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STRANGULATED UMBILICAL HERNIA REPAIR WITH OR WITHOUT MESH

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Abstract

Background*:The best technique for the treatment of strangulated umbilical hernia remains controversial. The use of mesh in cases of strangulated hernia is still under consideration due to the possible risk of infection.This study aimed put a strategy for repairing of strangulated umbilical hernia with or without mesh.****Patients and Methods****: A prospective comparative study was conducted on patients with strangulated hernia admitted to general surgery hospital Zagazig University during period fromJune 2018 to January 2019. This study included 30 patients with strangulated hernia, they were divided randomly into 2 groups, 15 patients underwent repair with meshand15 underwent repair without mesh.All patients were subjected to Demographic data taking, complete clinical examination.Laboratory investigations and Radiological investigations.****Results****:Operative times and hospital stay were longer in Group A who underwent repair with mesh, the duration was 60-90 minutes versus 20% only in of group B repair without mesh. That mean of hospital stay among Group A is 4.8 ± 1.65 days, while in Group B mean of hospital stay is slightly shorter 4.2 ± 1.65 with no statistical difference. post-operative complications showed higher in Group A where pus formation and seroma formation were more statistically.****Conclusion****: The repair of strangulated umbilical hernia with or without mesh are variable, However, these procedures are associated with poor prognoses and a higher rate of post-operative complications.*

Key words*: Umbilical hernia, Strangulated, Hernias represent, Intestinal strangulation, Mesh*

I. Introduction:

The recurrence rates after tissue repairs are variable, with estimates ranging from 15 to 40 per cent, although the use of prosthetic material for open umbilical hernia repair has been reported to minimise recurrence rates. Mesh repair, pre-aponeurotic (onlay), retro-muscular or pre-peritoneal (sublay) and intra-abdominal (underlay) placement or even combinations have been identified with appropriate results[1].Incarcerated hernias account for around 10% of umbilical hernias operated. In elective hernia surgery, tension-free mesh repair has been shown to be more effective than suture reconstruction in terms of long-term recurrence. Wound infection rates range between 1 and 7 per cent in both mesh and non-mesh repairs[2].The best technique for the treatment of strangulated umbilical hernia remains controversial. The use of mesh in cases of strangulated hernia is still

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under consideration due to the possible risk of infection[1]. There was an idea that any patient with complex hernias, i.e. acute incarceration and/or strangulation, was at an unreasonable risk of recurrence. While several studies have clearly demonstrated the protection and effectiveness of prosthetic mesh repair in the emergency management of acutely imprisoned and/or strangulated inguinal and ventral hernias, surgeons have remained both doubtful and reluctant to use prosthetics in such settings[3]**.**

Mesh related issues in strangulated umbilical hernia, such as wound complications, discomfort, pain and possible loss of flexibility in the abdominal wall, raise the question of whether or not all patients should have mesh repairs[4].Understanding mesh prosthesis helps in decision-making. Macroporous lightweight polypropylene mesh is very resistant to infection. If infected, these mesh prostheses will usually be healed with local wound treatment and a short course of antibiotics. Polytetrafluoroethylene (PTFE) or extended PTFE (ePTFE) mesh prosthesis are very durable and will not bind to viscera or other adjacent tissues.However the lack of ingrowth prevents mesh recovery if it is contaminated and antimicrobial treatment is not required to sterilise the actual prosthesis since there is no blood flow inside the mesh prosthesis. Consequently, there is little or no place for PTFE or ePTFE in emerging hernia repairs, especially in contaminated wounds[5]. Synthetic mesh repair should be done with caution in patients with intestinal strangulation and/or subsequent intestinal resection due to the risk of mesh infection[6]**.**This study aimed to put a strategy for repairing of strangulated umbilical hernia with or without mesh.

II. Patients and methods:

A Prospective, comparative study was conducted on patients with strangulated hernia admitted to general surgery hospital Zagazig University during period from June 2018 to January 2019. This study included 30 patients with strangulated hernia, they were divided randomly into 2 groups, 15 patients underwent repair with mesh and 15 underwent repair without mesh. Approval for performing the study was obtained from general surgery departments, Zagazig University Hospitals after taking approval of Institutional Review Board (IRB). the was carried out in accordance with The Code of Ethics of the World Medical Association. Inclusion criteria: Patients more than 18 and less than 70 years old. Patients showing no signs of perforation or peritonitis. Patients with still healthy overlying covering skin. Patients fit for surgery.Exclusion criteria: Patients below 18 and above 70 years old. Patients who had alterations or abnormality in blood clotting or immune system. Patients with history of long use of steroids. Patients with uncontrolled diabetes or advanced liver disease. Patients with collagen disease. Patients who refused to enter the study.

