

# A Randomized Controlled Study on Patients Who Underwent Ileostomy Closure with Mesh Reinforcement and its Value in Prevention of Closure Site Incisional Hernia

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## Abstract

**Background:** Stomal site incisional hernia is often an underestimated complication following ileostomy closure, with rates about 40%. This was because there were no sufficient previous studies undergone to find a definite solution for it. Therefore, various preventive methods was studied to reduce the incidence of post-ileostomy closure incisional hernia. One of these methods was the usage of prophylactic mesh reinforcement (using a mesh manufactured from approximately equal parts of absorbable poliglecaprone monofilament fiber and non-absorbable polypropylene monofilament fiber) during ileostomy closure and study its role in prevention of stomal site incisional hernia without increasing the incidence of wound complications.

**Aim of Study:** Evaluation of the role of prophylactic mesh reinforcement during closure of ileostomy in prevention of stomal site incisional hernia.

**Patients and Methods:** This was a retrospective study, included 30 Egyptian patients presenting for ileostomy closure. Half of them were control and the other half applied mesh at ileostomy site during closure. Patients of the two groups underwent ileostomy closure between February 2016 and March 2018 and then they had been assessed in the following two years for the occurrence of post-operative incisional hernias.

**Results:** Regarding the incidence of incisional hernia, 9 out of 30 patients (30%) in the current study developed incisional hernias. In group B (without mesh reinforcement) 7 patients (46.7%) developed incisional hernias, while in group A (with mesh reinforcement) 2 patients (13.3%) developed incisional hernias. Although there was trend for developing incisional hernia in patients without mesh reinforcement and the study shows significant result of incisional hernia reduction with mesh reinforcement during the first six months after closure ( $p=0.0421$ ), prophylactic mesh repair did not significantly reduce that incidence in the total follow-up period of the two years ( $p=0.1086$ ).

**Conclusion:** We have concluded that the study shows significant result of incisional hernia reduction with mesh reinforcement during the first six months after closure. How-

ever, in the total follow-up period of the two years prophylactic mesh repair did not significantly reduce post-ileostomy closure incidence of incisional hernia, without significantly increasing the incidence of wound infection.

**Key Words:** *Ileostomy closure – Mesh reinforcement – Closure site incisional hernia.*

## Introduction

**ILEOSTOMY** refers to a stoma constructed by bringing the ileum out onto the surface of the skin. Intestinal waste passes out of the ileostomy and is collected in an artificial external pouching system which is adhered to the skin [1].

Ileostomy is commonly used temporarily to protect a distal anastomosis such as in ileal pouch anal anastomosis or a low colorectal anastomosis. It is also used for fecal diversion from the distal anorectum such as for perianal Crohn's disease, anorectal cancer, diverticular disease, severe perineal trauma or sepsis, treatment of anastomotic leakage and fecal incontinence [2].

There is no significant difference in frequencies of complications between early and late closure of temporary ileostomy, but there is significant difference in types of complications that occur where the early closure has more wound complications and not associated with increased morbidity and mortality while the late closure has significantly more small bowel obstruction rates [3].

Temporary ileostomy closure is an elective procedure; so the complication rate should be low but some previous studies reported high rate of serious complications and death. The overall complication rate for ileostomy closure is ranging from 4.7% to 33.3%. Which can be classified into early and late; early complications like wound infection, anastomotic leakage, bleeding, reoperation and

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death; late complications like incisional hernia, intestinal obstruction and even new stoma formation. There are other systemic complications that may occur as cardiorespiratory problems, pneumonia, deep vein thrombosis and urinary tract infection [4].

Wound infection is a common early complication, it ranges from 1.7% to 18.3 for ileostomy closure and it leads to wound dehiscence and incisional hernia [5]. Incisional hernia is the most common late complication; which is an underestimated complication of ileostomy closure, with rates as high as 40%. As the incidence of bowel cancer increases, more temporary ileostomies are needed and consequently this complication is likely to increase [6].

Nowadays, there is a lack of attention given to the magnitude of incisional hernias and their subsequent effect on morbidity and mortality [7]. Pre-operative and post-operative optimization limits the incidence of incisional hernias. But among all methods, the materials and technique used in abdominal wall closure are considered of the most important risk factors. Therefore, it is very essential to optimize the surgical technique used in abdominal wall closure to prevent the patients from suffering from incisional hernias and consequent risks of their repair [8].

