Original Article

EFFICACY OF PRIMARY REPAIR IN TERMS OF FREQUENCY OF INTRA-ABDOMINAL ABSCESS IN PATIENTS OF NONDESTRUCTIVE COLONIC INJURIES WITH COLOSTOMY

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ABSTRACT

Objective:

To compare the efficacy of primary repair in terms of frequency of intra-abdominal abscess in patients of nondestructive colonic injuries with colostomy.

Study Design:

Randomized clinical trial.

Setting:

Surgical unit IV DHQ/Allied Hospital Faisalabad; from January 2012 to June 2013.

Subjects:

62 patients with colonic injuries, 31 patients in each group.

Method:

Sixty two cases presenting with colonic trauma were studied to know the risk of post operative complication in terms of frequency of intra abdominal abscess. There were 31 patients in each group. Half of patients who underwent primary repair for colonic injuries fall in group A and half of patients who underwent colostomy fall in group B.

Results:

Primary repair was done in patients of group A & colostomy was done in group B. The hospital stay ranged from 14 to 21 days. In the data, frequency of intra abdominal abscess was calculated within 2 weeks post operatively in each group. In total 62 patients, there were 3 (4.84%) patients who developed intra abdominal abscess, 1 patient in group A (3.22%) and 2 patients (6.45%) in group B. The primary repair did not show an increase in intra-abdominal sepsis, regardless of risk factors (the number of associated injuries, the level of fecal contamination, and transfusion volume).

Conclusion:

Primary repair of penetrating colonic injuries is safe and effective. It prevents the patient from unnecessary repeated hospitalization, complications of colostomy, and the economic and psychological trauma associated with stoma formation**.**

Key Words: Colonic injuries, primary repair, colostomy.

INTRODUCTION

Colón is the second commonest injured organ in abdominal injuries after the small bowel being the most common. Most of the time this results from penetrating trauma and occasionally it is because of blunt injuries. At times it presents as an isolated injured organ and on the other hands it may be associated with other solid or hollow viscous

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injuries. Mechanism of injury usually determines the type of injury whether it is destructive or non-distractive.

Because of its contents soiling of the peritoneal cavity starts immediately after injury and may leads to lethal consequences, due to this colonic injury is still considered as one of the most serious domain of abdominal trauma. Owing to its loaded nature and poor blood supply special consideration is needed to establish its management plan.

Treatments in the past took its way from primary repair to colostomy. This change was because of the poor outcome of primary repair done in First World War in which mortality rate was more than 60%. Wallace faced 50% mortality rates in primary repair. Consequently a diversion policy emerged showing some encouraging reduction in mortality rate up to 35%. By the end of Second World War mortality reduced to 5-20% attributed to colostomy.

The primary repair of colon can be safely done in selected patients with acceptable morbidity.[1] Recently several prospective and randomized control trials advocate the primary repair in most cases of colonic injury. Most clean stab wounds and low-velocity gunshot injuries of colon can be offered primary repair after debridement till fresh bleeding margins and on table lavage if indicated.

All colonic injuries can be subjected to primary repair or colostomy. The exclusion criteria for primary repair are injuries of delayed presentation time >8 hours, haemodynamic instability necessitating more than 4 unit of blood transfusion till surgery, destructive, de-vascularized injury, any preexisting disease of colon, any severe co-morbid disease and significant fecal contamination at presentation. These are bad prognostic indicators in the management of colonic injuries. In these cases colostomy is the treatment of choice.[2]

Advantages of primary repair are the avoidance of colostomy. Colostomy has its own morbidity like prolapse, retraction, necrosis, stenosis, repeated consultations, colostomy diarrhea, and herniation in addition to cost and social problems. It requires a second operation for closure and hence extends the total operative time and overall hospital stay, and increases cost and morbidity. Primary colonic repair avoids all these drawbacks but debate still exists about its safety. Treatment of colonic injury should be case specific, taking into account the mechanism of the damage, severity, general conditions and associated injuries.[3]

AIMS AND OBJECTIVES:

This presentation of "Primary repair versus colostomy in management of colonic injuries" conducted in surgical unit-IV, Allied/DHQ Hospital Faisalabad was to meet and achieve following objectives;

- To compare the efficacy of primary repair in terms of frequency of intra-abdominal abscess in patients of nondestructive colonic injuries with colostomy.
- To demonstrate that primary closure of the colonic injury without colostomy in selective patient is safe and less morbid as compared to colostomy.

RESULTS

FREQUENCY OF INTRA ABDOMINAL ABSCESS AT TWO WEEKS

	SAMPLE SIZE	INTRAABDOMINAL	PERCENTAGE
GROUP A	31 Patients	1	3.22%
GROUP B	31 patients	2	6.45%
TOTAL	62 Patients	3	4.84%

AGE DISTRIBUTION

GROUP	CASES	PERCENTAGE
G1 (21-30 YEARS)	15	24.19%
G2 (31-40 YEARS)	32	51.61%
G3 (41-50 YEARS)	10	16.13%
G4 (51-60 YEARS)	05	08.06%

SEX DISTRIBUTION

SEX	NO OF PATIENTS	PERCENTAGE
MALE	45	72.58%
FEMALE	17	27.42%

DISTRIBUTION OF INJURED COLON

Site of injury	Group A	Group B	Total	PERCENTAGE
Ascending colon	2	4	6	9.67
Transverse colon	15	10	25	40.32
Descending colon	3	5	8	12.90
Sigmoid colon	11	12	23	37.09

ASSOCIATED INJURIES

INJURIES	GROUP A	GROUP B	TOTAL	PERCENTAGE
Small intestine	19	21	40	64.52
Stomach	5	3	8	12.90
Mesentery	1	2	3	4.83
Spleen	1	1	2	3.22
Diaphragm	1	0	1	1.61
Liver	0	1	1	1.61
Retroperitoneal	0	1	1	1.61

