

OUTCOME OF EXTRA-MUCOSAL SMALL GUT ANASTOMOSIS IN A PERIPHERAL HOSPITAL

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ABSTRACT

Objective: To evaluate the outcome of extra-mucosal small gut anastomosis (interrupted) in terms of hospital stay, mortality and anastomosis-related complications.

Material and Methods: This was a hospital based, prospective and descriptive study, conducted in the General Surgical Ward of Agency Headquarter Hospital, Parachinar, Pakistan from 1st December 2005 to 31st November 2006. A total of hundred consecutive cases of extra mucosal small gut anastomosis, admitted through casualty or OPD were included in the study. Special proformas were designed for each patient from the date of admission till discharge from the hospital and for follow up upto three months. Patients with intestinal perforations due to fire arm injuries, stab wounds, ileostomy closures, stricturoplasties were included in the study. Patients with diabetes mellitus, malignancies, children under 12 years of age and patients with associated multi organ injuries (liver, spleen, colon etc) were excluded from the study.

Results: Mean hospital stay was 9.4 (\pm 3 S.D.) days. Male to female ratio was 2.9:1. Mortality rate was 1%. Wound dehiscence and abscess formation were the main complications (8% each) followed by peritonitis (6%) secondary to anastomotic dehiscence.

Conclusion: Single layer extra mucosal small gut interrupted anastomosis with vicryl 2/0 was found to be an acceptable procedure regarding hospital stay, mortality and anastomosis related complications.

Keywords: Intestinal anastomosis, small gut anastomosis, extra mucosal anastomosis.

INTRODUCTION

Anastomotic dehiscence in gastro intestinal surgery is very serious and life threatening complication¹. There are several methods of intestinal anastomosis. Open methods of gut anastomosis are either single layer or double layer, interrupted or continuous, full thickness or extra-mucosal. Other methods of gut anastomosis are stapling techniques and use of glue etc.

Though many factors like blood supply², quality of bowel preparation, operation time and age of patient have been implicated, a technically satisfactory repair of gut without tension is key to success, but still there is one big question; what is the best method?

We used vicryl 2/0³ for all anastomosis as it is readily available, not very expensive, easily handled and absorbable material.

MATERIAL AND METHODS

It was a hospital based, prospective and descriptive study, conducted in General Surgical Ward of AHQH, Parachinar from Dec 2005 to Nov 2006. Hundred consecutive cases, admitted through casualty or from out patients, were selected to undergo small gut anastomosis.

Patients included were above twelve years of age, underwent small gut (jejunum and ileum) anastomosis.

Patients with other hollow organ injuries (like large gut stomach and duodenum), those with extensive contamination of peritoneal cavity, and those with diabetes mellitus, uremia, malignancies and on steroids were excluded from the study.

In most emergency cases laparotomy by midline incision was performed. All the anastomosis and repairs were done by a single

SURGICAL PROCEDURE AND SITE OF ANASTOMOSIS

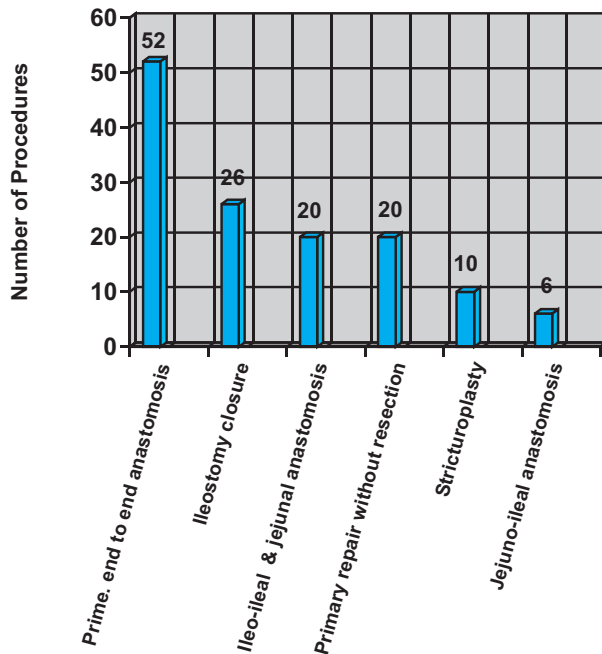


FIGURE 1

layer extra-mucosal technique, using vicryl 2/0, on atraumatic needle. Different procedures were primary end to end anastomosis, ileostomy closures, ileo-ileal & Jejunal anastomosis and stricturoplasties (Figure 01). All the anastomosis were checked for their patency by milking the contents through the anastomosed parts⁴. All patients were given 3rd generation Cephalosporins and infusion Meteronidazole, i/v fluids, nasogastric suction, nil oral regimens, good analgesia and strict intake output charts. Complications of the procedure were observed and noted on preforms during hospital stay and on follow up visits for up to three months.

RESULTS

Out of hundred patients included in the study; 74 were male and 26 were female. Majority of the patients were in 3rd and 4th decades of life. In these patients, 134 repairs/anastomosis of the small gut were performed using vicryl 2/0, as a single layer interrupted extra mucosal technique.^{5&6}

The average hospital stay was 9.4 (± 3 S.D.) days. Post operative fever was the most common complication which occurred in 64 (64%) patients, followed by chest infection in 12 (12%) patients. Among the anastomosis related complications, wound infection occurred in 52 (52%) patients (Figure 02). Most of patients were cases of fire arm injuries. Most of these patients

were managed conservatively. Eighteen (18%) patients developed paralytic ileus post operatively for 2 to 3 days which was relieved by conservative management (N/G tube, IV fluids, nil oral). In eight (8%) patients abdominal wound dehiscence took place. These patients were shifted to operation theatre and closed by tension suturing under general anesthesia. Eight (8%) patients developed intra-abdominal abscesses, four (4%) of them were operated and four patients treated conservatively. Peritonitis took place in six (6%) patients. The patients with leaks were managed by ileostomies. Four (4%) patients developed intestinal lumen stenosis of which 3 were managed conservatively. In one (1%) patient by-pass surgery (ileo-transverse anastomosis) was performed after 3 months. One patient with anastomotic leak who had undergone salvaged ileostomy expired after 3 weeks post operatively.