All patients were subjected to Demographic data taking, complete clinical examination. Local examination was done focusing on the umbilical hernia, colour of the skin overlying the hernia sac.

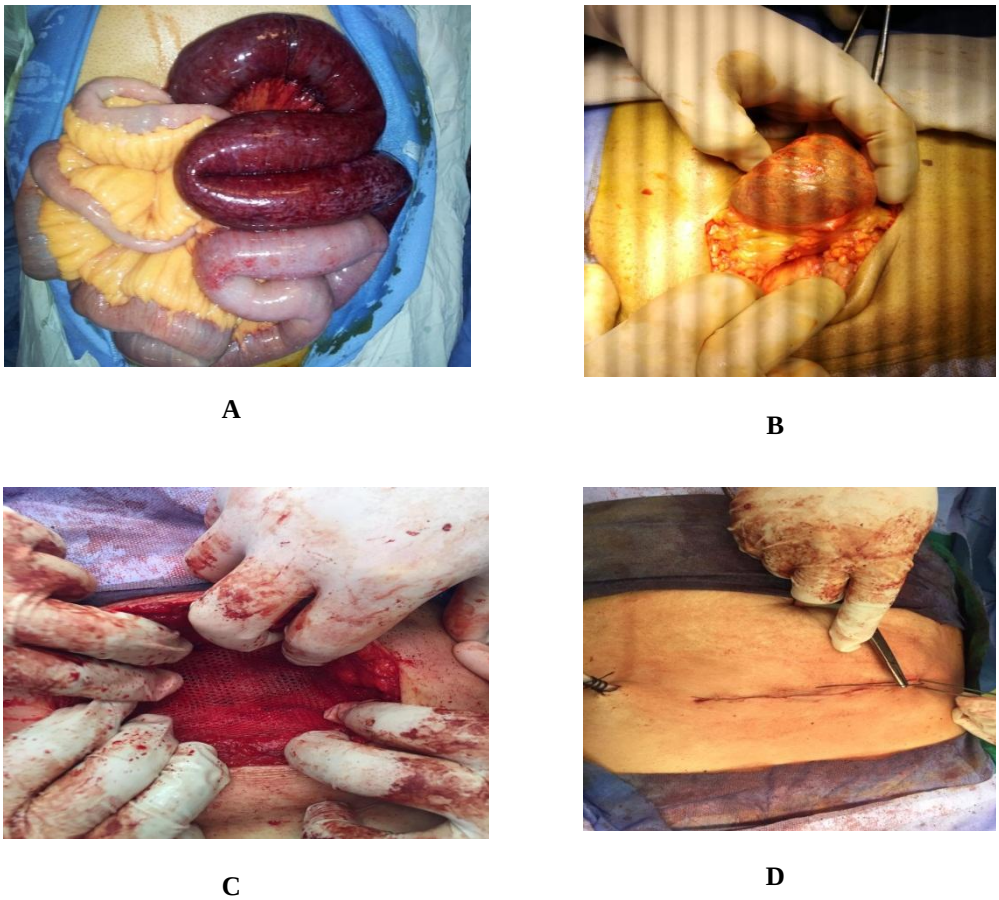
Laboratory (Routine) investigations were done for all patients including complete blood count (CBC), Alanine Aminotransferase (ALT), Aspartate aminotransferase (AST), Urea, Creatinine, Random blood sugar, coagulation profile and serum albumin. Radiological investigations such as superficial probe ultrasonography, pelvi- abdominal ultrasonography, and plain erect x ray abdomen and CT abdomen.

Methods :

The patients are simple random divided into two groups:

GroupA;This group included fifteen patients, resection and anastomosis and intra peritoneal drain then closure of the defect using prolene 1 then mesh repair, using polyproline mesh, (onlay technique),then fixation of the mesh with prolene 2/0. Closure of subcutaneous tissue and skin. Closed suction drain of 2 limbs was used.

