

COLONIC INJURIES; PRIMARY REPAIR VS COLOSTOMY AN EXPERIENCE AT MAYO HOSPITAL

DR. SAQUIB ZAHUR, FCPS

Assistant Professor (Surgery)
Lahore Medical & Dental College
Lahore

DR. HASNAT AHMAD BUTT, FCPS

Associate Professor (Surgery)
Lahore Medical & Dental College
Lahore

Article Citation:

Zahur S, Butt HA. Colonic injuries; primary repair vs colostomy an experience at Mayo Hospital. Professional Med J Mar 2010;17(1):73-77.

ABSTRACT... Objectives: To determine the effectiveness of primary repair of colonic injuries and its comparison with the traditional colostomy or exteriorization. **Methods:** The study was performed in Mayo hospital Lahore. Of the initial 114 patients 63 patients with colonic injuries were selected and divided into 2 groups. After resuscitation these patients were operated. Both methods of treatment of colonic injuries were employed in different patients. Results were tabulated and a comparison of primary repair vs colostomy was done. **Results:** Recovery of patients undergoing primary repair was comparable with those having colostomy done. Only one major complication of leak occurred in the primary repair group. Abdominal dehiscence occurred in the colostomy group. Average hospital stay of 9 days in the primary repair group was significant and far less, than 22 days in colostomy group. **Conclusion:** Under controlled circumstances primary repair of colonic injuries appears to be a good mode of treatment.

Key words: Colonic injuries, primary repair, colostomy

INTRODUCTION

In modern day era the cost of hospitalization has risen enormously. The health care providers now are adopting ways and means which are helpful in decreasing this financial burden on both the patient as well as the institution. This issue has brought to life the debate of management of colonic injuries. The ages old mode of treatment (colostomy) is now being questioned. Now the surgeons are taking bold decisions in the management of colonic injuries with a better understanding of the healing process and availability of good antibiotics, surgeons are now focusing on performing one staged procedure for the colonic injuries. From the West, there are claimants of successful management of colonic injuries with primary repair.

This has led us to perform this comparative study to assess the usefulness of this procedure. Mayo hospital Lahore is the best place for this purpose since it caters a lot more number of patients as compared to rest of the

hospitals in the province.

PURPOSE OF STUDY

To evaluate the results of primary repair over exteriorization of the colon in cases of colonic injuries.

INCLUSION CRITERIA

All patients of colonic injuries, reaching the hospital within 8 hours and having varying degrees of contamination of the peritoneal cavity.

EXCLUSION CRITERIA

The exclusion criteria for primary repair were tightly controlled. Those patients who had blood loss greater than 1000 ml, blood pressure less than 80mm Hg, injury

Article received on:	23/06/2009
Accepted for Publication:	01/09/2009
Received after proof reading:	08/12/2009
Correspondence Address:	
Dr. Saquib Zahur	
135-A P.C.S.I.R, Cooperative Housing Society	
Phase-I, Lahore.	
nszahur@gmail.com	

to more than two organs, significant fecal contamination, and time delay greater than 8 hours were excluded.

MATERIAL AND METHODS

This is a prospective study performed on 114 patient, over a period of 2 years (1999- 2001), at Mayo Hospital Lahore.

On applying the inclusion and exclusion criteria only 63 patients remained.

All the patients were adequately resuscitated according to the principles laid down by ATLS¹. Laparotomy was performed and the injuries were accordingly dealt with. The colonic injuries were managed either primarily (suture repair or resection with end to end anastomosis) or exteriorization. Suture repair and anastomosis were performed using absorbable suture in double layer. The patients were categorized according to the part of the colon sustaining injury (table-II) and the degree of contamination of the peritoneal cavity (table-III). The degree of contamination varied from mild (confined to the site of injury), moderate (confined to one quadrant) and severe (more than one quadrant). Following the procedure in every case, abdomen was thoroughly washed with several liters of normal saline and closed over either 1 or 2 drains.

Post operatively the patients were closely watched for complications which in turn were managed accordingly until the discharge of every patient.

Patients who underwent exteriorization were advised to return after at least 3-4 months for the reversal of colostomy.