The abdominal wall has moderate strength, three quarters of which resides in the aponeurosis and the rest in the muscles, peritoneum, and skin. Post-operative scar tissue is always weaker and reaches maximum strength about 80 days after the operation. However, if non-absorbable meshes are used, the process of integration is efficient by the tenth day, increasing until about day 35, when it becomes stable [9]. Advantages of Mesh-reinforced ileostomy closure lie in that it represents a simple and feasible strategy to reduce the incidence of incisional hernia with rates as high as 40% representing the most common late complication in ileostomy closure. Although not all patients with an incisional hernia require intervention, yet, medical co-morbidities and intra-abdominal adhesions render hernia repair, when needed, a high-risk procedure. Therefore, it is pertinent to consider hernia prevention strategies like having a prophylactic mesh application in ileostomy closure [10].

Disadvantages of Mesh-reinforced closure lie in that the ileostomy closure site is associated with bacterial contamination because the intestine is open and there is a higher risk of wound infection, especially the onlay mesh applied above the anterior

rectus sheath after its closure which requires more dissection in the plane between the sheath and the subcutaneous tissue which might lead to seroma formation and wound infection that's why a suction drain in that area should be placed, while the intra or preperitoneal mesh insertion has low incidence of wound complications but it involves intestinal complications as bowel contact may lead to adherence and consequent fistulization which is considered a more dangerous complication [11]. Therefore, there is a crucial need to study and compare between the benefits and risks of having a prophylactic mesh application during ileostomy closure.

#### *Aim of the work:*

The aim of the study was to evaluate the role of prophylactic mesh reinforcement during closure of ileostomy in prevention of stomal site incisional hernia.

### **Patients and Methods**

*Type of study:* Retrospective randomized study.

*Study setting:* This study will be conducted on patients presenting for ileostomy closure in Alexandria Main University Hospital and El-Qabbary Specialized Oncology Centre Hospital.

*Study sample:* This study will be conducted on 30 patients presenting for ileostomy closure. Half of them were control and the other half applied mesh at ileostomy site during closure. The group of patients who have undergone the mesh reinforcement was named Group A and the group of control patients was named Group B.

*Study duration:* Patients of the two groups underwent ileostomy closure between February 2016 and March 2018 and then they had been followed-up for two years for the assessment of post-operative incisional hernias.

*Study populations:* Patients attending at Alexandria Main University Hospital and El-Qabbary Specialized Oncology Centre Hospital with the following criteria:

*Inclusion criteria:* Patients who have undergone abdominal surgeries who are having temporary ileostomies of any type and underwent surgery for ileostomy closure.

*Exclusion criteria:*

- 1- Patients with temporary colostomy of any type.
- 2- Patients for whom laparotomy was required for closure of their ileostomies.

- 3- Patients with comorbidities like Diabetes Mellitus (DM), chronic liver and chronic kidney disease.
- 4- Immunocompromised patients.
- 5- Pediatric age group.

*Type of patients:*

This was a retrospective study that included 30 patients of ileostomy closure procedure of age ranging twenty-six to sixty-six years old and from both sexes attending to the hospital. The patients were randomly selected into two groups each included 15 patients, first group underwent ileostomy closure with mesh reinforcement, the second group underwent ileostomy closure without mesh reinforcement.

*Methods:*

All the patients in the present study were subjected to the following:

*Pre-operative data:*

- 1- Demographic data collection from the patients including:
  - Age.
  - Previous surgery undergone, when was it done and the indication for performing an ileostomy in it.
  - Time interval between the ileostomy formation and closure to be within 4-8 weeks.
  - Presence of any comorbidities which might be risk factors raising the incidence of stoma site closure herniation or other complications such as respiratory problems and smoking, diabetes mellitus, obesity, hypertension, chronic kidney disease and malignancy including whether the patient received chemotherapy and radiotherapy or not.
  - History of any other previous surgeries.
- 2- General and abdominal clinical examination.
- 3- Laboratory investigations including serum haemoglobin level (included in complete blood count), serum albumin level and coagulation profile.
- 4- *Radiological investigations:*
  - 1- Distal loopogram with gastrograffin enema.
  - 2- CT abdomen and enterocolonography.

*Operative technique:*

- 1- All patients received prophylactic intravenous antibiotics (cefipime 1g and metronidazole

500mg) upon general or spinal anaesthetic induction.