Figure 1



A **B**

C **D**

Figure 1: Strangulated umbilical hernia hernia repair without mesh was done.

A: Gangrenous loop of small intestine, resection anastomosis was done.

B: Dissection of the sac in strangulated umbilical hernia which appear bluish in color and containing gangrenous omentum.

C: Fixation of polyproline mesh after closure of the defect

D: Closure of the skin and fixation of the suction drain.

GroupB;This group included also fifteen patients. In this group, was submitted to resection and anastomosis of the gangrenous loop of intestine, intraperitoneal drain was done, then closure of the defect using prolene then closure of subcutaneous tissue using vicryl then closure of skin with closed suction drain of 2 limbs.

Removal of the intra peritoneal drain after 5 days then close follow up to the suction drain daily and estimation of the serous fluid daily, then removal of the suction drain when the serous fluid reach about 30 cc or less and after 7 days post-operative.**Figure 2**

Figure 2: Strangulated umbilical hernia hernia repair without mesh was done.

Follow up:

The postoperative outcome was monitored during outpatient visits. The amount and nature of drained fluid were recorded daily. The drains were removed when the amount of fluid became less than 50 cc/24 hours, or when the drained fluid started to become infected disregarding the amount drained in the last days. Time of drain removal postoperatively was recorded in each case.

Complications:

Postoperative complications including seroma, peritonitis, and mesh rejection were recorded **Figure 3**. We used 3rd generation cephalosporin fortherapy for infection, and wound dressing and debridement were used for necrosis. Wound dressing was standard in all groups **Figure 4**.

Figure 3: Mesh failure after repair of strangulated umbilical hernia in male patients 55 years old.

Figure 4: Surgical site infection after mesh repair of strangulated hernia in 35 years old male.

Statistical analysis :

The collected data were analyzed by computer using Statistical Package of Social Services version 24 (SPSS), Data were represented in tables and graphs, Continuous Quantitative variables e.g. age were expressed as the mean ± SD & median (range), and categorical qualitative variables were expressed as absolute frequencies (number)&relative frequencies (percentage).Suitable statistical tests of significance were used after checked for normality. The results were considered statistically significant when the significant probability was less than 0.05 ($P < 0.05$). P-value < 0.001 was considered highly statistically significant (HS), and P-value ≥ 0.05 was considered statistically insignificant (NS).

III. Results:

This study showed that age of patients with strangulated hernia repaired with mesh group is ranging from18-60 years old with mean (54.6 ± 7.45) years old and 60% of them are female while age of patient in Group2 group is (44.6 ± 11.16) years old, ranged from 18-60 years old, patients in Group A in repair with mesh group were statistically older than Group B repair without mesh. most of patients were female 9 female patients in group A(60%), while in group B 10 patients were female (66.7%). There was no significant difference between both groups regarding comorbidities where 26.7% of the studied Group A were obese and 20% of them were diabetics, while 40% of patients in the Group B were obese and diabetics.(most of patients were obese and non diabetic).**Table (1)**

This study showed that33% of group A patients who underwent repair with mesh had gangrenous intestine versus only 20% of group B repair without mesh, regarding operation time, in 46.6% of group A patients who underwent repair with mesh, the duration was 60-90 minutes versus 20% only in of group B repair without mesh. That mean of hospital stay among Group A is 4.8 ± 1.65 days, with a range from (3-7) days. While in Group B mean of hospital stay is slightly shorter 4.2 ± 1.65 with no statistical difference.**Table (2)**

This study showed thatthere was high statistically significant difference between both groups where pus formation and seroma formation were more statistically higher in Group A.**Table (3)**

Table (1): Sociodemographiccharacteristics and Comorbidities among of the studied groups

Item	Group A (N=15)		Group B (N=15)		Test	P-value
	No.	%	No.	%		
Age groups						
• 18-30	3	20.0	1	6.7	Fisher exact	1.000 (NS)
• 31-60	12	80.0	14	93.3		
Sex						
• Male	6	40.0%	5	33.3%	Fisher exact	1.000 (NS)
• Female	9	60.0%	10	66.7%		
Obesity (BMI > 30)						
• No	4	26.7	6	40.0	0.6	0.438 (NS)
• yes	11	73.3	9	60.0		
Diabetes mellitus on ttt						
• No	12	80.0	9	60.0	Fisher's	0.427 (NS)
• yes	3	20.0	6	40.0		

