Original Article

Prophylactic onlay mesh placement to prevent parastomal hernia in patients undergoing abdominoperineal resection: A prospective comparative study a year follow-up, a single-center experience

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ABSTRACT

Introduction: The rate of parastomal hernia may be decreased by implanting mesh at the time of stoma creation. The evidence was previously restricted to a small number of randomized controlled trials.

Objective: The purpose of this study is to determine if simultaneous prophylactic mesh applied during the abdominoperineal resection (APR) has a preventative effect on parastomal hernia (PSH) incidence following APR of rectal cancer.

Patients and Methods: 53 surgically resected rectal cancer patients were included in this study, and were divided into two groups: experimental group (receiving mesh, n=22) and control group (no mesh, n=31). Patients in the control group underwent a conventional end colostomy, but those in the experimental group received a polypropylene mesh put onlay in the shape of a keyhole around the colon. 24 months was the median follow-up period. Cox regression analysis was used to examine the differences in risk functions. The significance of differences across groups was examined using the Pearson Chi and Fisher's exact tests. SPSS version 23 (SPSS Inc., Chicago, IL, USA) was used for all analyses, and a statistically significant value of 0.05 was used.

Results: The postoperative incidence rate of PSH was significantly lower in the experimental (13.6%) group than in the control group (45.2%) at 24 months follow-up, (*P=0.015*). The PSH operative time in the experimental group was significantly longer compared with the control group (265.95 min vs. 256.74 min; *P=0.044*). There is no significant difference between both groups regarding stoma prolapse, stenosis and necrosis.

Conclusion: Mesh prophylaxis appears secure and effective in preventing parastomal hernia at the time of stoma creation in APR patients.

Key Words: Abdominoperineal resection APR, parastomal hernia PSH, rectal cancer.

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INTRODUCTION

A parastomal hernia (PSH) is a common complication following stoma surgery and is associated with long-term morbidity. A PSH occurs when part of the intestine bulges out of the opening in the abdomen, creating a protrusion[1]. This can happen when the abdominal muscles are weakened and are unable to support the weight of the stoma and the surrounding tissue. The hernia can become larger over time and can cause pain and discomfort, as well as make it difficult to manage the stoma[2].

The incidence increases nowadays due to increasing obesity as well as improved survival of colorectal cancer patients. PSH reduces the patient's quality of life following surgery and can potentially result in a serious risk to their lives. A study says that the 5-year incidence of PSH was 30–50%, although another study found 15%. Additionally, Lopez-Cano noted a greater incidence of PSH (93.8%). 5 In China, the PSH follow-up rate can reach 100% with more time[3,4].

According to a study, PSH of abdominoperineal resection (APR) patient's follow-up rate after surgery increased to 72.88% after 5 years. PSH not only adversely impacts patients' quality of life, but it can also result in several problems including discomfort, bleeding, bowel obstruction, and bowel strangling[5].

Many techniques that can be applied in corrective surgery have been developed in this area. However, this incidence could be reduced by reinforcing the abdominal wall with polypropylene mesh[4].

This study aims to evaluate the use of polypropylene mesh for reducing PST.

Aim

To compare between using prophylactic mesh versus none using mesh to reduce the incidence of PSH in patients undergoing APR. Secondary endpoints include rate of infection, rate of reoperation at 12 months, operative time,

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and rehospitalization rate, rate of stoma stenosis, necrosis and prolapse.

PATIENTS AND METHODS:

This was a prospective interventional study conducted in Ain Shams University Hospitals, Cairo, Egypt over 2 years starting from December 2020 to January 2023. Data was collected prospectively from 53 patients. They were successively divided into two groups: control (received no mesh n=31) and experimental (received mesh n=22). Included patients are rectal cancer patients who required APR, who did not have serious heart, lung, or renal failure, who had a follow-up of at least 6 months, and who were prepared to give written informed consent. Patients who had any serious organ failure had previous major abdominal surgery or were unable to give informed consent were excluded. Evaluations of PSH incidence rate and time to recurrence were the main end goals.

The Ethical Committee of the surgical department of Ain Shams University approved the study protocol. Before being enrolled in the trial, every patient gave their signed, informed consent.

