

Experience of Single Layer Anastomosis in Small Gut

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Objective: To see the results of a single layer (Serosubmucosal or extramucosal) anastomosis technique in small gut. **Design:** Clinical trial. **Setting:** Surgical Unit-III, Sir Ganga Ram Hospital, Lahore. **Subjects and Methods:** 30 patients including in this study received either through emergency or on elective list operated and end to end anastomosis of small gut was done. **Results:** A single layer suture technique is preferable to two-layer method. Patients including single layer anastomosis of small gut, recovery was good and uneventful. There was no anastomotic leak. Only 3 patients got wound infection post operatively. **Conclusion:** Single layer anastomotic method is increasingly favour for end to end anastomosis in small gut.

Key words: Single layer, anastomosis

Open end to end one layer technique is increasingly favoured for end to end anastomosis in areas of GIT, where the blood supply is poor, where is no serosal coat and the lumen is small. In infants one layer technique is the rule. Most surgeons favour the use of one layer open technique for the oesophagus and lower rectum. Connell sutures are less haemostatic and there is more tissue than the technique illustrated. Secure healing of an intestinal anastomosis is dependent on accurate apposition of serosal or outer surfaces of the bowel and this is achieved by the use of a suture technique which inverts the cut edges of the gut. Single layer of suture cause less aschemia, tissue necrosis or narrowing of the lumen the two layer method.

Material and Methods:

The study was carried out on both male and female patients admitted through emergency or on elective cases in Surgical Unit-III of Sir Ganga Ram Hospital, Lahore from January to June, 2004. Only the adults patients including in this study having small gut anastomosis operated for laparotomy. The total number of patients were 30. Fifteen patients out of 30 were operated for tuberculous of intestine. Ten patients for post D&C trauma to uterus and gut. Three patients were of strangulated hernia (gut was infarcted). Two patients for blunt trauma underwent surgery under GA. All patients were observed in post-op period for the signs of peritonitis and fistula formation.

Results

Table 1: Age Distribution (n=30)

Age Limit (years)	n=	%age
20 to 40	15	50%
40 to 50	10	35%
50 to 65	5	15%

Table 2. Diagnosis

Diagnosis	n=	%age
Intestinal T.B.	15	50
Post D&C Trauma to gut	10	35
Strangulated hernias	3	10
Blunt Abdominal Trauma	2	5

Table 3 Site of anastomosis

Site	n=	%age
Ileum	28	90
Jejunum	2	10

Table 4 Post of complications

Complications	n=	%age
Anastomosis leak	Nil	0
Wound infection	3	10

Discussion

Primary healing by accurate apposition is considered the ideal for epithelial wounds, and intestinal anastomoses should be no different. However, most anastomotic techniques do not aspire to accurate realignment and consequently depend on secondary healing. Most intestinal anastomoses heal uneventfully because of the relatively profuse blood supply of the bowel and the fact that the process of healing is hidden within the abdomen.

Intestinal anastomoses heal in series of overlapping phases:

- Lag phase (days 0-4), in which the acute inflammatory response clears the wound of debris.
- Phase of fibroplasia (days 3-14), in which fibroblasts proliferate and immature collagen is laid down.
- Maturation phase (day 10 onwards), in which collagen remodels.

Intestinal anastomoses have little intrinsic resistance to distension and longitudinal distraction is weak until collagen deposition is established. Extrinsic support is required during the lag phase to maintain tissue continuity. The surgeon's role is to provide support (usually by inserting sutures or staples), and to ensure optimal conditions for subsequent healing. Although anastomotic technique is the single most important determinant of outcome, a number of other factors affect healing if these combine to make the risk of anastomotic failure high, the wisdom of performing an anastomosis should be questioned.

A number of anastomotic techniques are available but, because all compromise healing, none can be considered perfect.

The optimal method of healing by achieving accurate alignment of the divided bowel:

- Promote primary healing by achieving accurate alignment of the divided bowel
- Cause minimal disruption of local vasculature.
- Incorporate the minimum amount of foreign material.
- Not implant malignant cells at the anastomosis
- Not enhance the risk of metachronous cancers.

Suturing technique is sero-submucoal extra mucosal by open method. Interrupted single layer serosubmucosal suture – this technique is widely considered to be the gold standard for intestinal anastomosis and is the preferred hand-sewn technique. Interrupted serosubmucosal; sutures allow accurate tissue apposition, using the strongest layer of the gut (the submucosa), cause minimal damage to the submucosal vascular plexus and minimize the risk of malignant cell implantation.

Continuous single-layer serosubmucosal suture – when access is good and the anastomosis technically straightforward, a continuous serosubmucosal suture method is equally effective. This is particularly useful in the upper gastrointestinal tract (e.g. in gastrojejunostomy and biliary-enteric anastomosis) and can be quicker than the interrupted single layer technique.

Modified end-to-end anastomosis for sites with limited access. The posterior row of sutures is inserted with the bowel ends held apart. The individual sutures are knotted on the mucosal aspect of the apposed bowel. The anterior row of sutures is inserted and anastomosis is completed.

Conclusion

A single layer anastomosis technique is increasingly favoured for end to end anastomosis in small gut. Surgeons in training should adopt a single layer technique other continuous or interrupted should be mastered before relying on stapling devices, allowing the surgeon to take remedial action when technical problems occur with stapling.

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