Determinants of outcome of primary repair of colonic trauma

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ABSTRACT

OBJECTIVES: To search of parameters for the selection of the group cases of colonic injuries getting maximum benefit of primary repair.

STUDY DESIGN: A prospective non-randomized study.

SETTING: Surgical Unit IV, DHQ Hospital, Faisalabad.

SUBJECTS: Patients with colonic trauma due to penetrating and non-penetrating injuries.

MAIN OUTCOME DETERMINANTS: The main outcome determinants found significant were age, proper prompt treatment, severity of injury, haemodynamic status at the time of operation and gross faecal contamination.

RESULTS: Thirty patients colonic trauma who the basis of history, clinical examination and investigations. Patients were closely observed for sign and symptoms of anastomotic leak, and intra- record of these patients was maintained on preformed proforma. All risk factors were made measurable on abdominal sepsis, wound infection. Out of 30 patients, presented to Emergency Ward during one year, underwent exploratory laparotomy. The complete 24 patients were managed by primary repair and six patients were managed by staged procedure. All the 24 patients developed no infective complications. One out of six patients of staged procedure group died on 3rd post-operative day due to sudden myocardial infarction and three out of six patients developed infective complications.

CONCLUSIONS: Age, proper prompt treatment, severity of injury, haemodynamic status at the time of operation and gross faecal contamination are determinants of outcome of primary repair of colonic trauma.

Key words: Primary repair, colonic trauma

INTRODUCTION

The first reference to colon injuries can be found in book of judges. Hippocrates regarded all such wounds as deadly and even Celsius advised that their cure be left to nature[1].The geo-political situations resulting in military conflicts continue to contribute to a wide-variety of trauma[2].With advancing mechanization, increase in fast moving vehicles and increase in lawlessness in society, extensive trauma has emerged as a serious health that all colonic injuries encountered in war would be treated by problem. Mortality in cases of colonic injury was 100%[3]. A famous surgeon named Susruta in fifth century AD in subcontinent described operations including abdominal sections and intestinal sutures[5].The colonic trauma was treated by primary repair early in the century until world war II and in 1943 surgeon general of United States issued an order performing colostomy[6]. The colostomy was accepted as a standard method of treatment for colonic trauma was dealt by primary repair under strict criteria. into three grades and recommended primary Shock, delay more than 6 hours, gross faecal contamination, haemoperitoneum more than 1000 ml, associated intra-abdominal injuries, more than 2, colonic injury requiring resection and loss of anterior abdominal wall were considered contra-indications to primary repair[9].Flint et al 1981 grouped these factors upto 1970 when various surgeons started doing primary

repair of colonic trauma and exteriorized primary repair [7].The fundamental issue in primary repair is whether it is safer than colostomy and second is that which injuries under which circumstances can be safely repaired without increased risk for complications compared to diversion[8]. Colonic trauma repair for colonic trauma who have grade I of flint score[10]. Day by day surgeon's confidence grew in primary repair of colonic, injury and more and more efforts were made to avoid colostomy and colostomy was only considered in case of unstable patient with high risk factors and large number of patients with colonic injury dealt with primary repair[11].We started a study in our unit to selectively treat these cases with primary closure and a protocol of study was designed to be strictly followed. The idea is to sort out factors influencing the results and assess the outcome of our management

DISCUSSION.

The proper management of traumatically injured colon has been subject of considerable controversy for the past fifty years. The fundamental issue in primary repair is whether it is safer than staged procedure and second, is the selection of patients, which can be managed by primary repair without increased risk of complication compared to staged procedure.

As is evident from study, age is not a risk factor but coincidental medical problem present before surgery may be the cause of morbidity and mortality.

The stab abdominal injuries were cause of colonic trauma in ten patients, firearm injuries in nine patients, blunt abdominal trauma in 5 patients and iatrogenic injuries in six patients.

The morbidity in-group of patients dealt by primary repair was nil, no matter what was the mechanism of injury. Many recent papers favour our findings that mechanism of injury is not a risk factor[12].

The right colon has trauma in 11 patients and left colon has trauma in 19 patients. The most commonly injured sites were the right half of transverse colon and sigmoid colon. The patients with, right-sided colonic trauma had 9% morbidity and 9% mortality but cause of mortality was not colonic injury or colonic related complication (Sudden myocardial infarction).

The nature of injury has no effect on outcome in primary repair. In primary repair group, adequate debridement of lacerated wounds of colon done, any doubtful tissue removed until bleeding from healthy edges started. In such a way lacerated wounds were converted into incised wounds before repair in colostomy group, incised wounds of colon has better result as compared to lacerated wounds ($P < 0.05$).

