

## FACTORS AFFECTING THE MANAGEMENT OF TRAUMATIC COLONIC INJURY

Ata-ul-Lateef<sup>a</sup>, Maham Mansoor Rana<sup>b</sup>

<sup>a</sup>Associate Professor of Surgery, Faisalabad Medical University, Faisalabad

<sup>b</sup>Post Graduate Resident Surgery, Allied Hospital, Faisalabad.

### ABSTRACT:

**BACKGROUND:** The main purpose behind conducting this study was to assess the effect of various factors in the management of colonic injuries and their outcome; and to propose a safe and valid protocol for the management of such injuries.

**METHODS:** 66 patients presenting with colonic injuries through emergency in General Surgical Unit of Allied Hospital Faisalabad were included in our study.

**RESULTS:** The patients had an average age of 28 years, 73% being male. Forty-one patients underwent primary repair of the colon while 25 patients underwent fecal diversion. The time interval between injury and repair was less than 6 hours in 71% of patients. 67% of the patients sustained a gunshot wound to the abdomen, 15% were stab wounds and 18% were blunt injury. The associated abdominal organ injury was presented in most of the patients. Primary repair done in 62% patients and colostomies performed in 38% patients. The mortality rate was 14%.

**CONCLUSIONS:** Several Factors contribute to the colon related post operative morbidity of patients and hence the treatment option such as: units of blood transfusion, multiorgan injuries, colon injury score, Injury Severity Score and degree of contamination. (p value <0.05 significant)

### INTRODUCTION:

For any trauma surgeon, colon wounds remain a relatively common, yet sometimes challenging, clinical problem. Few injuries have reached the advances in management that have been obtained with trauma to the colon. What was once a death sentence for a patient 150 years ago, the majority of patients presenting with colon injuries today is surviving their hospital stay with a relatively low complication rate. With the development of more aggressive operative techniques and improvements in antimicrobial therapy, colon-related morbidity has decreased to just 15%. During the early civil war, the mortality secondary to colon injuries was 90% which has markedly decreased to just 1% according to recent literature.<sup>[1]</sup>

Colorectal injuries do not occur frequently in trauma patients and make up only 1% of them.<sup>[2]</sup> Individuals who are injured in military encounters are reported to have a higher incidence of colonic injuries, i.e. about 5–10 % as compared to civilian population who have a

lower incidence i.e. between 1 and 3 %.<sup>[3]</sup> Among commonly injured organs, based on mechanism of injury colon is the 2<sup>nd</sup> most common in gunshot wound to abdomen, 3<sup>rd</sup> most common in anterior stab wound to abdomen and is the most commonly injured organ in posterior stab wounds. It is present in about 20% of posterior stab wounds patients who undergo surgery. Gunshot wounds cause injury to transverse colon most commonly and stab wound to left colon based on a segment of colon involved in the injuries.<sup>[4]</sup>

The management of colonic injury remained a challenge because colon contains an enormous reservoir of bacteria which are excluded from the body by normal mucous membrane. If mucous membrane is disturbed by trauma it results in creating the problem by bacteria

*Corresponding Author:*

Ata-UI-Lateef

Associate Professor of Surgery ,  
Faisalabad Medical University, Faisalabad.

Email: ataulateef@yahoo.com

escaping into peritoneal cavity and invading adjacent tissues and producing severe infection.

The main purpose behind conducting this study was to assess the effect of various factors in the management of colonic injuries and their outcome and to propose a safe and valid protocol for treating such injuries.