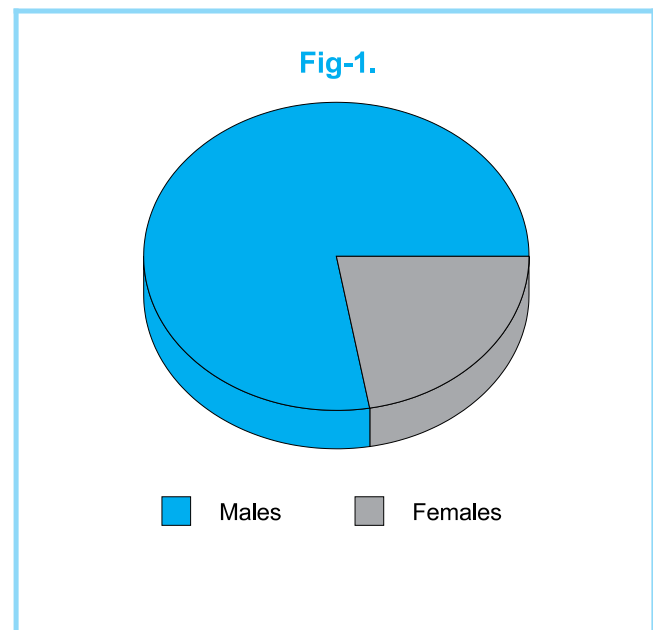
The results were subjected to student t tests for the purpose of analysis.

RESULT

From 1999 to 2001 a total of 63 patients were studied at the surgical floor of Mayo Hospital Lahore. Of these forty nine (77.78%) were males while fourteen (22.22%) were females. fig I.

The patients were divided into two groups A and B. Patients undergoing primary repair/ resection and anastomosis were included in Group A. Patients in whom colostomy was done were assigned Group B.

Patients sustaining colonic injuries belonged to varied age range. The ages of patients belonging to Group A ranged from 13 to 49 years, with an average of 24.5 years. Patients of Group B were in the age range of 15 to 67 years, with an average age of 31.7 years. (table I)



Groups	Minimum age	Maximum age	Average age
Group A	13	49	24.5
Group B	15	67	31.7

The anatomical location of the injuries was studied. Most of the injuries were sustained by transverse colon 46.03% while the least affected was pelvic colon 7.94%. 45(71.43%) cases had single colonic perforation while 18(28.57%) suffered multiple perforations. Of the total patients, 48 (76.19%) received associated injuries to other abdominal viscera². (Table II). Surgery was performed on all cases. During surgery the fecal

contamination was noted. About 13(20.63%) had minimal, 38(60.32%) moderate while 09(14.29%) had gross contamination. (Table III). During their post operative course the complications were noted. The main complications were either wound infections or intra abdominal abscesses. These complications are given below. (Table IV)

Region	Group A	Group B	n
Caecum	06	-	06 (9.52%)
Right colon/hepatic flexure	07	02	09 (14.29%)
Transverse colon	13	16	29 (46.3%)
Left colon / splenic flexure	06	08	14 (22.22%)
Sigmoid colon	01	04	05 (7.94%)

Fecal contamination	Group A n=28	Group B n=35	Total
Absent	03	-	03(4.76%)
Minimal	09	04	13(20.63%)
Moderate	16	22	38 (60.32%)
Gross	-	09	09 (14.29%)

Complications	Group A	Group B	n=
Abscess	01	01	02
Suture repair leak	01	-	01
Multiorgan failure	-	01	01
Renal failure	-	-	-
ARDS	-	01	01
Sepsis	02	03	05
Soft tissue infection	02	04	06
Abdominal dehiscence	01	01	02
Total	07 (25%)	11 (31.43%)	18 (28.57%)

The average hospital stay of the patients belonging to Group A was 09 days (p value < 0.01)s. Group B patients had an average stay of 15 days after 1st surgery and 07 days after the 2nd surgery. Thus the cumulative hospital stay of Group B patients was 22 days. (Table V)

Groups	Minimum	Maximum	Average
Group A	07	48	09
Group B	08	34	15
Group B after colostomy closure	05	10	07
Total Group B	13	44	22

DISCUSSION

Management of colonic injuries has been a matter of controversy from the ancient past. There is a debate between the defendants of primary repair vs. external drainage. Before 19th century the results of both have been disappointing³. Until the IInd World war majority of the cases was treated with primary repair, which had a mortality rate of 60%. After the war colostomy was introduced. It resulted in an astonishing decrease in the fatality rate, which came down to 30%. this rate improved further during the Korean war to 15%, attributed probably to the mandatory construction of colostomy for every colonic injury, good antibiotics, improvement in the evaluation techniques & better resuscitation⁴.

With the advancement in all fields of health care there has again been resurgence in the interest for primary repair of colonic injuries. Once again the dual between primary repair vs. colostomy has been brought to life. There have been sporadic reports of studies emphasizing primary repair⁵.

This has necessitated us to perform this study to compare the advantages of primary repair of colonic injuries over the traditional colostomy.

According to our study the patients undergoing primary repair had an average age of 24.5 years, while those of group B were of 31.9 years in terms of average age. Although the group B patients were of a slightly older age group yet this difference was not very significant. Both the groups belonged to a relatively younger age group⁶.

However what is significant is that the patients of group B had a longer stay in the hospital i.e. 15 days after the initial admission and 6 days after colostomy reversal. So the cumulative hospital stay was actually 21 days⁷. On the other hand the hospital stay of the patient of the patients of group A was 9 days. This difference is quite large and depicts an early recovery of the patients in group A. This in turns will have a definite decrease in the working hours lost and an early return to work. Secondly the financial burden increases as the hospital stay lengthens⁸.