Preoperative assessment

Routine preoperative preparation including full labs, pelvic MRI, and Triphasic computed tomography (CT scan or PET CT for local and distant staging of the rectal cancer. Preoperative marking of the stoma site while the patient is standing. Preoperative colonic preparation and antibiotic administration were used in all cases according to local protocol. All cases were operated by the same surgical team throughout the study. As part of their preparation, operations were described in detail to the candidates for surgery and the surgical procedure was reviewed with them with the possibility of conversion to open surgery and all the possible intraoperative, early and late postoperative complications.

Operative techniques

Radical resection of rectal cancer was performed via laparoscopic approach, ligation of the IMA at its origin or just after the take-off of the ascending left colic and TME was performed by dissecting through the holy plane of Heald. Routine splenic flexure mobilization was performed in selective cases when required to avoid tension of the stoma. The perineal approach is then continued, delivery of the specimen and closure of the levator ani when possible, and skin closure is done. Oval skin incision over the planned stoma site to create the permanent end colostomy, cutting anterior rectus sheath and muscle splitting of the rectus muscle and cutting of the posterior rectus sheath and peritoneum was done in the same manner for all patients allowing the passage of two fingers. In the mesh group, before applying the mesh re-draping of the patient's abdomen and changing gloves by the team before applying the mesh.

We applied the mesh in an onlay keyhole fashion (Fig. 1) surrounding the colon by at least 5 cm and fixing it to the anterior rectus sheath with 2–0 prolene sutures. Colon was then delivered to the planned site without any tension in both groups (Figs 2, 3). A closed suction drain is then applied in the mesh group subcutaneously.

Postoperative care

All patients were encouraged to commence oral fluids 6 h after surgery, they received prophylactic anticoagulants, elastic stockings, intravenous broad-spectrum, parenteral analgesia, and PPIs. Postoperative pain was evaluated by the patients using the ‘visual analog scale’ (VAS) of 0–10, with 0 representing no pain and 10 representing the worst pain imaginable. Patients were usually discharged on the 4th postoperative day with removal of the tube drain before discharge.

Postoperative follow-up

The follow-up period of 2 years was carried out on an outpatient basis: Weekly visit for 1 month after discharge from the hospital. Monthly visit till the end of the third month. Visit every 3 months till the end of the second follow-up year. In each visit, the patient had full clinical assessment, required investigations as indicated, and according to the study plan follow-up.

Outcome measures

The primary outcome measure is PSH detected by clinical examination, CT scan was done to identify subclinical cases during the routine follow-up.

Secondary outcomes were stoma-related infections, mesh-related infections, stoma prolapse, stoma necrosis or gangrene, operative time, pain, and postoperative hospital stay.

Statistical analysis

The Pearson Chi and Fisher’s exact tests were used to test for the significance of differences between groups. All analyses were conducted using SPSS version 23 (SPSS Inc., Chicago, IL, USA), and *P* less than 0.05 was considered statistically significant.

RESULTS:

Data were collected, revised, coded, and entered into the Statistical Package for Social Science (IBM SPSS) version 23. The quantitative data were presented as mean, standard deviations, and ranges when parametric and median, interquartile range (IQR) when data was found nonparametric.

• Also qualitative variables were presented as number and percentages, the comparison between groups with qualitative data was done by using χ^2 test.

• The comparison between two groups with quantitative data and parametric distribution was done by using an Independent t-test.

• While the comparison between two groups with quantitative data and non-parametric distribution was done by using Mann–Whitney test.

• The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the P value was considered significant as the following:

P>0.05: nonsignificant.

P<0.05: significant.

P<0.01: highly significant.

53 patients were included in the study with 2 years of follow-up; the mean age was 65.98±8.09 years. 17 (32.1%) patients were females. The mean BMI was 29.78±1.80 Kg/m2. 31 (58.5%) patients were smokers. 24 (45.3%) patients were diabetics. 25 (47.2%) patients were hypertensive. Eight (15.1%) patients had lung disease. Five (9.4%) patients were converted to open surgery (Table 1).

• There was no significant difference between both groups according to demographic data and co-morbidities.

• The mean age was 66.23±8.29 years in the mesh group while in the nonmesh group the mean age was 65.81±8.07 years. In the mesh group, seven (31.8%) patients were females, 15 (68.2%) patients were males while in the nonmesh group 10 (32.3%) patients were females and 21 (67.7%) patients were males. Mean BMI was 29.61±1.59 kg/m2 in the mesh group while in the nonmesh group the mean BMI was 29.90±1.94 kg/m^2.

