

Routine Use of Loopogram/contrast Radiology Prior to Post Typhoid Ileostomy Reversal

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ASBTRACT

Objectives: The objective of this study was “to Find out the utility of loopogram / contrast study routinely done before the ileostomy stoma reversal in patients of typhoid perforation necessitating stoma formation”.

Study Design; It was an observational descriptive study.

Place and Duration of Study: This study was conducted at the Surgical Department and Radiology Departments, Sheikh Zayed Medical College/ Hospital Rahim Yar Khan, including 51 patients admitted during the period from 01- 03- 08 to 01- 03- 2011.

Methodology; fifty one patients were included in this study in which stoma was created due to post typhoid intestinal perforations and than its reversal was performed after contrast study. Loopogram was performed in all the patients to exclude leakage or obstruction in the distal gut. Data regarding age, sex, out come of contrast study/Loopogram, technique of reversal and post operative outcome of these patients in consideration to recovery and complications was collected. Methods used for reversal were according to type of stoma as per standard international surgical protocols. The time of stoma reversal was after 03 months of primary surgery necessitating its formation i.e. ensuring resolution of all abdominal adhesions on evidence base medical practice.

Results; There were 51 patients 37 (72.54%) were males and 14 (27.46%) females. Patients between the age of 11 to 20 years 7 (13.72%) were males and 2(3.92%) females. The main sufferers were between the age of 20 and 40years, the males were 28(54.90%) and females were 9(17.65%). There were 5 (9.81%) patients beyond the age of 40 years. In this study neither the Loopogram/contrast study showed any contradictory finding to prevent the post typhoid perforation ileostomy stoma reversal nor post operative follow up showed any major complication highlighting the necessity of the Loopogram.

Conclusion; in the presence of careful clinical evaluation it is unnecessary to perform loopogram/contrast study in post typhoid ileal perforation stoma prior to its reversal for the restoration of the gut continuity.

Key words: Stoma Reversal, Ileostomy Reversal, Typhoid Perforation, Loopogram, Contrast Radiology.

INTRODUCTION

Typhoid is a common disease in our community. It is caused by salmonella typhi. A suspect habit and proper investigations are needed for its early diagnosis and treatment. Though many non specific tests exist yet laboratory diagnosis of typhoid fever requires isolation and identification of *Salmonella enterica* serotype Typhi¹. Histology of enteric perforation of small intestine shows Erythrophagocytosis with predominantly histiocytic proliferation².

Delay in diagnosis leads to complications that are morbid and at times mortal e.g. intestinal

perforation. These perforations may result in early multiple organ dysfunction syndrome, multiple organ failure syndrome and eventually can lead to death of untreated patients. The typhoid ileal perforation should always be treated surgically by an emergent intervention.

The intended surgical procedure should be one of wedge resection, segmental resection, resection of the diseased ileum/multiple perforations and end to end anastomosis. But as the average time from perforation to admission is 56 hours. The mortality rate is 32% and it is adversely influenced by the duration of illness, duration of perforation, shock, uremia, encephalopathy and fecal peritonitis. Between two groups one comprising of Forty– nine patients treated by closure of the perforation, resection anastomosis while the other group of 29

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was treated by closure of the perforation combined with an end-to-end ileotransverse colostomy. Although mortality was the same in both groups, those undergoing bypass had a significantly smoother postoperative³.

In the management of abdominal sepsis the treatment focuses on the surgical control of source of infection and reduction of the bacterial load in the peritoneal cavity, planned relaparotomy, relaparotomy on demand and continuous closed peritoneal lavage⁴.

Clinical trails have proved that despite surgical re-interventions; the use of potent antibiotics; and intensive supportive care; the mortality among patients with anastomotic insufficiency may be as high as 45%⁵. On the basis of these facts it is vogue in our unit to perform temporary stoma in the form of loop ileostomy or end ileostomy and mucus fistula rather to go for the primary resection and anastomosis or ileo-transverse anastomosis in patients presenting delayed and suffering from sever sepsis.

The second operation in the form of stoma reversal is needed to restore the gut continuity. This second operation has made the stoma formation less popular and thus some workers prefer side to side ileotransvers anastomosis⁶.