MECHANISM OF INJURY

	Group A	Group B	Total	Percentage
Firearm injury	21	23	44	71
Stab wound	7	5	12	19.35
Blunt trauma	3	3	6	09.67

DISCUSSION:

In abdominal region injuries the colon is the second most injured organ after the small intestine, penetrating injuries being the most common cause. Traditionally colonic injuries were treated by colostomy but now studies favour the primary repair. Several retrospective and prospective studies show an improved outcome in patients undergoing primary repair as compared to colostomy. The clinical parameters related to outcome are type and extent of colon injury, level of abdominal contamination, hypovolemic shock, time between injury and surgery, and associated organ injury.[4]

Our main focus was to identify the early postoperative septic complications in colonic injury by offering primary repair (group A) and colostomy (group B).

In total 62 patients at two weeks follow up, there were 3 (4.84%) patients who developed intra abdominal abscess, 1 patient in group A (3.22%) and 2 patients (6.45%) in group B.

The primary repair did not showed increase postoperative intra-abdominal sepsis, regardless of risk factors (the number of associated injuries, the level of fecal contamination, and transfusion volume). At four weeks follow up, in-group A there was 1 (3.3%) patient of abscess and 1 (3.3%) patient of wound infection. In group B, there were 2 (6.7%) patients of abscess and 2 (6.7%) patients of wound infection. In a study conducted at Mayo Hospital they found that rate of wound infection and intra-abdominal abscess was not more in the patients undergoing primary repair. In fact they found more wound infection and abdominal abscess in the patients in which colostomy was

performed.[5] Demetriades et al. showed that the primary repair group presented good treatment outcomes compared to the proximal diversion group (11.8% versus 29.2% respectively).[6] In another study Ranko et al with a retrospective and prospective series including 30 and 33 patients of primary repair concluded that primary repair of colonic injuries can be done in majority of patients with promising success rate.[7] In another study of 55 patients primary repair was done in 35 patients and colostomy in 20 patients. They found the rate of wound infection 14% and intra-abdominal abscess 2.8% in primary repair as compared to colostomy in which it was 40% and 10% respectively.[8] Hudolin et al. described that wound related complications developed in 27 per cent of patients after primary repair and 30 per cent after colostomy. [9] Results of these studies are comparable to our results.

In our study mode of injury was fire arm 71%, stab 19.35 %, blunt 9.67%. In another of study 74 patients (41.6%) had stab wounds and 104 patients (58.4%) had gunshot wounds.[10] Ranko et al found iatrogenic injuries and stab wounds as the most frequent cause. In these studies and in our study mode of injury is penetrating in nature most of the time which is in accordance to the reported in literature.

Many studies report a dominant involvement of young male patients in penetrating colonic trauma as in our study. Majority of our patients were male (72.58%), though the incidence of female patients is somewhat higher than other series.[11] In our study the mean age was 36.8 years. As compared to the study of Kahya et al[12] the mean age of the patients was 30.1 years, which is comparable with our study. In another study, there were a total of 178 patients; 156 were male (87.6%) and 22 were female (12.4%) [10] and the most affected age group was between 21 and 30 years, but in our study the most affected group was 31-40 years (51.61%).In a study conducted at Mayo Hospital there was male dominance and maximum frequency age group was between 30-40 years[5] as in our study. In another study younger most affected age group was found between 21 and 30 years. [10]

In our study (64.52%) patients had associated small bowel injury followed by stomach (12.90%), mesentery (4.83%), spleen (3.22%) and liver (1.61 %). In another study small bowel was involved (29.4%), liver (20.6%), pancreas (14.7%), stomach (14.7%) followed by spleen (11.8%). [13] Findings are in accordance to the literature which describes frequent associated injuries.

In our study, 40.32% patients had mild & 59.68% patients had moderate contamination of peritoneal cavity. In another study, in 35% of patients there was mild and in 65% moderate contamination and complications were higher in the later group. It concluded that major fecal contamination of the peritoneal cavity and systolic blood pressure lower than 90 mmHg are independent factors which have contributed to the development of postoperative complications.[14] These findings are comparable to findings of our study.

The time interval between injury and repair in the present study is 3-10 hours (mean 6 hours), as compared with the local study conducted at Lahore General Hospital Lahore by Hussain et al[15] the mean time interval between injury and operation was 7 hours, which is comparable with our study. Sharpe et al. on the basis of his trials recommend primary repair at any time interval.[16] In our study, transverse colon is more frequently involved segment (40.32%) followed by sigmoid colon (37.09%), descending colon (12.90%) and ascending colon (9.67%) that is comparable to other studies in literature. In contrast to our study, colonic involvement in another study was as ascending colon(33.33%), transverse colon (19.04%), descending colon (4.76%), sigmoid colon (4.76%), rectum (38.09%).[17] Another study concluded that Injury location did not affect morbidity or mortality after penetrating colon injuries and nondestructive injuries can be repaired primarily with an acceptably low morbidity. [16] In a review article another issue is highlighted that despite of recent improvement in transportation , recusutation and lot of work available in the favour of primary repair, still colostomies are performed just because of the surgeon's apprehension of failure and at times just to take the shelter of colostomy avoiding time consuming exercise of resection and anastomosis.[18] This should also be rectified.

CONCLUSION:

Primary repair of penetrating colonic injuries is safe and effective. It prevents the patients from unnecessary repeated hospitalization, complications of colostomy, and the economic and psychological trauma associated with stoma formation. Our results were promising and comparable with those quoted both in the local and international data.

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