ORIGINAL ARTICLE

Outcome of Primary Reconstruction after Intestinal Resection in Mesenteric Vascular Occlusion

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ABSTRACT

Background: primary reconstruction after resection of ischemic bowel in mesenteric vascular occlusion involving distal ileum usually warrants major resections. Jejuno transverse anastomosis after right hemicollectomy is the commonly performed procedure in our unit under such setting. In this prospective study the option of jejuno ileal anastomosis was evaluated against jejuno transverse anastomosis.

Study design: Qusi experimental

Method: this study was conducted in surgical unit II of CMH Rawalpindi from Nov, 2005 to Dec, 2008. Patients presenting with acute abdomen were hospitalized from emergency and out patient department. They were operated upon with in 24 hours after fluid resuscitation and antibiotic therapy. Patients with per-operative diagnosis of mesenteric vascular occlusion were included in the study. The ischemic/gangrenous gut was removed and primary anastomosis carried out. In 38 patients right hemicollectomy with jejuno transverse anastomosis was contemplated where as in 13 patient it was possible to establish continuity through jejuno terminal ileal anastomosis. Post-operatively patients were put on anti-coagulant therapy. Descriptive analysis was used for interpretation of results.

Results: A total number of n=51 patients were included in the study, 13 in experimental group and 38 in control group. In experimental group "A" one patient 7.69 % had infarct extension, became toxic and tender & was re-operated on third post-operative day. The patients expired after three days of second surgery due to cardiac event while 10 patients 26.31% died in group "B". Anastomotic leakage was observed in 5 patients 13.16% and wound infection in 7 patients 18.42% in Group "B" as compare to 0 in Group "A". The experimental group had advantage over the control group with respect to Post-operative ileus (1.5 days and 2.5 days), time of surgery (100 min and 150 min), length of hospital stay (mean 6 and 10 days) respectively. Institution of oral feeding was also earlier in Group "A" 4th Post-Op day as compare to 5.5 Post-Op day in Group "B".

Conclusion: Jejuno ileal anastomosis provides a workable option after resection of ischemic bowel in mesenteric vascular thrombosis where applicable. It is better tolerated by the patient in terms of morbidity and mortality as compare to jejuno transverse anastomosis after extensive resection.

Key words: Right hemicollectomy, intestinal resection, mesenteric vascular oclusion

INTRODUCTION

Acute mesenteric ischemia though uncommon is associated with high morbidity and mortality but good out come is possible with early recognition and aggressive treatment. Acute mesenteric vascular occlusion is marked by reduced blood flow to the affected segment of bowel, resulting in cellular injury due to lack of oxygen and nutrients[1]. It is broadly divided into non-occlusive mesenteric ischemia (NOMI) and occlusive mesenteric ischemia (OMI)[2]. NOMI accounting for 30-35 % is observed in elderly patients, post CABG[3], on haemodialysis[4] and on medications like digitalis, vasopressin, Cocaine etc[5]. Acute mesenteric arterial embolism (AMAE) 50% is

also commonly seen in elderly with cardio vascular problems and acute mesenteric venous thrombosis (AMVT) 10-15 % is more common in relatively younger population with hyper co-agulable states. Mesenteric infarction is unusual in young adults[6] but must be suspected in every case of atypical abdominal pain and constipation with no obvious cause[7]. Various modalities of medical treatment are advocated for (AMI), like thrombolytic therapy, intra-arterial vasodilators but their role is minimized in the setting of peritoneal signs. Clinical examination with high index of suspicion, angiography or CT-angio remain the corner stone of diagnosis. Volume resuscitation, institution of broad spectrum antibiotics and correction of underlying co-morbid conditions is the standerd pre-operative treatment. Surgery is mandatory in the setting of signs of peritonitis. The over all mortality remains more than 70%. However

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survival rate can be improved with early diagnosis and appropriate management with aggressive intervention with in 24 hrs of onset of symptoms[8]. In this study all patients were diagnosed on the basis of clinical signs of peritonitis and intestinal obstruction, confirmed by abdominal radiography and ultrasonography. Routine practice at our centre was to perform right hemicollectomy when distal ileum was involved in ischemic necrosis and continuity established through jejuno transverse anastomosis, in patients fit to withstand surgical stress. In this study we performed experiment of jejuno ileal anastomosis when a few centimeter of terminal ileum (>2cm) was spared from infarct. The idea was to save time of surgery, to enhance length of salvageable gut and to reduce morbidity.

