges of Surgeons of Edinburgh and Ireland*. 2004; 2:99-102.
6. del Pozo M, Marin P. Three-dimensional mesh for ventral hernias: a new technique for an old problem. *Hernia*. 2003;7:197-201.
7. Muysoms FE, Miserez M, Berrevoet F, Campanelli G, Champault GG, Chelala E, Dietz UA, Eker HH, El Nakadi I, Hauters P, Hidalgo Pascual M, Hoferlin A, Klinge U, Montgomery A, Simmermacher RK, Simons MP, Smietanski M, Sommeling C, Tollens T, Vierendeels T, Kingsnorth A. Classification of primary and incisional abdominal wall hernias. *Hernia*. 2009;13:407-14.
8. Muschaweck U. Umbilical and epigastric hernia repair. *The Surgical clinics of North America*. 2003;83:1207-21.
9. A K. Management of abdominal hernias. In: Arnold (ed). 3 edn., London, 2003 pp 228-36.
10. Chan MK, Baillod RA, Tanner A, Raftery M, Sweny P, Fernando ON, Moorhead JF. Abdominal hernias in patients receiving continuous ambulatory peritoneal dialysis. *Br Med J. (Clin Res Ed)*. 1981;283 (6295):826.
11. Zinner MJ SS, Ellis H. Maingot's abdominal operations. 10 edn., 1997:London.
12. Granese J, Valaulikar G, Khan M, Hardy H, 3rd. Ruptured umbilical hernia in a case of alcoholic cirrhosis with massive ascites. *The American surgeon*. 2002;68:733-34.
13. Nguyen NT, Lee SL, Mayer KL, Furdui GL, Ho HS. Laparoscopic umbilical herniorrhaphy. *J Laparoendosc Adv A*. 2000;10:151-53.
14. Velasco M, Garcia-Urena M, Hidalgo M, Vega V, Carnero F. Current concepts on adult umbilical hernia. *Hernia*. 1999; 3:233-39.
15. Lichtenstein IL, Shulman AG, Amid PK, Montllor MM. The tension-free

hernioplasty. American journal of surgery. 1989; 157:188-93.  
16. Aslani N, Brown C. Does mesh offer an advantage over tissue in the open

repair of umbilical hernias? A systematic review and meta-analysis. Hernia. 2010; 14:455-62.

How to cite this article: Mustafa SIT, Ilgun AS, Yilmaz EE. Umbilical hernia: which technique in which defect size?. Int J Health Sci Res. 2013;3(11):92-96.

\*\*\*\*\*