- 2- Sterilization and disinfection were done.
- 3- A circumferential skin incision was done surrounding the ileostomy site and dissection was done from all abdominal wall layers till separation of the loops from edge of peritoneum and the ileostomy defect in the intestinal wall was sutured.
- 4- Following re-establishment of intestinal continuity and return of bowel back into the intraperitoneal cavity, full thickness of rectus sheath was closed with continuous 0 polypropylene sutures.
- 5- The tissue plane just superficial to the aponeurosis surrounding the fascial closure was dissected with monopolar diathermy to allow onlay placement of a 6 X 11 cm polypropylene mesh (Ultrapro, Ethicon, Johnson & Johnson) that had been cut and trimmed to shape.
- 6- Circumferential 2.0 polypropylene sutures were used to fix the mesh to the underlying fascia. A suction drain was placed in the subcutaneous tissue then the subcutaneous tissue and skin were closed with sutures.
- 7- In patients who did not undergo mesh reinforcement, the anterior rectus sheath was closed in a similar fashion using the same suture and the subcutaneous tissue and skin will be closed with sutures.

*Post-operative course and follow-up:*

- 1- Patients were NPO (nil per os) for 3 days post-operatively and received IV fluids, antibiotics (cefipime 1g and metronidazole 500mg), analgesics and a pack of FFP twice per day. Oral diet started on postoperative day 4.
- 2- Discharge of the patients was after normal vital signs without fever, normal passage of flatus and stool, normal feeding without vomiting, clean incision wound and normal post-operative laboratory investigations' results. The suction drain was removed upon discharge of the patients.
- 3- Post-operative follow-up visits were once per week in the first post-operative month then once per month in the consecutive months to observe the occurrence of wound dehiscence or infection which was detected either clinically if the patient was feverish (temperature at or above 37.5°C) and generally ill or by local inspection and palpation if the signs of inflammation and infection as erythema, hotness, tenderness and

pus discharge were present or by laboratory investigations including high white blood cell count (more than 10,000cells/mm<sup>3</sup>). Also the occurrence of ileostomy closure site herniation was detected by clinical examination of the wound or radiologically through ultrasonography.

- 4- Post-operative follow-up visits continued for a time period of 24 months from the date of ileostomy closure.

#### Statistical analysis:

Quantitative data was represented as mean, standard deviation, median and range. Data were analyzed using independent *t*-test to compare means of two groups. Qualitative data were presented as number and percentage and compared using Chi square test. Graphs were produced by using Excel. *p*-value is considered significant if it is less than 0.05. The study results included post-operative incisional hernia occurrence which was observed in every 6 months within 2 years and post-operative wound infection.

### Results

During the follow-up period of 6 months, in group (A) no patients presented by a post-operative incisional hernia while in group (B) 5 patients presented by post-operative incisional hernia representing 33.3% of the total patients underwent closure without mesh reinforcement. Therefore, as regards post-operative incisional hernia, there is a significant difference between the two groups in the post-operative follow-up period of the first 6 months. However, in the subsequent follow-up visits of the remaining 24 months, group (A) showed 2 cases of incisional hernia (one patient between 6-12 months and the other between 12-18 months). Also, group (B) showed an additional 2 cases at the period between 6-12 months which were all confirmed radiologically. That is shown in (Table 2).

In group A during the follow-up period of 24 months, 2 patients presented by a post-operative incisional hernia and was confirmed radiologically representing 13.3% while 13 patients didn't show post-operative incisional hernia representing 86.7%. While in group B during the follow-up period of 24 months, 7 patients presented by a post-operative incisional hernia and was confirmed radiologically representing 46.7% and 8 patients didn't show post-operative incisional hernia representing 53.3%. The patients presented with post-ileostomy incisional hernia were 9 cases out of the 30 patients of the study sample. They were prepared and man-

aged surgically. Therefore, as regards post-operative incisional hernia, no significant difference between the two groups in the total period of follow-up which is 24 months.

In group A, 4 patients had a post-operative wound infection representing 26.7% and 11 patients didn't show infection representing 73.3%. While in group B, only 3 patient had post-operative wound infection representing 20%, and 12 patients didn't show infection representing 80%. Therefore, no significant difference between the two groups as regards wound infection.

