

## TUBE CAECOSTOMY : A VALUABLE PROCEDURE IN PRIMARY CLOSURE OF RIGHT SIDED COLONIC GUNSHOT INJURIES

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**ABSTRACT :** *This prospective study was carried out at the Dept. of Surgery, Karachi Medical & Dental College between Nov. 1994 to Oct. 1995, on patients with gunshot wounds of the abdomen involving right hemicolon, to assess the effectiveness and morbidity of tube caecostomy as a protective procedure. Twenty patients were operated within 2-3 hours of injury during this period. At laparotomy wounds of the right hemicolon were repaired primarily, after trimming of the margins and a tube caecostomy performed with minimal morbidity and no mortality. Thus primary closure of right hemicolonic gunshot wounds with venting of distal colon via a tube caecostomy is a safe procedure.*

**KEY WORDS :** *Trauma, Gunshot Wounds, Colonic Injuries, Caecostomy.*

### INTRODUCTION

Karachi, the largest city of Pakistan has seen an enormous surge in civilian violence over the last few years, especially involving firearms. This has resulted in an increased incidence of gunshot injuries of the abdomen, causing multiple visceral injuries. Moreover, the hospital emergency department is inundated with the simultaneous arrival of several gunshot victims. The aim of this study was to find out whether it was safe to perform primary closure of gunshot wounds of the right side of the colon, when venting via a tube caecostomy was provided.

### PATIENTS AND METHODS

A prospective study was carried out between Nov. 1994 to Oct. 1995 on all patients who came to the Trauma Centre of Abbasi Shaheed Hospital and were admitted and operated in our unit for gunshot wounds of the abdomen involving right hemicolon. Patients who were not operated within six hours of injury and those with gross faecal peritoneal contamination were excluded from the study. Similarly patients with lacerations involving the whole circumference of bowel and those with a laceration exceeding 10 cms in the long axis were also excluded from the study.

After resuscitation, all patients underwent laparotomy. Major vascular, solid visceral and small bowel injuries were dealt with accordingly, as also other injuries like chest, limb, etc. The wound edges in the right hemicolon were trimmed and closure performed in two layers using 2/0 vicryl, the first layer with continuous and the second with interrupted sutures.

Following primary repair of gunshot wounds of right hemicolon, the caecum was mobilized and appendectomy performed. A size 32 Fr. two way Foley's catheter was passed through the appendectomy stump into the caecum, fixed to it via a purse string suture and the balloon inflated with 5cc of water. The Foley's catheter was then brought out through a separate stab in the right iliac fossa and the caecum anchored to the anterior abdominal wall.

The abdominal cavity was next lavaged thoroughly with normal saline and two tube drains placed, one in the pelvis and the other in the right paracolic gutter. The caecostomy tube was clamped on the 10th post operative day and removed on the 12th. These patients were given a third generation cephalosporin and metronidazole at induction of anesthesia which were continued for five days. All cases were followed up for at least six months.

## RESULTS

Twenty patients who suffered gunshot (mostly Kalashnikov / TT pistol) wounds of the abdomen with injuries to the right half of the colon were included in the study. All of them were men, their ages ranged from 15 to 52 years. They reached the hospital within 2 hours of injury, 12 had a systolic blood pressure of < 90mm Hg and a pulse rate > 110/min. Six patients had more than one entry wound of the abdomen and four had another wound in the chest. One patient had an entry wound in the neck with surgical emphysema and another in the right lower chest. Ten patients had large exit wounds.

All patients with associated gunshot wounds to their chest had a size 32 Fr. chest tube put in. All patients underwent laparotomy, the mean time between injury and operation was 3 hours. Besides right hemicolon other visceral injuries suffered are given in Table 1.

Table 1. Other Visceral Injuries

Viscera*	Number	%
Small bowel	18	90.0
Liver	4	20.0
Spleen	2	10.0
Stomach	2	10.0
Diaphragm	3	15.0
Rt. Kidney	1	5.0
Urinary bladder	1	5.0
Common Iliac Vein (R)	1	5.0

\* Patients had more than one visceral injury.