METHOD

Patients with per operative findings of intestinal ischemia treated by resection and primary anastomosis were included in the study. Patients in which resection and primary closure was not possible and Patients operated after 24 hrs of onset of symptoms were excluded from study. The study was conducted in surgical unit II of CMH Rawalpindi from Nov, 2005 to Dec, 2008. Patient presenting with acute abdomen were hospitalized from emergency and out patient department. All patients were subjected to abdominal radiography and ultrasonography along with other routine investigations. Angiography or CT scan was not employed for diagnostic purpose in this study. The diagnosis of acute abdomen was made on the basis of physical findings and the above mentioned investigations. Patients were operated upon after thorough fluid, electrolytes resuscitation and broad spectrum antibiotic therapy. Exploratory laparotomy was carried out under general anesthesia with in 24 hrs of onset of symptoms. 51 patients operated during the last three years with per-operative diagnosis of mesenteric vascular occlusion were included in the study. The ischemic/gangrenous bowel was resected and primary anastomosis was carried out. In 38 patients (control) Group "B" right hemicollectomy with jejuno transverse anastomosis was contemplated where as in 13 patients (experimental) Group "A" it was possible to establish

continuity through jejuno terminal ileal anastomosis. The latter was only possible when more then 2 cm of terminal ileum was spared from ischemia. As less then 2 cm. length of ileum was considered technically infeasible for construction of anastomosis. Single layer manual anastomosis with 3/0 vicral interrupted sutures was performed in the experimental Group "A". End to side double layer Jejuno transverse anastomosis was made in conventional manner in the control Group "B". Thorough peritoneal levage with warm saline was performed. Anastomotic site and pelvic drains were placed and abdomen closed. Post-operatively patient were put on anti-coagulant therapy. Descriptive method of analysis was employed for interpretation of results.

RESULTS

A total number of n=51 patients were included in the study, 13 in experimental group and 38 in control group. In group "A" one patient 7.69 % had infarct extension, became toxic and tender & was re-operated on third post-operative day. Right hemicollectomy was performed and gut was exteriorized. The patient expired after three days of second surgery due to cardiac event where as 10 patients 26.31% died in group "B".

Table 1 Mortality

	n=	Mortality	%age
Group "A"	13	01	07.69
Group "B"	38	10	26.31
Total	51	11	21.56

Anastomotic leakage was observed in 5 patients 13.16% and wound infection in 7 patients 18.42% in Group "B" compared to 0 in Group "A". 4 patients 10.5% had re-opening in Group "B" as compare to one 7.69 % in Group "A". Post-operative ileus was observed less in Group "A" (1.5 days) then (2.5 days) in Group "B". Time of surgery 1.5-2 hrs mean 100 minutes and 2-3 hrs mean 150 minutes. Hospital stay 5-7 days mean 6 days and 7-12 days mean 10 in Group "A" and "B" respectively. Institution of oral feeding was also earlier in Group "A" 4th Post-Op day as compare to 5-6 days mean 5.5 Postop day in Group"B".

Table 2: Morbidity

Morbidity	Group "A"	% / Mean	Group "B"	% / Mean
Anastomotic leakage	0	0%	5 Cases	13.16 %
Wound Infection	0	0%	7 Cases	18.42 %
Post-Op illeus	1-2 Days	1.5 Days	2-4 Days	2.5 Days
Oral Feeding	4th Post-Op	4 Days	5-6 Post-Op	5.5 Days
Hospital Stay	5-7 Days	6 Days	7-12 Days	10 Days
Time of Surgery	1.5-2 Hrs	100 min	2-3 Hrs	150 min

DISCUSSION

The study revealed high mortality rate in the control Group "B" as compare to experimental Group "A". The reason may be more advanced disease and the extent of infarct in the control group. Additional factors may be more time of anesthesia and more length of surgery in seriously ill patients in the control Group "B" leading to high mortality. However the overall mortality rate is less in this study 21.56 % as compare to 70% in most of the other studies[1]. It may reflect the selected Group mortality because of our inclusion and exclusion criteria. Jejuno ileal end to end anastomosis with one or two layers inverting sutures is recommended[9,10]. We performed single layer anastomosis. Risk of anastomotic narrowing and leakage have been reported due to single ileal blood supply[11,12,13]. However there is clear advantage of preservation of ileocecal valve[14]. There is apparent edge in morbidity to Group "A" over Group "B" with respect to time of surgery (1.5 and 2.5 hrs) , length of hospital stay (5-7 and 7-12 days) respectively. Institution of enteral feeding was also earlier in Group "A" 4th post-op day as compare to 5.5 post-op day in Group "B". The similar trend was observed in post operative complications. Post operative ileus (1.5 and 2.5 days), wound infections (0% and 18.42%) and anastomotic leakage 0% and 13.15% in Group "A" and "B" respectively. However the risk of infarct extension and second look laparotomy was higher in Group "A" 7.69% as compared to none in Group "B". Apart from this single risk or disadvantage the overall advantages of the procedure are good enough to make it practicable. The procedure is practiced in other centres of the world as well as experiments on horses have been performed[15].

CONCLUSION

Jejuno ileal anastomosis provides a workable option after resection of ischemic bowel in mesenteric vascular thrombosis where applicable. It is better tolerated by the patients in terms of morbidity and mortality as compare to jejuno transverse anastomosis after extensive resection. The limiting factor is availability of more then 2 cm of terminal ileum free from ischemia for constitution of the anastomosis.

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