### **MATERIAL AND METHODS:**

This study was conducted at General Surgery Department Allied Hospital Faisalabad from July 2017 to June 2018. It is a prospective, observational study. We recorded data from all of the patients we had treated with colonic injuries. Patient management was conducted by a surgical attending physician and a senior surgical resident on arrival at the trauma center. All 66 patients were managed via standard Advanced Trauma Life Support protocol and were aggressively resuscitated with lactated Ringer's solution and, if necessary, type-specific blood. All patients received preoperative antibiotics, either a second-generation cephalosporin (2g of cefoxitin or 1 g of cefotetan) or a combination of cefotaxime (1 g) and metronidazole (500 mg). The decision to perform a laparotomy on a penetrating abdominal injury relied on peritoneal penetration, with local wound exploration being performed for those injuries in question. Blunt abdominal injury was evaluated clinically and radiologically.

The patients with colonic injuries were divided into two main groups on the basis of surgical approach: one group undergoing primary repair and the other undergoing diversion. Primary repair included: 1) closure of perforation with simple suture 2) and resection of an injured part followed by anastomosis while Diversion included: 1) surgical resection of the injured segment with closure of the distal stump and formation of an end colostomy/stoma or exteriorization two segments, 2) resection and anastomosis or closure with simple suture along with proximal stoma. The decision to proceed with primary repair or diversion was left on the operating surgeon. Intraoperative decisions for the various forms of colon injuries management were based on the extent of the injury, degree

of contamination, and injury location.

Each case was reviewed for:

- \* Patient age,
- \* Location of injury
- \* Mechanism of injury,
- \* Fecal contamination
- \* Injury Severity Score,
- \* Colon injury severity,
- \* Presence of shock,
- \* Blood units transfused within the first 24 hours
- \* Associated injuries,
- \* Method of surgical repair, and
- \* Colon-related complications (wound infection or seroma, intra-abdominal abscess, wound dehiscence, suture line failure, and death).

Exclusion criteria included patients who died within 72 hours from time of admission. To assess the level of colon injury, colon injury scale (CIS) was used which was taken from American Association for the Surgery of Trauma (AAST). Based on this, grade I and II classified as non destructive injuries, while III, IV, and V injuries grade were classified as destructive injuries. The degree of fecal contamination was classified as a) mild: when stool contamination was located to one quadrant of abdomen only, b) moderate: when contamination was involving 2 to 3 quadrants and c) severe: when stool contamination was involving all four abdominal quadrants. Each patient was assigned an Injury Severity Score which is based on the Abbreviated Injury Scale grades of the three most injured body regions.

These variables were analyzed in relation to the development of wound infection and intra-abdominal abscess to identify potential risk factors that may contribute to colon-related postoperative morbidity and mortality. Wound infection was defined as: 1) occurring within 30 days of the surgical operation; 2) infection involves subcutaneous tissue of incision and deep tissues, such as facial and muscle layers and purulent discharge from wound or drain placed in wound which required opening up of the wound.

The Student's t-test and chi-squared test were used for statistical analysis of variables used in the study. A value of  $P < 0.05$  was reported as statistically significant.

## RESULTS:

The general characteristics of the 66 patients analyzed included, an average age of 28 years (range was 11 to 70), with 73% being male. Forty-one patients underwent primary repair of the colon while 25 patients underwent fecal diversion. The time interval between injury and repair was less than 6 hours in 71% of patients. Sixty-seven percent of the patients sustained a gunshot wound to the abdomen, 15% were stab wounds, and 18% were blunt injury. Location of injury included 27% of the patients having right colon injuries, 30% transverse colon, 36% left colon, and 5% having multiple colon injuries (Table 2).

Four patients presented in shock (systolic blood pressure <90 mm Hg on arrival at the Hospital). The average Injury Severity Score was 21 and the average Colon Injury Severity grade was 3.2. Overall, three deaths occurred; two were multiorgan failure clinically unrelated to the colon wound.

Forty-one patients underwent primary repair. Twenty-nine of these patients received a simple one layer hand-sewn repair; 12 patients required resection and anastomosis (nine were ileocolic anastomosis and three were colocolic anastomosis). In the fecal diversion group, there were 11 sigmoid end colostomies, 9 transverse colostomies, 3 ileostomies, 2 descending colon colostomies, and 1 transverse loop colostomy. Twenty two patients in both the primary repair and fecal diversion group had a gunshot wound to the abdomen.

