

Stoma Reversal in Children: Our Experience after Change of Technique.

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Received: April 2017

Accepted: May 2017

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ABSTRACT

Background: Formation of an intestinal stoma is a component of surgical intervention for diseases of the bowel. The technique for stoma reversal remained controversial in the use of either single or double layer of sutures and type of suture used for anastomosis. **Aims:** To evaluate the safety, efficacy, time consumption and outcome of single layer extra mucosal interrupted anastomosis for stoma reversal of both small and large bowel in children using polyglactin suture. **Methods:** Forty cases were included in this study in the age group of three months to 15 years for stoma reversal by single layer extra mucosal interrupted anastomosis. All the patients were operated under general anesthesia and by three operating surgeons by the same technique. **Results:** The mean operative time for anastomosis started from taking of first stitch to the last was 14 minutes and mean duration of hospital stay was seven days. Wound infection was seen in three patients and one patient developed anastomotic leak. **Conclusion:** Stoma reversal by single layer extra mucosal interrupted anastomosis for reconstruction of both small and large bowel in children using polyglactin is safe, effective, time saving without any increase in anastomotic leak rate.

Keywords: Single layer anastomosis, anastomotic leak, anorectal malformation (ARM), polyglactin.

INTRODUCTION

Intestinal stoma formation is common in children following surgery for diseases of small and large bowel.^[1] The ideal time for reversal of stoma is nine to 12 weeks after the primary surgery, so as to allow the proper recovery from previous surgery and to let the adhesions settle on their own.^[2] Controversy exists whether or not to use single layered extra mucosal interrupted suture technique for the reversal of stomas.

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It was Halsted who described a single layer suturing technique for intestinal anastomosis.^[3] Various techniques have been devised for intestinal anastomosis but there is no single technique which is internationally accepted.^[4] Many surgeons are using single layered extra mucosal technique for closure of stomas instead of continuous single layer or double layer, because of many advantages of the above said technique including reduced time taken for anastomosis, no compromise in lumen, less anastomotic leak, comparable/ less complication rate and least damage to submucosal vascular

plexus.^[5] Recently single layer anastomosis has gained popularity.^[6,7] This study was conducted with the aim to confirm the safety and efficacy of this technique in our institution as we have changed our technique of stoma reversal from double layer to single layer interrupted extramucosal technique.

MATERIALS AND METHODS

This study was conducted in the Post Graduate Department of General Surgery, Govt. Medical College Jammu from March 2016 to April 2017. Forty patients of intestinal stoma posted for stoma closure were included in the study. [Table 1] shows primary diagnosis of patients which were included in this study for stoma reversal. All patients were pre operatively evaluated for patency of distal bowel and fitness for general anaesthesia and stoma closure was done under general anesthesia in all patients. All patients received premedication and prophylactic antibiotics half an hour before induction and the injectable antibiotic was continued for next 24 hours. Stoma closure was done in single layer extra mucosal interrupted technique using absorbable polyglactin 3-0 or 4-0 suture material. Outcome of patients was evaluated in term of:

1. Duration of anastomosis in minutes (time counted from first stitch taken to completion of anastomosis).
2. Return of gastrointestinal function (return of bowel sounds/ passage of flatus or stools). Nasogastric

aspiration was done in all patients and nasogastric tube was removed after return of gastrointestinal function. Oral feeds were started after the removal of nasogastric tube.

3. Anastomotic leak.
4. Re-exploration.
5. Hospital stay (in days).
6. Cost factor and
7. Mortality.

These patients were followed on 7th and 28th day of discharge from hospital in outpatient department.

RESULTS

Out of 40 patients included in this study, 28 were males and 12 were females and age ranges between three months to 15 years. Among these patients 22 had ileostomy while 18 patients had colostomy as an outcome of previous surgery for different primary diseases as shown in [Table 1]. All the patients of colostomy were of ano rectal malformations. All the anastomosis were performed by senior operating surgeons. All the anastomosis constructed were end to end type of anastomosis and in all anastomosis

absorbable polyglactin 3-0 or 4-0 suture material was used. The mean operative time was 14 minutes (8-20 min). Wound infection was seen in four patients, which were managed conservatively. One patient developed anastomotic leak and this patient was re explored on post-operative day five and again stoma was made. Mean time for return of bowel function was on 3rd day (2-4 days). Mean duration of hospital stay was seven days ranging from 06 to 12 days. This technique was cost effective as a single suture required for anastomosis, anesthesia and overall surgery duration was less due to short duration of time required for anastomosis. There was no mortality in study group.