• In the mesh group: 13 (59.1%) patients were smokers while in the nonmesh group, 18 (58.1%) patients were smokers.

• 11 (50%) patients in the mesh group were diabetic while 13 (41.9%) patients were diabetic in the nonmesh group.

• Eight (36.4%) patients were hypertensive in the mesh group while 17 (54.8%) patients were hypertensive in the nonmesh group.

• Three (13.3%) patients had lung disease in the mesh group while five (16.1%) patients had lung disease in the nonmesh group.

• Only two (9.1%) patients in mesh groups were converted to open while three (9.7%) patients in the nonmesh group were converted to open (Table 2) (Fig. 4).

There was no significant difference between both groups regarding the incidence of PSH development in the first 6 months of surgery, however, there was significant reduction in rates of PSH development in the mesh group in 9-, 12-, 18-, and 24 months following surgery.

In postoperative 3 months, no one in the mesh group experienced PSH while in nonmesh group two (6.5%) patients developed PSH, *P=0.225*.

In postoperative 6 months, no one in the mesh group experienced PSH while in the nonmesh group three (9.7%) patients developed PSH *P=0.1333*.

In postoperative 24 months duration, three (13.6%) patients developed PSH in the mesh group compared with 14 (45.2%) patients who developed PSH in the nonmesh group *P=0.015* (Table 3) (Fig. 5).

The operative time was significantly longer in the mesh group (265.95 min ±5.59) than nonmesh group (256.74 min±20.29) *P=0.044* (Fig. 6), however, there was no significant difference between both groups regarding hospital stay 4.32 days±1.81 versus 4.16 days ±1.83, respectively, *P=0.758*.

In the mesh group three (13.6%) patients developed infected mesh, while one (3.2%) patient developed a peristomal infection in the nonmesh group.

Visual analog score of postoperative pain showed no significant difference between both groups, *P=0.732*.

There was no significant difference between both groups regarding stoma prolapse, stenosis and necrosis. In mesh group one (4.5%) patient developed prolapse versus four (12.9%) patients developed prolapse in nonmesh group, *P=0.305*. in mesh group one (4.5%) patient developed stoma stenosis while no one developed stenosis in the nonmesh group, *P=0.231*. No one developed stoma necrosis in the mesh group while two (6.5%) patients developed stoma necrosis *P=0.225*.

Need for rehospitalization

Four (18.2%) patients in mesh group needed readmission, three of them received parenteral antibiotics for infected mesh and one patient developed stoma stenosis that required refashioning, while in nonmesh group three (9.7%) patients needed readmission, two of them developed adhesive intestinal obstruction which resolved with conservative treatment and one patient developed severe UTI and was managed conservatively (Table 4).

There was no significant difference between both groups regarding peristomal infection, surgical site infection and wound dehiscence. three (13.6%) patients suffered peristomal infection in the mesh group while one (3.2%) patient suffered peristomal infection in the nonmesh group. One (4.5%) patient developed surgical site infection in the mesh group, while two (6.5%) patients developed surgical site infection in the nonmesh group. One (4.5%) patient developed wound dehiscence in the mesh group while two (6.5%) patients developed wound dehiscence in the nonmesh group. However; No one developed intra-abdominal infection in both groups (Table 5, Fig. 7).

Table 1: Demographic data and co-morbidities of APR patients

	N=53
Demographic data	
Age	
Mean±SD	65.98±8.09
Range	52–78
Sex, *n* (%)	
Female	17 (32.1)
Male	36 (67.9)
BMI	
Mean±SD	29.78±1.80
Range	26.3–33.3
Comorbidities	
Smoking, *n* (%)	
Nonsmoker	22 (41.5)
Smoker	31 (58.5)
Diabetes mellitus, *n* (%)	
No	29 (54.7)
Yes	24 (45.3)
Hypertension, *n* (%)	
No	28 (52.8)
Yes	25 (47.2)
Lung disease, *n* (%)	
No	45 (84.9)
Yes	8 (15.1)
Conversion to open, *n* (%)	
No	48 (90.6)
Yes	5 (9.4)

Table 2: Comparison of demographic data and co-morbidities between mesh and no mesh group