It is clear that number of blood transfusions has no effect on outcome of primary repair. Some authors considered number of blood transfusions as predictor of post-operative septic complications[14]. This is not coincidental with our findings and according to our study multiple blood transfusions do not determine the outcome of primary repair.

Twenty-six patients were not in shock at the time of presentation and four patients were in shock at the time of presentation. One of four died on 3rd post-operative day due to sudden myocardial infarction and one patient who was managed by staged procedure, developed burst abdomen. The other two patients who were managed by primary repair/resection and end-to-end anastomosis developed no complication. These patients were in hypovolaemic shock and made haemodynamically stable before the definite procedure. Two patients (50%) had complications and 50% patients were without complications. These results are comparable to results of series done by Rolando A. Padre[15].

Many authors considered shock a contra-indication for primary repair and thought it to be a determinant of outcome of primary repair[16]. The pre-operative and intra-operative shock was considered previously a contra-indication for primary repair.

Twenty two patients came to Emergency Ward (were managed) within 6 hours, 19 patients were managed by primary repair and 3 out of 22 patients were managed by colostomy.

Six patients were managed within 12-24 hours. Out of these 6 patients, 5 patients were managed by primary repair and one patient was managed by colostomy. Two patients out of 30 patients with colonic trauma were managed after 24 hours by staged procedure.

All nineteen patients who were managed by primary repair within 6 hours did well and developed no complication.

Five patients who were managed within 12-24 hours by primary repair developed no complication. The two patients who were managed within 6 hours by staged procedure developed infective complication. One patient who was managed within 6 hours by

colostomy, died on 3rd post-operative day by sudden myocardial infarction.

One patient who was managed within 24 hours by colostomy, developed burst abdomen. Both patients who was managed after 24 hours by colostomy developed no infective complication. According to many authors delay more than 6 hours was considered a contra-indication for primary repair and thought to be a factor which had a bad effect on outcome of primary repair[17]. In our study delay even upto 24 hours had no bad effect, on outcome of primary repair. An other study proved that delay upto 12 hours has no increase in morbidity and mortality[18]. According to Relando A Padre *et al.* 1993; there is no significant association noted between time interval more than 8 hours and development of complications[19].

All grades of severity of colonic injury were included in the study. The fourteen patients were with simple perforation with healthy edges (47%). Five patients had through and through tear of colon (17%). Eleven patients had tear of variable extent with ecchymosis of surrounding tissues of colon (37%) one patient had complete transaction of colon (3%). was performed.

One patient with colonic perforation with surrounding non-viable tissue was treated by staged procedure. This patient developed infection of main wound. In all six patients treated by resection and end-to-end anastomosis, there was no suture line failure. Our results are comparable to results of a 40 cases series, treated by resection and end-to-anastomosis with one anastomotic leak[20]. In an other study of 32 cases, 5 patients were treated by resection and anastomosis, and there was suture line leakage in one patient[21]. From the results of our study it was found that severity of colonic injury had no effect on outcome of primary repair.

The two patients without associated injury dealt by colostomy developed complications (18%) one patient with associated injury dealt by colostomy developed complication. One patient with associated injury dealt by colostomy died due to sudden myocardial infarction. It is evident from this study that all the patients whether with associated injury or without associated injury, dealt by primary repair did not developed complications. This result agrees with the results of other series[22].

It was evident from the results of our study that associated intra-abdominal injuries had no effect on outcome of primary repair.

Not that we are selling the newness of primary closure of large bowel trauma, we are sincerely reducing the miseries of the patients and this means taking the added responsibility of case selection for this procedure.

CONCLUSIONS

Age, proper prompt treatment and severity of injury, haemodynamic status at the time of operation and gross faecal contamination are determinants of the outcome of management of large bowel trauma.

Single stage management like primary closure of injury or resection and primary anastomosis in selected group of cases like with minimal feacal contamination no established peritonitis, clean bowel and favourable hemodynamics, is definitely better and recommended.

Proper debridement or resection of damaged colon in case of lacerated wounds of colon affects the outcome of primary repair of colonic trauma. The non-viable or that portion of colon that is devascularized should be debrided.

The proper peritoneal lavage also affects the outcome of primary repair all the four quadrants of abdomen are thoroughly washed with normal saline and mopped up.

EDITORIAL COMMENTS;

Kalashonkove culture, lawnessness, traffic mess etc causing increasing number of abdominal injuries leading to colonic injuries. Author has very clearly described the facors, prerequisite to primary repair and out come of primary repair of colonic injuries in a concised manner. Decreased Hospital stay, decreased morbidity, low cost of treatment and early job rejoining are definitely merit of primary colonic repair.

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