

Original Research Article

A clinical study of incidence of primary repair vs intestinal stomas during emergency surgeries, their complications and morbidityPrashant Raj Pipariya^{1*}, Ajay V Menon²¹Associate Professor, Department of Surgery, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India²PG Students, Department of Surgery, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India***Corresponding author**

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Abstract: Ours was a prospective study on a total of 100 patients undergoing either primary repair of bowel or intestinal stoma formation, following emergency laparotomies in the department of surgery, Gajra Raja Medical College, Gwalior (Madhya Pradesh) during the study period of September 2013 to August 2014. After obtaining consent from ethical committee, patients who underwent emergency laparotomies with intraoperative enterostomy/ primary repair/anastomosis done were randomly selected based on the records and grouped into two groups of those who underwent primary repair/resection/anastomosis or those who underwent stoma formation. Intraoperative, immediate and postoperative complications were studied and statistically analyzed.

Keywords: Enterostomy, resection, anastomosis, stoma.

INTRODUCTION:

An intestinal stoma is an opening of the intestinal or urinary tract onto the abdominal wall, constructed surgically or appearing inadvertently. Commonly performed procedures are colostomy and ileostomy. A colostomy is a connection of the colon to the skin of the abdominal wall. An ileostomy involves exteriorization of the ileum on the abdominal skin. In rare instances, the proximal small bowel may be exteriorized as a jejunostomy [1].

A primary repair involves repairing of all the tissues during the first surgery. This includes simple closure of a perforation as well as resection anastomosis of a damaged segment of the bowel. The performance of an ostomy or intestinal anastomosis in cases of perforation peritonitis or intestinal obstruction is a controversial theme in emergency surgery. On one hand there are risks of dehiscence of the anastomosis, and on the other hand, the inconveniences of small bowel exteriorization [5], either surgery is associated with a unique set of advantages and complications.

Post-operative complications can be wound infection, complete or partial wound dehiscence, enterocutaneous fistula/leak, intra-abdominal abscess and stoma related complications such as parastomal irritation/ infection/excoriation, stoma retraction, small

bowel obstructions, ileostomy prolapse, ileostomy diarrhoea [6].

In properly selected patients, resection and anastomosis of injuries of the large and small bowels appear to be safe, with acceptable leak and abscess rates, and should therefore at least be considered in all patients [7]. A loop ileostomy/colostomy is a safe option and stoma of choice when temporary fecal diversion is required [8].

The final decision to perform primary repair or diversion should be made on the basis of overall patient stability and the condition of the bowel at exploration [9]. The answers to these questions are not easy and not always supported by scientific data. They reflect, therefore, mostly the experience of surgeons. My study aims to compare both the procedures in our set up and assimilate data for deciding on the right procedure based upon patient condition, complications, monetary burden and post-operative recovery.

AIMS AND OBJECTIVES:

1. To study the feasibility of primary repair versus intestinal stomas in emergency surgeries.
2. To study the various complications and morbidities encountered after the construction of intestinal stomas or after primary repair.

3. To study the duration of hospital stay and oral feed in both cases.
4. To study the various difficulties faced in stoma care and monetary burden on the patient.
5. To study the ways in which these complications can be minimized and managed in a way for better social acceptance.

MATERIALS AND METHOD:

Ours was a prospective study on a total of 100 patients undergoing either primary repair of bowel or intestinal stoma formation, following emergency laparotomies in the department of surgery, Gajra Raja Medical College, Gwalior (Madhya Pradesh) during the study period of September 2013 to August 2014.

In all cases, laparotomy was performed by midline incision, under general endotracheal anaesthesia. The nature and volume of peritoneal fluid, number of perforations, the distance of the perforations from the ileocaecal junction, and the type of surgery performed (primary repair, intestinal resection with anastomosis, or stoma) were considered and recorded.