	Mesh group	No mesh group			
	N=22	*N*=31	Test value	*P* value	Significance
Demographic data					
Age					
Mean±SD	66.23±8.29	65.81±8.07	0.185•	0.854	NS
Range	52–78	52–77			
Sex, *n* (%)					
Female	7 (31.8)	10 (32.3)	0.001*	0.973	NS
Male	15 (68.2)	21 (67.7)			
BMI					
Mean±SD	29.61±1.59	29.90±1.94	-0.577•	0.566	NS

Range	26.7–32.1	26.3–33.3			
Comorbidities					
Smoking, *n* (%)					
Nonsmoker	9 (40.9)	13 (41.9)	0.006*	0.940	NS
Smoker	13 (59.1)	18 (58.1)			
Diabetes mellitus, *n* (%)					
No	11 (50.0)	18 (58.1)	0.338*	0.561	NS
Yes	11 (50.0)	13 (41.9)			
Hypertension, n (٪)					
No	14 (63.6)	14 (45.2)	1.763*	0.184	NS
Yes	8 (36.4)	17 (54.8)			
Lung disease, *n* (%)					
No	19 (86.4)	26 (83.9)	0.062*	0.803	NS
Yes	3 (13.6)	5 (16.1)			
Conversion to open, *n* (%)					
No	20 (90.9)	28 (90.3)	0.005*	0.943	NS
Yes	2 (9.1)	3 (9.7)			

P value greater than 0.05: Nonsignificant (NS); *P value* less than 0.05: Significant (S); *P value* less than 0.01: highly significant (HS). Chi-square test; •: Independent t-test.

Table 3: Incidence of parastomal hernia in mesh and no mesh group with 2 years follow-up

	Mesh group	No mesh group			
Incidence of hernia	*N* (%)	*N* (%)	Test value*	*P* value	Significance
3 month					
No	22 (100.0)	29 (93.5)	1.475	0.225	NS
Yes	0	2 (6.5)			
6 month					
No	22 (100.0)	28 (90.3)	2.257	0.133	NS
Yes	0	3 (9.7)			
9 month					
No	22 (100.0)	25 (80.6)	4.802	0.028	S
Yes	0	6 (19.4)			
12 month					
No	22 (100.0)	22 (71.0)	7.694	0.006	HS
Yes	0	9 (29.0)			
18 month					
No	21 (95.5)	20 (64.5)	7.032	0.008	HS
Yes	1 (4.5)	11 (35.5)			
24 month					
No	19 (86.4)	17 (54.8)	5.870	0.015	S
Yes	3 (13.6)	14 (45.2)			

P value greater than 0.05: Nonsignificant (NS); *P value* less than 0.05: Significant (S); *P value* less than 0.01: highly significant (HS). *:Chi-square test.

Table 4: Comparison of operative, follow-up and outcomes of mesh versus no mesh group

	Mesh group	No Mesh group			
	N=22, [*n* (%)]	*N*=31, [*n* (%)]	Test value	*P* value	Significance
Operative time (min)					
Mean±SD	265.95±5.59	256.74±20.29	2.069•	0.044	S
Range	258–285	243–359			
Hospital stay					
Mean±SD	4.32±1.81	4.16±1.83	0.309•	0.758	NS
Range	3–9	3–10			
Infection					
Mesh related					
No	19 (86.4)	–	–	–	–
Yes	3 (13.6)	–			
Stoma related					
No	–	30 (96.8)	–	–	–
Yes	–	1 (3.2)			
(Visual analogue score)					
Median (IQR)	3 (3–5)	3 (3–4)	–0.342	0.732	NS
Range	2–8	3–7			
Stoma complication					
Prolapse					
No	21 (95.5)	27 (87.1)	1.052*	0.305	NS
Yes	1 (4.5)	4 (12.9)			
Stenosis					
No	21 (95.5)	31 (100.0)	1.436*	0.231	NS
Yes	1 (4.5)	0			
Necrosis					
No	22 (100.0)	29 (93.5)	1.475*	0.225	NS
Yes	0	2 (6.5%)			
Re-hospitalization					
No	18 (81.8)	28 (90.3)	0.812*	0.368	NS
Yes	4 (18.2)	3 (9.7)			
Adhesive IO	–	2 (6.5)	–	–	–
Severe UTI	–	1 (3)			

P value greater than 0.05: Nonsignificant (NS); *P value* less than 0.05: Significant (S); *P value* less than 0.01: highly significant (HS).
*:Chi-square test; •: Independent t-test; ‡: Mann–Whitney test.