In sixteen patients there were at least two perforations in the colon while in four there were more than two. In seven patients the laceration in the colonic wall was more than 5cm long but less than 10 cms. All these patients were initially managed in the Intensive Care Unit for atleast 48 hours. All of them had more than 3 units of blood transfused preoperatively.

There were no post operative deaths. The caecostomy tube started to function by the fourth day. None of the patients developed a leak from the colonic repair site and there was no incidence of pericolic abscess formation. By the seventh day most of the patients had moved their bowel, their caecostomy tube was clamped on the tenth day and removed on the twelfth. The caecostomy site was covered with occlusive dressings. There was minimal faecal soiling and it healed in ten days.

Table 2. Complications

Complication	Number	%
Discomfort	3	15.0
Wound Infection	4	20.0
Leakage of faeces around tube	2	10.0
Skin Excoriation	1	5.0
Faecal Fistula	—	—
Tube Dislodgement	—	—
Mortality	—	—

The complications noticed (Table 2) were wound infection in four patients, leakage of faeces around the tube caecostomy in two and skin excoriation in one case, while a few complained of discomfort at the tube site. These patients were discharged by the fourteenth day. One patient required readmission on two occasions after discharge from the hospital. He had colicky pain, abdominal distension and constipation. He was managed conservatively and settled on high fibre diet. None of the patients had faecal fistula or dislodgment of the caecostomy tube.

## DISCUSSION

Abdominal gunshot injuries have increased due to rise in civilian violence. Usually, multiple visceral injuries are encountered at laparotomy. After dealing with major bleeding sites, attention is diverted to solid viscera like liver, spleen and kidneys. The small bowel is repaired next and finally the large bowel. If right hemicolectomy is contemplated for wounds in right hemicolon, the operating time is further increased with increased morbidity. Exteriorization of injured bowel is also time causing, besides there are stoma related problems like care of the stoma, expense and psychological acceptance. Sometimes, convenient site for the stoma is not available due to entry, exit and laparotomy wounds. The colostomy will also need closure requiring further admission and operation under general anaesthesia. This increases the burden of the hospital and puts added pressure on the elective surgery waiting list. Keeping the above arguments under consideration, primary repair of right hemicolonic gunshot wound with a covering tube caecostomy was carried out as advocated by Moore et al<sup>1</sup> in Hirschsprungs disease.

High velocity missile injury causes cavitation, depending on the density and elasticity of the target organ. Cavitation is associated with tissue injury many centimeters around the missile tract<sup>2</sup>. We found that

adequate trimming of the wound edges (which revealed adequate bleeding) and primary repair does not increase the mortality or morbidity. There was no evidence of apparent leak from the repair site or pericolic abscess formation. There has also been no evidence of stricture formation due to repair of colonic tissue that may have been involved in cavitation effect, as most of these patients have been followed up for at least six months.

There has been considerable controversy regarding the use of caecostomy<sup>3-6</sup>. It is thought to be inadequate for decompression of acute colonic obstruction<sup>7-10</sup>. There is fear of faecal fistula formation, dislodgement of the caecostomy tube, intraperitoneal leakage of intestinal content<sup>11</sup> and sometimes the need for reoperation for closure of stoma. In colonic gunshot wounds, as there is no distal obstruction, the tube caecostomy is sufficient to keep the repaired distal colon decompressed. The chance of faecal fistula formation is less if the tube is removed within two weeks. A caecostomy properly constructed by fixing the caecum to the inside of the abdominal wall at the site of the tube prevents intraperitoneal leakage<sup>11</sup>. Our patients went home on the fourteenth postoperative day. They did not require further admission for the closure of colostomy, hence a decrease in morbidity and hospital expenditure.

In our patients, complications due to caecostomy were less frequent (Table 2). Caecal drainage persisted at the most for three days after removal of the tube. None of the patients required closure of persistent caecal fistula

## CONCLUSION

We conclude that in patients with gunshot wounds of the abdomen involving right hemicolon, who reach the hospital early and are operated soon with minimal peritoneal soiling, primary repair of wounds with venting via a tube caecostomy is safe.

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