Table (1): Statistical analysis between Group A (ileostomy closure with mesh reinforcement) and Group B (ileostomy closure without mesh reinforcement) regarding demographic data.

	Group A (n=15)		Group B (n=15)		Test of sig.	<i>p</i>	Sig.
	No.	%	No.	%			
<i>Gender:</i>							
Male	14	93.3	13	86.7	$\chi^2 =$ 0.370	FE <sub><i>p</i></sub> = 1.000	NS
Female	1	6.7	2	13.3			
<i>Age (years):</i>							
Range	36.0-66.0		26.0-54.0		<i>t</i> =	0.057	NS
Mean ± SD	48.87±9.85		42.53±7.48				

$\chi^2$ : Chi square test. FE: Fisher Exact.  
*t*: Student *t*-test. Sig.: Significance.  
*p*: *p*-value for comparing between the studied group.  
*p*-value >0.05: Non Significant (NS).  
*p*-value <0.05: Significant (S).

Table (2): Statistical analysis between Group A (ileostomy closure with mesh reinforcement) and Group B (ileostomy closure without mesh reinforcement) regarding Ileostomy closure site incisional hernia in every 6 months during the 24 months follow-up period.

Ileostomy closure site incisional hernia	Group A (n=15)		Group B (n=15)		$\chi^2$	FE <sub><i>p</i></sub>	Sig.
	No.	%	No.	%			
<i>0-6 months:</i>							
No	15	100.0	10	66.7	6.0	0.0421	S
Yes	0	0.0	5	33.3			
<i>6-12 months:</i>							
No	14	93.3	13	86.7	0.3703	1.000	NS
Yes	1	6.7	2	13.3			
<i>12-18 months:</i>							
No	14	93.3	15	100.0	1.034	1.000	NS
Yes	1	6.7	0	0.0			
<i>18-24 months:</i>							
No	15	100.0	15	100.0	0.0	1.000	NS
Yes	0	0.0	0	0.0			

$\chi^2$ : Chi square test.  
 FE: Fisher Exact.  
*p*: *p*-value for comparing between the studied group.  
 Sig.: Significance.  
*p*-value >0.05: Non Significant (NS).  
*p*-value <0.05: Significant (S).

Table (3): Statistical analysis between Group A (ileostomy closure with mesh reinforcement) and Group B (ileostomy closure without mesh reinforcement) regarding the total follow-up period of the 24 months.

Total	Group A (n=15)		Group B (n=15)		$\chi^2$	FE <sub>p</sub>	Sig.
	No.	%	No.	%			
No	13	86.7	8	53.3	3.968	0.1086	NS
Yes	2	13.3	7	46.7			

$\chi^2$  : Chi square test.  
 FE : Fisher Exact.  
 p : p-value for comparing between the studied group.  
 Sig. : Significance.  
 p-value >0.05 : Non Significant (NS).  
 p-value <0.05 : Significant (S).

Table (4): Statistical analysis between Group A (ileostomy closure with mesh reinforcement) and Group B (ileostomy closure without mesh reinforcement) regarding wound infection at the closure site.

Infection at the closure site	Group A (n=15)		Group B (n=15)		$\chi^2$	FE <sub>p</sub>	Sig.
	No.	%	No.	%			
No	11	73.3	12	80.0	0.186	1.000	NS
Yes	4	26.7	3	20.0			

$\chi^2$  : Chi square test.  
 FE : Fisher Exact.  
 p : p-value for comparing between the studied group.  
 Sig. : Significance.  
 p-value >0.05 : Non Significant (NS).  
 p-value <0.05 : Significant (S).

### Discussion

The present study was designed trying to find a solution for post ileostomy closure incisional hernia. Up till now there are no sufficient published studies about this issue. We used a semi-absorbable mesh at the site of closure to prevent incisional hernia. The main concern was post-operative wound infection [12].

Regarding the incidence of incisional hernia, 9 out of 30 patients (30%) in the current study developed incisional hernias. In group B (without mesh reinforcement) 7 patients (46.7%) developed incisional hernias (which was close to the mentioned rates of incisional hernias at ileostomy closure site) [13], while in group A (with mesh reinforcement) 2 patients (13.3%) developed incisional hernias. Although there was trend for developing incisional hernia in patients without mesh reinforcement and the study shows significant result of incisional hernia reduction with mesh reinforcement during the first six months after closure, prophylactic mesh repair did not significantly reduce that incidence in the total follow-up period of the two years (p=0.1086).