Table 5: Comparison of wound complication between mesh versus no mesh group

	Mesh group	No Mesh group			
	N (%)	*N* (%)	Test value	*P* value	Significance
Peristomal infection					
No	19 (86.4)	30 (96.8)	1.999	0.157	NS
Yes	3 (13.6)	1 (3.2)			
Surgical site infection					
No	21 (95.5)	29 (93.5)	0.088	0.767	NS
Yes	1 (4.5)	2 (6.5)			

Wound dehiscence					
No	21 (95.5)	29 (93.5)	0.088	0.767	NS
Yes	1 (4.5)	2 (6.5)			
Intra Abdominal infection					
No	22 (100.0)	31 (100.0)	NA	NA	NA
Yes	0	0			

P value greater than 0.05: Nonsignificant (NS); *P value* less than 0.05: Significant (S); *P value* less than 0.01: highly significant (HS).
*:Chi-square test.

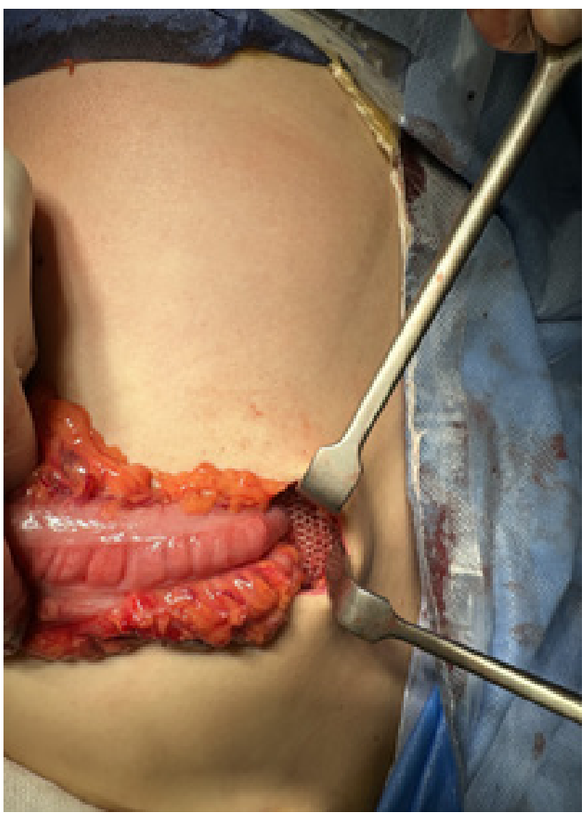

Fig. 1: Onlay mesh in end colostomy formation.

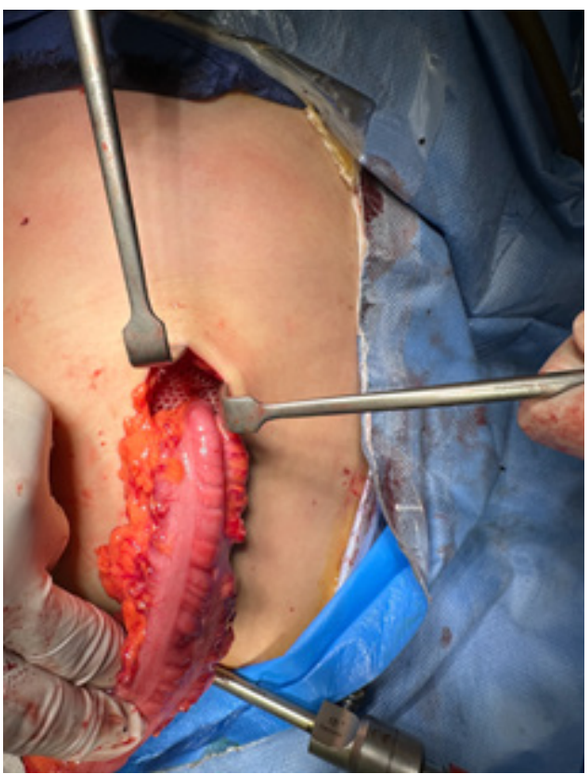

Fig. 2: Onlay mesh in end colostomy formation.