**** Mann Whitney U test.*** ***P < 0.05 is significant.***

Test: chi-square test significant. ***NS: Not significant.***

Table (2): Intraoperative data and Hospital stay among the studied groups

Item	Group A (N=15)		Group B (N=15)		Test	P-value
	No.	%	No.	%		
Gangrenous content						
• Intestine	5	33.3	3	20.0	Fisher's exact	0.409 (NS)
• Omentum	10	66.7	12	80.0		

Operation time						
• 30-60 min	5	33.3	10	66.7	15.45	0.000* (HS)
• 60-90 min	7	46.6	2	13.3		
• > 90 min	2	20	3	20.0		
Hospital stay (days)	**Group A (N=15)**		**Group B (N=15)**		**MWT**	**P-value**
• Mean ± SD	4.8 ± 1.65		4.2 ± 1.65		90.00	0.314 (NS)
• Median (Range)	5 (3-7)		3 (3 – 7)			

Chi-square test/Fisher's exact test ***NS: Not significant***

HS: highly significant. ***#Mann Whitney U test.***

P < 0.05 is significant.

Table (3): Post-operative complication among the studied groups.

Item	**Group A (N=15)**		**Group B (N=15)**		**Test**	**P-value**
	No.	**%**	**No.**	**%**		
Infection						
• No	6	40.0	13	86.7	7.033	0.008* (S)
• yes	9	60.0	2	13.3		
Seroma formation						
• No	3	20.0	11	73.3	8.571	0.003* (S)
• yes	12	80.0	4	26.7		
Recurrence						
• No	10	66.7	7	46.7	1.22	0.270 (NS)
• yes	5	33.3	8	53.3		
Sinus						

• No	6	40.0	13	86.7	7.033	0.008* (S)
• yes	9	60.0	2	13.3		

Test: chi-square test

NS: Not significant.

IV. Discussion:

In this study the results showed that age of patients with strangulated hernia repaired with mesh group A is ranging from 42-60 years old with mean 54.6 ± 7.45 years old and 60% of them are female while age of patient in Group B is 44.6 ± 11.16 years old, ranged from 18 -60 years old, patients inGroup A in repair with meshgroup were statistically older than Group B repair without mesh.In other study the total number of cases was 40 patients, about 25 cases (62.5%) their age was <65 years and about 15 patients (37.5%) their age was >65 years old [7].

In this study the results showed that there was no significant difference between both groups regarding comorbidities where 26.7% of the studied Group Awere obese and 20% of them were diabetics, while 40% of patients in the Group B were obese and diabetics.

In other study the results showed that about 33.3% of the patients were obese and about 15.4% of them were diabetic in group A, while about 29% in group B were obese and about 19% of them were diabetic[8].

In this study the results show that 33% of group A patients who underwent repair with mesh had gangrenous content from intestine versus only 20% of group B repair without mesh, regarding operation time, in 40% of group A patients who underwent repair with mesh, the duration was more than 90 minutes versus 20% only in of group B repair without mesh.

In other study the results show that 35% of group A patients who underwent repair with mesh had gangrenous contents versus 25% of group B, regarding operation time in group A 45% of patients was more than 90 minutes versus only 20% of group B[9].

In this study the results show that mean of hospital stay among Group A is 4.8 ± 1.65 days, with a range from (3-7) days. While in Group B mean of hospital stay is slightly shorter 4.2 ± 1.65 with no statistical difference.

In other study he results show that hospital stay among group A ranges from (3-6) days. While in group B ranges from (2-4) days [10].

In this study post-operative complications showed high statistically significant difference between both groups where pus formation and seroma formation were more statistically higher in Group A.

Infection occours in 60% in group A while in group B were about 13.3%. Seroma formation in group A about 80% while in group B were about 26.7%. Recurrence rate in group A were about 33.3% while in group B were about 53.3%. Sinus formation in group Awere about 60% while in group B were about 13.3%.

V. Conclusion:

The repair of strangulated umbilical hernia with or without mesh are variable, However, these procedures are associated with poor prognoses and a higher rate of post-operative complications. Therefore, we recommend mesh repair when good general condition of the patient and no resection, anastomosis of intestine was done. However, it should be tried on a much wider scale to prove its validity.

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