Stoma formation was done using a standard technique of circular skin opening, incision of anterior and posterior rectus sheath, muscle splitting, placing of supporting rod/feeding tube (if necessary), bowel exteriorisation and placing of sutures from bowel (full thickness) to the deep dermal layers of skin.

In case of intestinal resection, a primary anastomosis was created in a double layer; an inner all coats layer using vicryl (absorbable suture material) and an outer seromuscular layer using silk (non-absorbable suture material). Regarding primary repair, the technique adopted consisted of an inner layer of full thickness sutures placed using vicryl 3-0 followed by an outer seromuscular layer of sutures placed using silk 3-0. Debridement of edges of perforation was done in all cases.

After obtaining consent from ethical committee, patients were divided into two groups of 50 each, Group R had patients who underwent primary repair/resection anastomosis and Group S had patients who underwent stoma formation.

From the immediate post op period till discharge patient was monitored for any complications. An assessment of the monetary burden on the patient was calculated by adding the total amount of hospital expenses (cost of surgery and daily expenses) to the loss of income suffered by the patient per day. Follow up of the patient was also done by patient interview- in person or over the phone preferably 6wks post discharge to enquire about any delayed complications.

Inclusion Criteria:

1. All adult patients, male and female undergoing emergency laparotomies with intraoperative findings necessitating primary anastomosis/repair or stoma construction in whom a follow up of 6wks is feasible.
2. Patients who gave consent to be included in the study and for follow up.

Exclusion Criteria:

1. All emergency stoma surgeries or primary anastomosis occurring in pediatric age group (0-12years).
2. Patients undergoing elective stoma closure or stoma construction during elective surgery.
3. Patients undergoing a primary repair along with diverting stomas.
4. Patients in whom a follow up would not be feasible
5. Any patient undergoing biliary-enteric or pancreatico-enteric anastomoses.

OBSERVATIONS:

The most common general complication in Group S was wound infection (28%) followed by wound dehiscence and chest infection. The most common procedure related complication was excoriation of parastomal skin (16%) (Table-1).

The most common general complication in Group R was wound infection (28%) followed by wound dehiscence and chest infection. The most common procedure related complication was obstruction (14%).64% of patients in Group S developed complications compared to 52 % in Group R. The mortality rate was 8% (5 in Group S and 3 in Group R).(Table-2)

Table 1: Showing postoperative Complications in Group S

General Complications			Stoma Related Complications		
Complication	N	%(of total cases)	Complication	N	%(of total cases)
Wound Infection	14	28	Stoma Prolapse	7	14
Wound dehiscence	8	16	Parastomal Hernia	3	6
Chest Infection	7	14	Skin Excoriation	8	16
Cardiac Complication	2	4	Stoma Necrosis	3	6
Reperforation	2	4	Local Abscess	3	6
			Obstruction	3	6
			Stoma Retraction	2	4

Table 2: Showing postoperative Complications in Group R

General Complications			Procedure Related Complications		
Complication	N	%(of total cases)	Complication	N	%(of total cases)
Wound Infection	14	28	Leak	4	8
Wound dehiscence	6	12	Obstruction	7	14
Chest Infection	6	12	Fistula	4	8
Cardiac Complication	2	4			
Reperforation	1	2			

DISCUSSION:

Following results were drawn from the study:

Surgical intervention The most common surgery performed in the stoma group was loop ileostomy(48%); typhoid being the most common cause of non-traumatic perforation and the most common location of this being ileum. Majority of the patients who did not require stoma formation were managed by primary repair (60%) than resection anastomosis (40%).

Preoperative factors Feasibility of primary repair or stoma formation in an emergency laparotomy is influenced by patient's preoperative condition and intraoperative findings.

Lag Period In our study, 70% patients in Group S (stoma group) had a lag period of >72 hours, whereas the number was less in Group R (54%) (Primary repair group).