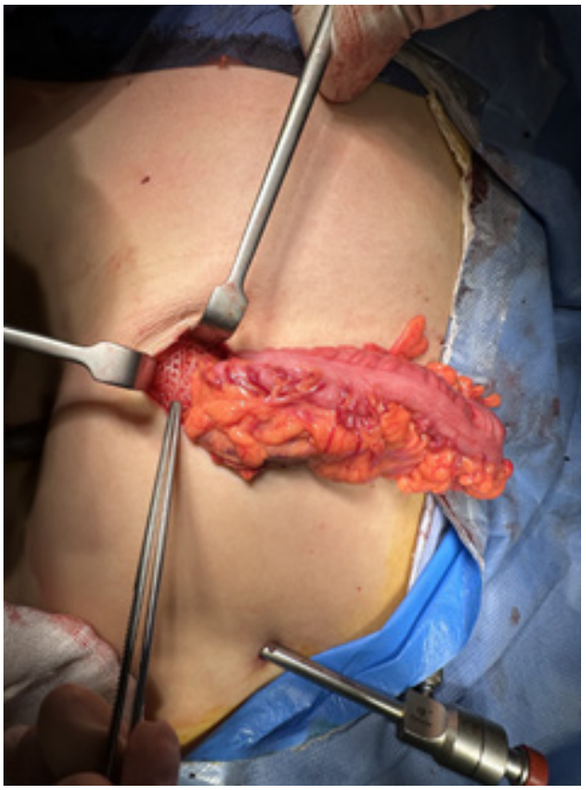

Fig. 3: Onlay mesh in end colostomy formation.

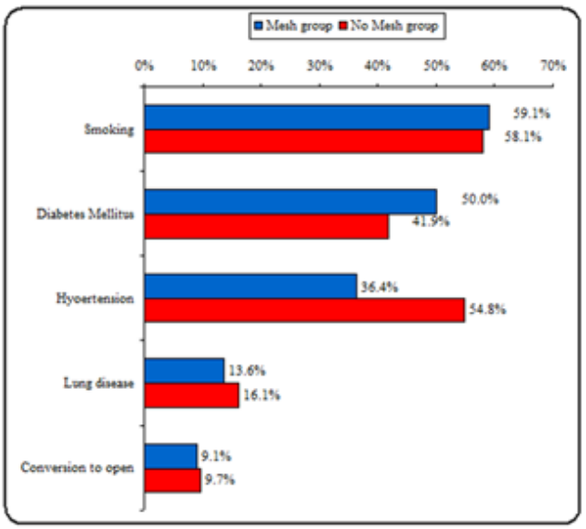

Fig. 4: Comparison of comorbidities between mesh and no mesh group.

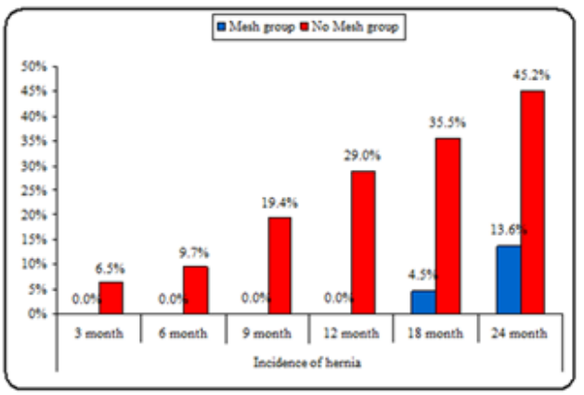

Fig. 5: Incidence of parastomal hernia in mesh vs no mesh group.

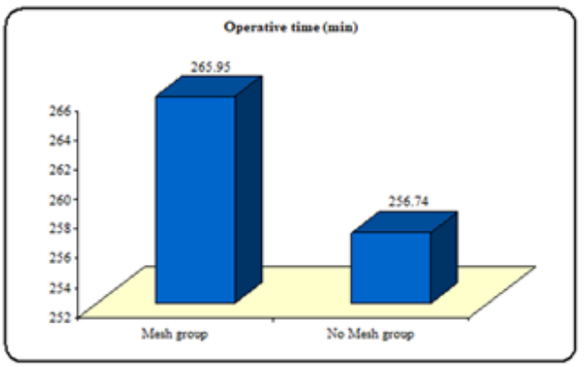

Fig. 6: Comparison of operative time between mesh and no mesh groups.