Intestinal stoma involve surgically created gut opening on the abdominal wall. Colostomy involves discharging feces from large intestine and ileostomy from the small intestine⁷. The formation of an intestinal stoma is one of the most frequent operations in intestinal surgery. Despite new operative techniques and a more restrictive use of the stoma, the stoma formation remains an often necessary surgical procedure, which results to a dramatic change in the patients' life⁸. There are numerous causes of stoma formation. In the western world reasons for stoma formation have changed with the better diagnostic, referral and therapeutic facilities available. But in our setup preventable diseases like criminal septic abortion and typhoid are the main causes for the various types of stoma formation. 20 % of 40 patients suffered from criminal abortion needed either temporary colostomy or ileostomy creation⁹ to save the life of the patient. The typhoid perforation still carries high morbidity and mortality. It has been estimated that perforation of the ileum occurs in the 2-4 per cent of all cases of typhoid disease. This perforation and consequent compounding factors are the cause of 25-50 per cent deaths from the disease¹⁰. Methods used for stoma closure are freshening of margins and closure of perforation in loop ileostomy, resection anastomosis after mobilization temporary ileostomy¹¹ and mucus fistula.

The stoma formation and later its closure are associated with high morbidity. Many complications, such as stoma necrosis, stoma retraction or stoma prolapse, are related to surgical mistakes made during stoma formation. Before stoma reversal Loopogram is done for detecting any type of mechanical bowel obstruction, adhesions, new perforations, stricture, kink, or any other contraindications for its reversal. Mechanical small bowel post operative obstruction is commonly due to adhesions, phlegmon or abscess, internal hernia intestinal ischemia and intussusceptions¹². In acute small bowel obstruction adhesions due to previous abdominal operations remain the most common aetiology¹³. Mortality rates in Patients who developed anastomotic leakage were very high, although marked decrease has been achieved over the past two decades. Anastomotic leakage still prolongs hospital stay and cost of therapy¹⁴. When two complications coexist, the mortality and morbidity rates rise steeply, especially if they are not detected in time¹⁵.

Traditionally visual examination by endoscopy and contrast imaging are recommended for confirmation of the integrity of and total healing of coloanal anastomosis¹⁶. Salmonella may manifest on barium studies by longitudinally oriented ulcer in the distal ileum overlying Peyers's Patches, Barium studies may also demonstrate non specific fold of thickening in the terminal ileum. Where there is possibility of intestinal perforation, water soluble contrast material Diatrizoate meglumine and Diatrizoate sodium are used¹⁷. Preoperative contrast study in selected cases showing patent distal loop is also important factor for the reduced morbidity seen in our study¹⁸.

As the data regarding performance of contrast study regarding post typhoid perforation stoma closure is not up to standard, this study was designed to find out the utility of loopogram / contrast study routinely done before the ileostomy stoma reversal in patients of typhoid perforation necessitating stoma formation.

Methodology: This was a prospective study conducted in the Surgical and Radiology Departments of Sheikh Zayed Medical College/ Hospital Rahim Yar Khan. In this study fifty one patients were included in whom stoma was formed due to typhoid perforation. Prior to admission in the ward for stoma reversal loopogram/contrast study was done to detect any contraindication for stoma reversal. These patients were admitted for stoma/ileostomy reversal to maintain gastrointestinal continuity during 01 03 08 to 01 03 2011. The department of our hospital manages patients of all age groups.

Technique of Loopogram: After proper counseling, distal loop of stoma or mucus fistula is defined, catheterized, contrast poured into it and multiple radiographs highlighting the loops of gut or and abnormality are taken.

Preparation for Stoma Closure: After thorough history and physical examination addressing the primary condition of the patient baseline laboratory investigations including Blood profile, Urine Profile, Serum Urea and Serum electrolytes were performed. Contrast Study (LOOPOGRAM) Loopogram was done to detect any obstruction, stricture, kink, adhesions, new perforations or any other contraindications for stoma reversal. Pre operative mechanical and biological gut cleansing were performed. All the patients underwent general anesthesia with endotracheal intubation and muscle relaxation. Nasogastric tube was routinely passed and closures of stoma were performed as per standard procedures depending on the loop ileostomy or end ileostomy with mucous fistula.

Technique of Stoma Closure: The loop ileostomy was reversed after painting, draping and mobilizing the stoma taking care not to injure the gut proximal and distal to the stoma closure site. The posterior bridge of gut and hence mesenteric vascularity was saved where possible to avoid complete end to end anastomosis. The stoma was closed. While in patients having end ileostomy with mucous fistula formal Laparotomy and mobilization of both the stoma were under taken and complete end to end anastomosis were performed The stoma site wound was usually closed on the line of Incisional hernia repair. But no mesh was used. Out come was monitored. Smooth recovery was defined when the postoperative period went uneventful and the patient was discharged.

Inclusion Criteria: All the patients irrespective of age, sex suffering from post typhoid perforation ileostomy alone or ileostomy with mucus fistula were included in this study. In all patients loopogram was routinely performed 10-15 days prior to plan stoma reversal. All the patients were operated and post operative course was followed.