Table 1: Showing primary diagnosis of 40 patients undergone stoma reversal.

Diagnosis	Frequency	Percent
Intussusceptions	6	15%
Ileal atresia	7	17.5%
Enteric ileal perforation	5	12.5%
Traumatic ileal perforation	4	10%
ARM	18	45%
Total	40	100%

Table 2: Comparison of various parameters of present study with different studies.

S. No.	Parameter	Present Study N=40	Garude Et Al 16 N=73	Burch Et Al 17 N=65	Mittal Et Al 7 N=30	Shabab Et Al 18 N=24	Khan Et A L19 N=28
1	No. & type of suture material used	1Polyglactin	1 Prolene	1 Prolene	-	-	-
2	Mean duration of anastomosis in minutes	14	9.5	20.8	15.3	-	20
3	Hospital stay in days (Mean)	7 (6-12)	12	7.9	12.8	-	-
4	Anastomotic leak with %	1(2.5%)	4(5.4%)	2(3.1%)	2(6.67%)	1(4.2%)	1(6%)
5	Wound infection	4(10%)	-	-	5(16.67%)	2(8.3%)	-
6	Return of bowel function in days (Mean)	3(2-4)					
7	Mortality	0	-	-	-	0	-
8	Site of anastomosis						
	Entero enteric	55%	63%	37%			
	Entero colic	-	20%	29%	-	-	-
	Colocolic	45%	17%	34%			

DISCUSSION

The gut anastomosis heals by same mechanism like that of wound healing.^[8] The submucosa, is the strongest layer of gut wall, therefore ideal anastomotic technique is the one which includes, apposition and approximation of submucosa of gut wall. Anastomotic failure had always been a cause for concern in patients undergoing surgery with gastrointestinal anastomosis,^[9,10] as it adversely affects the surgical outcome. Healing process is dependent on general factors as age, state of nutrition and diseases like renal failure, jaundice, malignancy, as well as local factors like vascularity, sepsis and suture technique.^[11]

Numbers of anastomotic techniques are available but because all compromise healing, none can be considered perfect.^[12] The points against double layer anastomotic technique are that it ignores the basic principle to accurately opposing the clean cut

edges and large amount of ischemic tissue within the suture line, which may increase the incidence of leak and excessive inversion may lead to narrowing of lumen.^[13] On the other hand, single layer anastomotic technique employing extra mucosal sutures which allows for accurate opposition, incorporate the strongest layer (submucosa) of gut, causes minimal damage to submucosal vascular plexus and least disturbance to lumen.^[14,15] Although various endpoints can be used to assess efficacy and safety of intestinal anastomosis, risk of leak after operation occupies the greatest attention among surgeons. In our study total of 40 stoma closure were done using single layer extramucosal anastomotic technique and only one patient developed anastomotic leak. Although the rate of anastomotic leak in various studies varies from 2.5-6.7% as shown in [Table 2]. The other parameters like time of anastomosis was almost comparable with Mittal et al,^[7] it was 14 minutes in our study. Single suture

required for anastomosis, which was also comparable with Garude et al and Burch et al but we used polyglactin instead of prolene,^[16,17] mean duration of hospital stay in our study was 07 days which was significantly lesser as compared to other studies and there was no mortality among the study group as shown in [Table 2].

CONCLUSION

Single layer extra mucosal interrupted technique for stoma reversal in both small and large bowel is a safe technique and this technique can be used in daily practice as it save time and is cost effective without increase in complication rate.

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How to cite this article: Wani AH, Iqbal J, Dingra NC, Riaz M. Stoma Reversal in Children: Our Experience after Change of Technique. *Ann. Int. Med. Den. Res.* 2017; 3(4): SG17-SG19.

Source of Support: Nil, **Conflict of Interest:** None declared