This might be due to type II statistical error owing to the small number in the study and also due to the insignificance between both groups regarding incidence of wound infection with 4 cases in group A (26.7%) and 3 cases in group B (20%), putting in mind that wound infection was the most important single factor affecting incidence of incisional hernia in the current study and in previous studies [6,10].

In the study done by Liu, Banham and Yellapu, 47 patients had onlay mesh reinforcement with the same type of mesh as in the current study and only 3 patients developed incisional hernias (6.3% compared to 13.3% in our study). Contrary to our study, they have concluded that this technique has significantly reduced the incidence of incisional hernias at ileostomy closure site (p=0.001) [14].

This was despite the fact that both studies were similar regarding main indication of the ileostomy creative surgery and mean post-operative follow-up time. This difference is most probably explained by lower wound infection rate in their study (4.3% in the mesh reinforcement group and 2.8% in the control group), this might be due to non-complete skin closure compared to complete closure in our study. While in the study of Bhangu et al., no cases developed incisional hernias at ileostomy closure site after biological mesh insertion intraperitoneally. This might be due to the usage of a different type of mesh inserted in a different anatomical site, the small number of patients in the study (only 7 patients) and short follow-up time of only 1 month [15].

In another well-established study, Maggiori et al., studied the effect of using a retromuscular (preperitoneal) bioprosthetic collagen porcine mesh at ileostomy closure site exclusively for rectal cancer patients who have undergone total mesorectal excision. They compared 30 patients mesh group with 64 patients with direct closure as a control group. Their technique significantly reduced the incisional hernia incidence as 3% in the mesh group developed incisional hernias compared to 24% in the control group (p=0.016) [16].

This might be due to performing the study on a larger sample of patients and usage of a bioprosthetic mesh with postoperative wound infection of only 5.3% instead of a synthetic one as in our study. It was also stated that follow-up time for the mesh group was less than that of the control group (16.8±3.3 months in the mesh group and 39.2±16.9 months in the control group). Van Barnveld et al., in their study used a different technique

which was intraperitoneal mesh insertion during stoma creation surgery around the peritoneal defect of the stoma (a mesh consisted of a monofilament polyester structure with a one-sided layer of absorbable collagen for adhesion prevention) followed by reversal after a median time interval of 6 months through a technique similar to our study. They concluded that such a technique was safe (regarding bowel contact complications) and effective in reducing the incidence of incisional hernias (despite not performing any statistical analyses) [17].

In their study no cases developed incisional hernias; this might be due to the fact that previously inserted mesh has been already incorporated within the abdominal wall giving it an extra strength. These results might also be due to that no cases in their study developed wound infection. But such study was performed on only 10 rectal cancer patients and diversion colostomies were included in the study. Kelly and Behrman studied the efficacy of prosthetic mesh reinforcement (polypropylene) during repair of various types of hernias including inguinal, ventral, incisional hernias including those after stoma closure. They concluded its efficiency as 6 patients out of 24 (25%) developed recurrence [18].

Also, in their study 5 patients (21%) developed wound infection. But in their study different types of wounds were involved including cleaner and less contaminated types of wounds which may give false results regarding the safety (regarding infection) of mesh usage in more contaminated wounds. Birolini et al., in their study have undergone onlay prosthetic mesh repair (polypropylene mesh) in cases which developed incisional hernias after stoma closure procedures. Neither of the patients developed recurrence of incisional hernia. This might be explained by that such wounds have become less contaminated as hernias developed and were operated on years after the primary surgeries. This was confirmed by that only 1 of the 20 patients (5%) developed wound infection. This was despite there was a high incidence of diabetes among patients of such study [19].

Morris-Stiff and Hughes in their study tried intraperitoneal usage of non-absorbable mesh (polypropylene) in repair of parastomal hernias in 7 cases; 5 with terminal ileostomies and 2 with terminal colostomies. They reported failure of their technique as 2 cases (29%) developed recurrence of the hernias in addition to more serious complications as bowel perforation and obstruction. This failure was most probably due to the risk of inserting an intra-abdominal prosthetic material espe-

cially when related to colostomies rather than ileostomies [20].