Exclusion criteria: Patients stressing for operation before three months of primary operation were neither operated nor included in this study. Stoma reversal due to causes other than typhoid e.g. gunshot injuries, criminal abortions, post operative adhesions, tuberculosis etc were also excluded from this study as were the Patients with major post operative sepsis and major organ space infection were deferred for more periods for resolution of adhesions. Evidence base medicine verifies that Intra abdominal adhesions usually resolve after three months.

Demographic, clinical and pathological data and Radiological and post operative outcome after post typhoid stoma reversal n=51

Variable	NO.	%age
Age		
11-20	09	17.65
21-30	16	31.38
31-40	21	41.17
>40	05	09.80
Sex ratio (M: F)	37:14	73:27
Type of Stoma		
Loop ileostomy	48	94.12
End Ileostomy & Mucus Fistula	03	05.88
Cause		
Single Typhoid perforation	48	94.12
Multiple perforations	03	05.88
LOOPOGRAM performed	51	100
Contraindication to Reversal	00	
Surgical Procedure performed		
Loop ileostomy closure	48	94.12
Laprotomy with stoma Mobilization and end to end anastomosis	03	05.88
Post operative out come		
Smooth recovery	46	90.14
Complications		
Superficial SSI	2	3.92
Deep SSI	1	1.98
Minor Wound Disruption	2	3.96

RESULTS

There were 51 patients. The causation of stoma formation was the post typhoid perforation. In majority of the cases stoma was loop ileostomy.

There were 37 (72.54%) males and 14 (27.46%) females. Patients between the age of 11 to 20 years males were 7 (13.72%) and females were 2(3.92%). The main brunt of disease in born at the age of second and third decade as shown in the table that between 21and 40years, there were 28(54.90%) males and females were 9(17.65%). There were 5 (9.81%) patients above the age of 40 years. Most of the patients were between second to fourth decades. The male significantly predominate over female in this study.

In all the fifty one (100%) patients contrast study was performed. This Loopogram failed to detect even a single patient with evidence of contraindication to stoma reversal.

Stoma was reversed in fifty one patients having ileostomy. Complication was labeled when the patient had to stay in the ward for medication or surgical intervention. All these were insignificant as no one needed re laparotomy or stoma formation. There were no patients with fecal fistula/ organ space infection due to inadvertent missed injury to the gut

leading to pouring the gut contents outside the body or peritonitis in this study.

DISCUSSION

Temporary stoma formation is common. In United States and Canada, the over all incidence of stoma formation is decreasing and well continue to do so because of adjuvant surgical measures as planned Laparotomy, continuous closed peritoneal lavage further reduce the bacterial load¹⁹ and hence mortality²⁰. The other reason for decrease in temporary stoma formation is a few abdomino-perineal excisions are done due to availability of newer surgical techniques.

The surgical procedures that eliminate permanent stoma, on the other hand has resulted in increasing use of temporary loop ileostomies which are usually more difficult stoma to manage²¹.

Our study solely focuses on the formation of temporary stoma due to typhoid and utility of contrast study in its reversal.

In several studies the utility of the contrast study routinely done before the ileostomy stoma reversal has been challenged. Khair et al study concludes that Routine gastrograffin enema in the absence of a clinical suspicion of anastomotic failure would appear to be of little value²². The incidence of postoperative leak in uncomplicated patients is low, such patients has their loop ileostomies closed with or without serial gastrograffin enema. Our study verifies its result in regard to stoma reversal in post typhoid ileostomy stoma formation. Our study also recommends the policy of Shah Study that performed only one contrast radiology among 32 patients necessitating stoma reversal²³.

Single layer anastomosis is continuing to be the method of choice for many surgeons²⁴. In the study of Ayub et al anastomotic leak was 4.7% in single layer versus 8.7% in two layers anastomosis, wound infection 7.1% intra abdominal abscess minor wound dehiscence was seen 7.5%²⁵. While in our study 4% of the cases got superficial surgical site infection, 2% had deep surgical site infection while there were minor wound disruptions in 2% of case a bit lower than that study. This study had also shown that the smooth recovery rates of 90%. Mortality was nil. All these patients recovered on conservative management. It reflects increase in care in our hospital hand in hand with all other major hospital in Punjab as studied by Akram et al that tremendous progress has been made in techniques for caring hospital patients so that they may not get infected during hospitalization²⁶.

There is no doubt that the world is intended to primary repair²⁷ by modifying surgical techniques,

skin closure technique in high risk patients²⁸, by avoiding simultaneous reconstruction of intestinal tract and abdominal wall²⁹ and Drains³⁰.

CONCLUSION

It is evident in our study that two independent variables i.e. contrast radiological study prior to post typhoid stoma reversal and post operative follow up of the patient failed to reveal any contraindication to the post typhoid perforation stoma reversal. It is therefore unnecessary rather wastage of resources to submit the post typhoid stoma patient for contrast study prior to its reversal in the presence of clinical evaluation.

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