Over all, 70% patients recovered well, except of minor complications like fever or wound infection. 29% patients recovered with different major complications. Mortality was 1% in this study (Figure 03).

DISCUSSION

In different studies one layer technique has been proven superior to two-layer technique with respect to luminal reduction, tissue strangulation and strength of anastomosis, that's why we adopted a newly developed technique, single layer extra mucosal small gut repair. On histological examination mucosal continuity and muscle re-alignment occurs more rapidly with single layer technique⁷. There are other advantages like the simplicity of anastomosis, low cost and

ANASTOMOSIS RELATED COMPLICATIONS

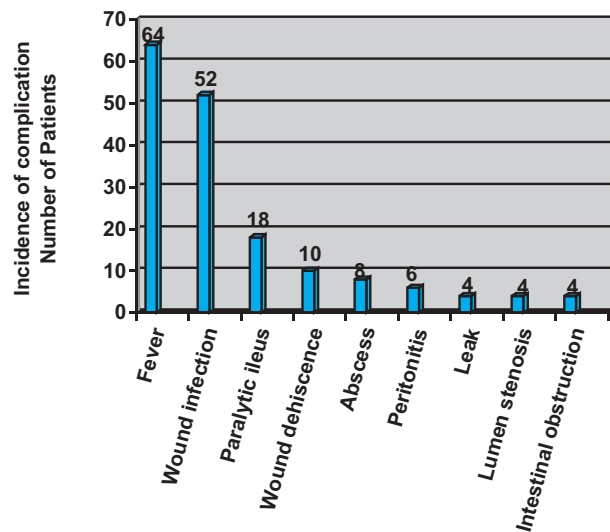


FIGURE 2

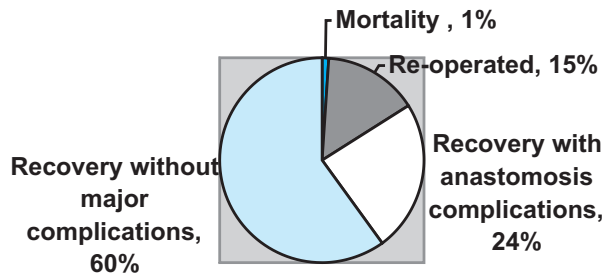


FIGURE 3

less time consumption beside the safety of procedure⁷. Hallstead's idea of superiority of single layer technique against double layer technique has gained a great deal of popularity in the last three decades. Study by Connolly - DP et al⁸ has shown that single layer repair is better choice than double layer repair in cases of enteric perforations.

Anastomotic complications continue to be a major cause of morbidity and mortality in patients undergoing surgery of intestinal repairs. The morbidity rate which is measured mainly by the hospital stay is doubled in the presence of complications while the mortality rate is increased three to ten fold. The present study gives the same picture, as majority of the patients without complications stayed for 7 to 12 (with a mean of 9.4) days in hospital while in case of complications stay was prolonged for three to four weeks. Nearly same results are reported by Ahmed J⁹ study conducted in Hayatabad Medical Complex, Peshawar.

Anastomotic leak was noted in 4 patients in this study. Subhan A¹⁰ reported 1.7% Anastomotic leak in his study, while Ahmed J found 8% leaks in his study when he performed single layer anastomosis and 8% leak in double layer closure of the gut.

Mortality was only 1% in our study that was mainly due to anastomotic leak, peritonitis and later on septicemia while Ahmad J reported 2% mortality in his study.

As far as other complications of our study are concerned, fever is on top (64%) compared to 70% in Qureshi-JN et al¹¹ study. Wound infection is the next which is 52%. Wound infection rate was higher as compared to Mirza-SM et al¹² study (22%) but lower than Qureshi-JN et al study (65%).

Majority of the patients were those with gun shot injuries but Qureshi-JN et al highlighted the same situation in Haiderabad areas of Sindh. Males in 3rd and 4th decades of life were the common victims in this study.

Tubercles strictures of gut were also

included in our study. Females of third and fourth decade of life were more affected than males, with male to female ratio of (1:1.2). Baloch-NA et al¹³ has reported the male to female ratio as (1:2) and common age as 4th decade. Ahmed-J et al has reported the mean age of tuberculosis gut as 32 years and the male to female ratio as (1:1.7).

Iliostomy closures were also common in this study. Male to female ratio was (3.5:1). Mean age was 28 years. In Memon-SB¹⁴ study male to female ratio was (2:1) and mean age was 35 years. In Mirza-SM et al study male to female ratio was (2.5:1) and mean age was 30 years.

The frequency of anastomosis related and general complications were comparatively higher in emergency operated patients than elective cases. The reason seems to be that emergency patients were un-prepared.

The suture material used for all the repairs/anastomosis was vicryl 2/0 on round body needle. It proved to be easily hand able and non-traumatic throughout this study. We would like to recommend it for future anastomosis.

CONCLUSION

The outcome of the procedure (interrupted single layer extra-mucosal intestinal repair/anastomosis) was analyzed in terms of hospital stay, mortality and complications such as anastomotic leak and intra-abdominal abscess formation etc. it is concluded that the procedure was simple, convenient and less time consuming. The results were favorable and comparable with the other national and international studies conducted in similar situation.

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