These data were supposed to result in a lower incidence of incisional hernias (as malignancy compared to any other indication is itself a risk factor for herniation) but they resulted in a similar incidence (31.4%). This might be due to that this study was performed on both ileostomies and colostomies with majority of cases with colostomies (93%) and all incisional hernias occurred in cases with colostomies, as colostomies produce more well-formed stool with more incidence of wound infection and other complications after the surgery [21].

All the surgeries in our study were performed by surgeons with the same level of experience (senior residents). In other studies, the level of experience was not reported in some papers or consultant surgeons performed the closure surgeries. Different level of experience might lead to different results [16].

#### *Conclusion:*

In this study, prophylactic mesh reinforcement during ileostomy closure procedure significantly reduce the incidence of closure site incisional hernia in the first post-operative 6 months. However, it does not significantly decrease the incidence of incisional hernia in the total follow-up period of the post-operative 24 months. In addition to, prophylactic mesh reinforcement during ileostomy closure procedure does not significantly increase the incidence of the closure site wound infection.

#### **References**

- 1- SANDS L.R. and MARCHETTI F.: Intestinal stomas. In: Beck DE, Roberts PL, Saclarides TJ, Senagore AJ, Stamos MJ, Nasser Y. (eds). The ASCRS Textbook of Colon and Rectal Surgery. 2<sup>nd</sup> ed. New York: Springer, 517-8, 2011.
- 2- BRAND M.I. and DUJOVNY N.: Pre-operative considerations and creation of normal ostomies. Clin. Colon. Rectal. Surg., 21: 5-16, 2008.
- 3- NAGELL C.F., PEDERSEN C.R. and GYRTRUP H.J.: Complications after stoma closure. A retrospective study of 11 years' experience. Ugeskr. Laeger., 167: 1742-5, 2005.
- 4- KAISER A.M., ISRAELIT S., KLARISTENFELD D., SELVINDOSS P., VUKASIN P., AULT G., et al.: Morbidity of ostomy takedown. J. Gastrointest. Surg., 12: 437-41, 2008.
- 5- JAN H., KHAN A., SAEED T. and KHAN M.M.: Complications following ileostomy closure: An evaluation of the causal factors. Pak. J. Surg., 28 (3): 177-81, 2012.
- 6- POOLE G.V.: Mechanical factors in abdominal wound closure and prevention of fascial dehiscence. Surgery, 97: 631-9, 1985.

- 7- DIENER M.K., VOSS S., JENSEN K., BÜCHLER M.W. and SEILER C.M.: Elective midline laparotomy closure: The INLINE systematic review and meta-analysis. *Ann. Surg.*, 251: 843-56, 2010.
- 8- ISRAELSSON L.A. and MILLBOURN D.: Prevention of incisional hernias: How to close a midline incision. *Surg. Clin. North Am.*, 93: 1027-40, 2013.
- 9- VIDAL J., PLANAS J. and MORENO J.M.: Analysis of 1.235 cases operated over a period of 20 years. *Cirugia Espanola*, 54: 126-31, 1993.
- 10- LOWE J.B.: Updated algorithm for abdominal wall reconstruction. *Clin. Plast. Surg.*, 33: 225-40, 2006.
- 11- CANO M.L., PERIERA J.A., VILLANUEVA B., VALL-RIBERA F., ESPIN E., CARRASCO M.A., et al.: Abdominal Wall Closure After a Stomal Reversal Procedure. *Cirugia Espanola*, 92: 387-92, 2014.
- 12- EL-HUSSUNA A., LAURITSEN M. and BÜLOW S.: Relatively high incidence of complications after loop ileostomy reversal. *Dan. Med. J.*, 59 (10): A4517, 2012.
- 13- KURIAN A., SURYADEVARA S., RAMARAJU D., GALLAGHER S., HOFMANN M., KIM S., et al.: In-hospital and 6-month mortality rates after open elective vs open emergent colectomy in patients older than 80 years. *Dis. Colon. Rectum.*, 54: 467-71, 2011.
- 14- LIU D.S., BANHAM E. and YELLAPU S.: Prophylactic mesh reinforcement reduces stoma site incisional hernia after ileostomy closure. *World J. Surg.*, 37: 2039-45, 2013.
- 15- BHANGU A., FUTABA K., PATEL A., PINKEY T. and MORTON D.: Reinforcement of closure of stoma site using a biological mesh. *Tech. Coloproctol.*, 18: 305-8, 2014.
- 16- MAGGIORI L., MOSZKOWICZ D., ZAPPA M., MONGIN C. and PANIS Y.: Bioprosthetic mesh reinforcement during temporary stoma closure decreases the rate of incisional hernia: A blinded, case-matched study in 94 patients with rectal cancer. *Surgery*, 158 (6): 1651-7, 2015.
- 17- VAN BARNEVELD K.W., VOGELS R.R., BEETS G.L., BREUKINK S.O., GREVE J.W., BOUVY N.D., et al.: Prophylactic intraperitoneal mesh placement to prevent incisional hernia after stoma reversal: A feasibility study. *Surg. Endosc.*, 28: 1522-7, 2014.
- 18- KELLY M.E. and BEHRMAN S.W.: The safety and efficacy of prosthetic hernia repair in clean-contaminated and contaminated wounds. *Am. Surg.*, 68: 524-8, 2002.
- 19- BIROLINI C., UTIYAMA M., RODRIGUES A.J. and BIROLINI D.: Elective colonic operation and prosthetic repair of incisional hernia: Does contamination contraindicate abdominal wall prosthesis use? *J. Am. Coll. Surg.*, 191: 366-72, 2000.
- 20- MORRIS-STIFF G. and HUGHES L.E.: The continuing challenge of parastomal hernia: Failure of a novel polypropylene mesh repair. *Ann. R. Coll. Surg. Engl.*, 80: 184-7, 1998.
- 21- GUZMAN-VALDIVIA G.: Incisional hernia at the site of a stoma. *Hernia*, 12: 471-4, 2008.