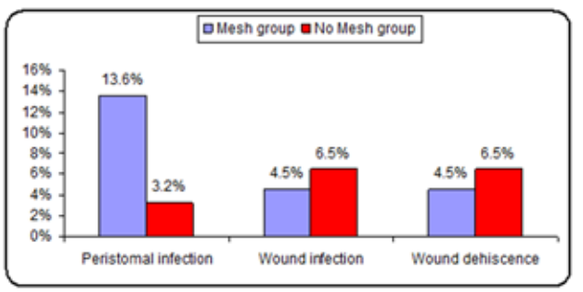

Fig. 7: Comparison of peristomal infection, wound infection, and wound dehiscence between mesh versus no mesh group.

DISCUSSION

In the general population, the occurrence of stoma creation is low, with an incidence of 4–6 cases per 10 000 people and a prevalence of 15–20 cases per 10 000 people. In elective cases, permanent stomas are most commonly created. After the creation of an end-colostomy, complications are frequent and range from 21 to 70%. These complications typically include complications such as stomal prolapse, stenosis, and skin infection around the stoma, while less common complications include fistula formation and stoma retraction. Delayed complications are also observed, with parastomal hernia being the most common,

occurring in up to 48% of patients with an end-colostomy when assessed clinically and up to 78% when assessed by CT. More than 25% of patients with clinical parastomal hernia require surgical repair, which has a high recurrence rate. Therefore, prevention is the best strategy for managing this complication[6].

The use of preventive surgical mesh as a mechanical support during end colostomy construction has been studied extensively to avert these problems[7]. Some studies have shown that prophylactic mesh placement significantly lowers the risk of parastomal hernias without increasing morbidity; however, other studies have not found a significant correlation between prophylactic mesh placement and a lower risk of parastomal hernias[2].

This study included a total number of 53 patients who underwent APR and permanent end colostomy, 22 patients underwent prophylactic mesh deployment to evaluate the rate of occurrence of parastomal hernia in the first postoperative 2 years.

In terms of operation time, the mesh group's (265.95 min ±5.59) was noticeably longer than the non-mesh group's (256.74 min±20.29).

Similar to this, six trials totaling 1683 patients were examined in the systematic review. Of them, 669 (40%) had stoma reversals with mesh reinforcement and 1014 (60%) had stoma reversals without mesh reinforcement. According to Mohamed and colleagues, the mesh group's operative duration was found to be substantially greater than that of the nonmesh group (135.3±86.1 min vs. 85.3±35.3 min, *P=0.02*)[8].

Moreover, a multicenter, randomized, controlled, double-blind trial. A permanent end colostomy was created during open colorectal surgery, and patients were randomly assigned to 2 groups: one with mesh and the other without mesh. According to this study, the mesh group's procedure took noticeably longer to complete (*P=0.019*)[9].

That might be explained by saying that adding a mesh requires an extra step, which lengthens the process.

In contrast, 12 RCTs were included in the McKechnie and colleagues meta-analysis. Of these, 581 patients had colostomy development with deployment of a preventative mesh, whereas 671 patients did not. The operating times of the two groups did not differ significantly, according to the authors (*P=0.31*)[7].

Regarding the duration of hospital stay, there was no significant difference between both groups regarding hospital stay 4.32 days±1.81 versus 4.16 days±1.83, respectively, *P=0.758*.

Similar findings were made by Mohamed *et al*. who discovered that there was no statistically significant difference between the length of hospital stays for the mesh and nonmesh groups (5.3±0.39 days vs. 5.8±0.56 days; *P=0.31*)[8]. A meta-analysis conducted by Peltrini and colleagues in 2021 included seven studies with a total of 1716 patients who underwent stoma closure, of which 78.4% had ileostomies and 21.6% had colostomies. The analysis compared stoma closure with mesh reinforcement (n=684) to stoma closure without mesh reinforcement (n=1032). The study found that stoma closure with mesh was not associated with a significant increase in hospital stay compared with the no mesh group (*P=0.096*)[10].

According to our findings, parastomal hernia incidence was significantly lower in patients who underwent permanent end colostomies with preventive mesh (13.6%) than in those who underwent colostomies without prophylactic Mesh (45.2%) in 2 years follow-up, *P=0.015*.

As a preventive strategy, the 2018 European Hernia Society Parastomal Hernia Guidelines highly recommend utilizing synthetic mesh when constructing an end colostomy[11].