Preoperative investigations and hemodynamic status In our study, the mean Hb, mean S Alb. and Mean MAP of the stoma group were 9.842±0.52 g, 2.90±0.22 g and 78.66±4.51 mm of Hg respectively (Refer table 8 and graph). These values in Group R were 10.36±0.42g, 3.190±0.246 g and 91.39±6.42mm Hg which were significantly higher (p<0.05) than the stoma group (Group S).

Intraoperative findings An assessment of intraoperative findings in our study group S revealed intraperitoneal collection>1000 ml in 52% of patients while only 2% patients in Group R had an intraperitoneal collection >1000 ml. 60% patients in Group S had feculent collection in comparison to 20% in Repair Group R. The condition of bowel wall was edematous in 96% of Group S (stoma group) patients as opposed to a mere 6% in Group R (primary repair/resection anastomosis group). High volume, feculent intraperitoneal collection and bowel wall oedema are unfavourable factors for holding sutures and such cases are better managed by exteriorisation.

Post-operative complications The most common general post- operative complication encountered in our study was wound infection 28%. Among procedure related complications, in Group S, the most common complication was excoriation of parastomal skin seen in

16 % cases. This may be due to the fact that ileostomy was the most commonly performed stoma procedure in this group. Group R had four instances of anastomotic leak. (8%). mortality in leak patients was high with three of the four patients dying inspite of re-exploration. The most common complication pertaining to this group encountered in our study was obstruction (14%). None required re-exploration. The rate of fecal fistula formation in our study was 8%.

Outcome The operative outcome in our study revealed nearly 50% complications in both groups with the incidence of complications in stoma group being more than the repair group. The mortality in our study was 8% with 5 mortalities in the stoma group and 3 in the repair group.

Prognostic factors influencing outcome Preoperative factors that have a bearing on post- operative complications have been studied. Factors like Mean Age, Gender, Mean Hemoglobin, Serum Albumin, Mean MAP, Lag Period were compared in both groups for their prognostic significance in predicting post-operative complications. Both in Group S and Group R, an increased age, a low serum albumin a low MAP(student t test, p value < 0.05) and an increased lag period (^χ2 test p value < 0.01, df =1) were associated with a higher incidence of complications.

Mean duration of hospital stay and monetary expense The mean duration of hospital stay was 10.84±2.97 days in Group S and 10.44±3.07 days in Group R. The difference between both these values was statistically insignificant (p <0.05). The mean monetary expense in Group S was 2451.5 Rs and 2059.6 Rs in Group R, which was statistically significant (p<0.05).

SUMMARY AND CONCLUSION:

Non traumatic perforation constitutes the bulk of the indication for emergency explorative laparotomy (61%), with typhoid probably being the culprit for majority of such perforations. Males in their second and fourth are the ones most commonly affected. Most common location of insult is the ileum (72%).

Patients having improved preoperative parameters like lag period < 72Hrs, better mean Hb, Serum albumin and an enhanced hemodynamic stability along with non-compromising intraoperative findings,

such as low volume (<1000ml), non-feculent intraperitoneal collection and healthy, non edematous bowel wall are the ideal candidates for primary repair. Patients having an adverse set of preoperative and intraoperative parameters are best managed by bowel exteriorisation. Wound infection is the most common complication (28%) following emergency laparotomy. Surgical outcome, with reference to complications, is better following primary repair (52%) than with stoma formation (64%). In an emergency setting, the mortality rates are acceptable (8%) in either of these surgeries i.e., stoma formation and primary repair, when performed in a properly selected patient. Morbidity is significantly influenced by an advanced age, a low Hb, hypoalbuminemia, an advanced lag period (>72 Hrs.) and poor hemodynamic stability at the time of operation, in both set of surgeries. The mean duration of hospital stay is the same following either stoma formation or primary repair (10±3 days). Stoma care poses an extra monetary burden on patients undergoing these operations (2451.5 rupees in stoma patients and 2059.6 rupees in patients undergoing repair). Since our study is underpowered, further studies with larger sample size needs to be done to conclusively prove or refute our findings.

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