## تقييم دور التقوية الوقائية باستخدام شبكة من ألياف البوليجليكابرون القابلة للإمتصاص وألياف البوليبروبايلين الغير قابلة للإمتصاص

الفتق الجراحي في موقع فتحة التبرز يعد من المضاعفات الغير مأخوذ بها. بعد غلق فتحة التبرز الإليوستومي بمعدلات تصل إلى ٤٠٪. هذا لعدم وجود أبحاث سابقة كافية أقيمت لإيجاد حل مناسب لهذه المضاعفة.

لذلك فإن الهدف من هذه الدراسة هو تقييم دور التقوية الوقائية باستخدام شبكة (مصنوعة من أجزاء متساوية تقريباً من ألياف البوليجليكابرون القابلة للإمتصاص وألياف البوليبروبايلين الغير قابلة للإمتصاص) في منع حدوث فتق جراحي في موقع فتحة التبرز بعد غلق فتحة التبرز الإليوستومي دون زيادة نسبة حدوث عدوى في الجرح.

هذه الدراسة كانت دراسة عشوائية محكمة أقيمت على الذين تم تحضيرهم لعمل إغلاق لفتحة التبرز الخارجي الأليوستومي على ٣٠ مريض، ١٥ منهم أجريت عليهم التقوية الوقائية باستخدام الشبكة (مجموعة أ)، و١٥ آخرون لم تجرى عليهم التقوية الوقائية باستخدام الشبكة (مجموعة ب).

بالنسبة للمرضى الذين أجريت عليهم التقوية الوقائية تم وضع الشبكة فوق جدار البطن بعد إغلاقه بغرز وتمت متابعتهم لفترة تتراوح من ٦-٢٤ شهر من أجل متابعة نسبة حدوث فتق جراحي أو عدوى للجرح.

أظهرت النتائج أن مريضين في (المجموعة أ) الذين أجريت عليهم التقوية الوقائية وجد لديهم فتق جراحي (١٢.٣٪) مقارنة ٧ مرضى في (المجموعة ب) (٤٦.٧٪)، أن ٤ مرضى من (المجموعة أ) وجد لديهم عدوى في الجرح (٢٦.٦٪) مقارنة ٣ مرضى في (المجموعة ب) (٢٠٪). لم تكن هناك دلالة إحصائية بين المجموعتين.

بناءً على ذلك، إستنتجنا من هذه الدراسة أن التقوية الوقائية باستخدام شبكة في مكان غلق فتحة التبرز الإليوستومي أظهرت دلالة إحصائية فقط في أول ستة أشهر لكن في مدة سنتين المتابعة ككل لم تقدم دلالة إحصائية في تقليل نسبة حدوث فتق جراحي ولم تزيد من نسبة حدوث عدوى في الجرح بنتيجة ذات دلالة أيضاً.