McKechnie *et al*. reported that preventive mesh implantation patients had a significantly decreased probability of developing a parastomal hernia (OR 0.60, *P = 0.0003*)[7]. Moreover, Gao and colleagues noted that when comparing the experimental group. The control group demonstrated a numerically higher incidence of PSH in comparison to the other group[1]. Mesh reinforcement decreased the incidence of stoma site incisional hernia while maintaining a similar rate of SSI across mesh and nonmesh groups, according to a meta-analysis of three case-control studies conducted in 2019 by Hill *et al*.[12]. This is consistent with what we found. Numerous systematic studies or meta-analyses, some of which were published recently, have found that a nonabsorbable synthetic mesh placed in the retromuscular location lowers the incidence of PSH with no associated increase in morbidity[13–16].

Nonetheless, there are certain issues with prosthetic meshes. These can cost more money, take longer to complete, and increase the risk of infection or adhesion formation in the intestinal loops[17,18]. A synthetic mesh with rough edges, polypropylene mesh has a higher risk of intestinal erosion and perforation[19]. More absorbable material has been used in the construction of more recent composite meshes, which results in a less noticeable inflammatory response in the tissues[20].

The current investigation was unable to show any variations in colostomy necrosis and stenosis rates between the mesh and no mesh groups, *P value=0.225* and 0.231, respectively. Sahebally and colleagues found similar results in their systematic review and meta-analysis study, which comprised 1097 patients (538 with mesh and 559 without mesh) and 11 RCTs. The results of this investigation showed that the rates of stomal necrosis and stenosis did not differ between the mesh and nonmesh groups [odds ratio (OR)=0.72, *P=0.48*] or stoma stenosis (OR=1.21, P=0.73, *P=0.71*), respectively[4].

Regarding peristomal infection, the frequency of peristomal infection was similar in both groups, with no discernible difference, *P=0.157*. This was similar to Sahebally *et al*. (2021), who discovered that the incidence of peristomal infection did not differ between preventive mesh and no mesh (OR=0.70, *P=0.51*, *P=0.74*)[4]. This was owed to prophylactic antiseptic measures used during the deployment of the mesh.

Regarding stoma prolapse, there was no significant difference between both groups, being (4.5%) in mesh group vs 12.9% in the no mesh group, *P=0.305*. Similar findings were reported by Sahebally *et al*. (2021), who found that the incidence of stoma prolapse did not differ between prophylactic mesh and no mesh. (OR=0.38, *P=0.07, P=0.56*)[4]. The meta-analysis of the eight trials that compared the implantation of any prophylactic mesh at the time of stoma formation with the absence of mesh showed that there was probably no statistically significant increase in the incidence of parastomal problems linked to the mesh (*P=0.990*)[15]. Moreover, Wang *et al*. (2016) observed that there were no differences in stoma-related morbidity between the mesh and nonmesh groups (RR, 0.65)[2].

There was no discernible difference between both groups for intraabdominal infection, dehiscence, or wound infection. Similar findings were reported by Lopez-Cano *et al*. when they discovered no statistical differences between groups for wound infection (RR 0.77), (*P=0.46*)[14]. Moreover, Van den Hil and colleagues discovered that there were no appreciable differences between preventive mesh placement and no mesh placement when it came to surgical site infections (OR 1.06, *P = 0.84*)[21]. Moreover, Peltrini *et al*. (2021) discovered that the included studies in their analysis did not show SSI or wound infection rates that were greater than the no mesh control group[10].

Study limitation

a. Our study included patients who followed-up only for a short term only. However, long-term results are lacking.

b. Mesh complications are still not yet reported over a long term follow-up.

c. Heterogeneity of patients' data and demography might result in different nonreliable results.

CONCLUSION

Implantation of preset mesh in surgically resected patients with rectal cancer reduced the incidence of PSH after the surgery. Overall, in this study, no complications, such as stoma infection, stoma subcutaneous effusion, stoma stenosis, intestinal obstruction, and intestinal leakage, were observed with the placement of onlay mesh with controllable risks. However, there is a small rise in the overall operation time. Thus, prophylactic placement of mesh will be effective in reduction of postoperative complications along with improving the quality of life of APR patients.

CONFLICT OF INTEREST

There are no conflicts of interest.

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