Care of the stoma is a tedious and a cumbersome job. If not looked after properly it can cause soiling of both the laparotomy wound as well as the stoma site leading to wound infection⁶. This can hamper wound healing which eventually leads to delayed recovery of the patient. Thus meticulous care has to be taken which requires the services of stoma care specialists. All our patients had to be repeatedly advised by such personnel. Similarly the idea of the stool coming from the abdominal wall raises a variety of psychological issues. These issues were also dealt with accordingly. Services of a stoma care specialist and a psychotherapist are expensive and add to the cost⁹.

The occurrence of septic complications in our study was 20%. Majority was wound infection and intra abdominal abscesses. These complications occurred more frequently in the group B patients as compared to the group A (14% vs 38%). This is not merely due to a chance. Since the patients of group B had a stoma, the chances of fecal soiling of the wounds were quite high. Secondly the patients in this group had to be subjected twice to surgery during the course of their management.

Since these are contaminated operations, this automatically increases the chances of wound infection. The incidence of intra abdominal abscesses was the same in both the groups¹⁰. When these results were subjected to student t tests the resulting p value was 0.01 at a df of 2.

There was only one (3.8%) colon related complication in our study which occurred in the primary repair group. Contamination, although, was mild in this case and the patient had two separate colonic injuries, yet, both the injuries were repaired primarily. This patient later developed leak and had to be re-operated, at which time the colon was exteriorized. Later the patient was discharged without any further complications.

There is a general understanding that right sided colonic injuries are more suitable for primary repair as compared to the left sided ones. Our study negates this and has further been supported by the study performed by Burch et al¹¹ indicating that there was no difference in behavior of right or left sided colonic injuries. We managed both the right and left sided injuries by either primary repair or resection anastomosis. The only differentiating point in this context is that the exclusion criteria for primary repair were tightly controlled. Those patients who had blood loss greater than 1000 ml, blood pressure less than 80mm Hg, injury to more than two organs, significant fecal contamination, and time delay greater than 8 hours were excluded¹².

CONCLUSION

The study has shown that time, mechanism of injury and multiplicity of the perforations are important factors determining the choice of management. Part of the colon sustaining injury does not appear to play a role in selection of the treatment modality. Colostomy is definitely associated with a lot many complications as compared to suture repair only. Thus it can be concluded from this study that under controlled clinical conditions primary repair of colonic injuries can be advantageous when compared to colostomy.

Copyright © 01 Sep, 2009

REFERENCES

1. American college of surgeons. **Advanced trauma life support**. 6th ed. Chicago: American College of Surgeons 1997.
2. Nelkin n; Lewis F. **the influence of injury severity on complication rates after primary closure or colostomy for penetrating colon trauma**. Ann Surg 1989; 209(4):439-447.
3. La Grade LA. **Gunshot injuries**. 2nd ed. New York WM wood and company;1916:288.
4. Tott Even, Heel R, Discart H, Hendrik XL, Creve U. **Isolated colonic injury following blunt abdominal trauma** 6: Acta Chir Belg 2000 Mar-Apr;100(2):71-73.
5. Shannon FL, Moore EE. **Primary repair of colon, when it is a safe alternative**. 1985;98(4):851-860.
6. Thomson SR, Baker A, Baker LW. **Prospective audit of multiple penetrating injuries to the colon; further support for primary closure**. JR Coll Surg Edin 1996 Feb: 41(1) 20-4.
7. Thal E, Yeary EC. **Morbidity of colostomy closure following colon trauma**. J. Trauma 1980; 20: 287-291.
8. Stone hh, fabin tc. **Management of perforating colon trauma**. Ann surg1979;190(4):430-436.
9. Issacson JE JR, Bude RL, Kahloe HR. **Changing concepts of treatment of traumatic injuries of the colon**. Dis. colon rectum 1961;4:168-172.
10. Adkins RB, Zirkle PK, Waterhouse G: **Penetrating colon trauma**. J Trauma, 1984;24(6) 491-499.
11. Burch JM, Brock JC, Gewirtzman L. **The injured colon**. Ann Surg. 1986;203(6)701-711.
12. Mihmanli M, Erzunimlu, K Gunay,M. **Primary repair in penetrating colon injuries**. Hepatogastroenterology-1996 jul- aug: 43(10): 819-822.

PREVIOUS RELATED STUDIES

- Abdul Rauf Arshad, Shahzad Bashir, Usman Abaidullah, Atta ul Lateef. Colonic injuries; factors affecting their outcome. Professional Med J Sep 1999;06(3):331-335.

**Kites rise highest
against the wind;
not with it.**

Winston Churchill