In recording the frequency of involved associated abdominal injuries, the small bowel was the most commonly injured organ, occurring in 54% of the primary repair group and 66% in the diversion group (Table 3). Both groups were similar in having more than two injured abdominal organs-41% of the primary repair and 32% of the diversion group.

The differences in the average Injury Severity Score between the two groups were not statistically significant; primary repair patients averaged a score of 19.9 and the diversion group, 23.2 (Table 4). In analyzing the severity of colon injury, 15 patients who underwent primary colon repair had a Colon Injury Severity grade >III. Comparably, 21 patients who

sustained a fecal diversion had a grade >III (Table 4). The average Colon Injury Severity score was statistically greater in the diversion group ( $3.9 \pm 1$ ) compared with those patients with primary repair ( $2.8 \pm 0.2$ ;  $P < .001$ ).

A total of four patients were in shock on arrival at the trauma center. One out of the four underwent primary repair of the colon and had transfusion of 4 pints of packed red cells during management. The other three patients who presented in shock underwent colostomy and were given 9 pints, 12 pints, and 23 pints of packed red blood cells, respectively. A total of 4 patients in the primary repair group and 7 patients in the diversion group had transfusion of more than 4 pints.

The morbidity and mortality associated with the colon injury were assessed in relation to the methods of repair (Table 5). Wound infection occurred in 4.87% of the primary repair patients as opposed to 40% in the diversion group. Two of the patients with primary repair of the colon wound had anastomotic leak and consequently 1 had intra-abdominal abscess, whereas in 3 of the diversion patients an abscess was formed. The overall complication rate of fecal diversion was almost double that of primary repair (14.6% versus 28%).

The potential risk factors associated with the septic complications were assessed. Table 6 shows the univariate statistical analysis. Location of injury, mechanism of injury, presence of shock, and age of the patients were not statistically significant in any of these complication groups. The presence of a right-sided injury contributed to a 8.3% wound infection rate ( $p$  value < .01), whereas having an Injury Severity Score >25 in the 20% wound infection ( $p$  value < .03). In patients who developed an intra abdominal abscess, significant contamination ( $p$  value < .01), more than two associated injuries ( $p$  value < .01), and Injury Severity Score >25 ( $p$  value < .05) contributed significantly to this problem. For those patients who developed at least any one complication, several factors contributed significantly: transfusion with 4 or more units of blood ( $p$  value < 0.02), more than 2 associated injuries ( $p$  value < .01), increasing levels of colon injury score ( $p$  value < 0.05), and significant contamination ( $p$  value < .05).

**Table 1. Colon Injury Score**

Grade	Type of injury	Description of injury
I	Hematoma	Contusion or hematoma without devascularization
	Laceration	Partial thickness, no perforation
II	Laceration	Laceration <50% of circumference
III	Laceration	Laceration >50% of circumference without transection
IV	Laceration	Transection of the colon
V	Laceration	Transection of the colon with segmental tissue loss
	Vascular	Devascularized segment

**Table 2. Location of Colon Injury**

Location of Injury	Type of Repair	
	Primary	Diversion
Right Colon	14	4
Transverse Colon	12	8
Left Colon	13	12
Multiple	2	1

**Table 3. Associated Abdominal Injuries**

ORGANS	%Primary Repair	% Diversion
Small Bowel	54%	66%
Spleen	12%	08%
Liver	10%	08%
Kidney	07%	00%
Gall Bladder	07%	00%
Stomach	05%	20%
Pancreas	06%	08%
Diaphragm	05%	04%
Major Vascular	02%	08%
≥ 2 Organs	41%	32%
< 2 Organs	59%	68%

**Table 4. Method of Repair**

Injury	Primary Repair	Diversion
<b>COLON INJURY SEVERITY</b>		
Grade I	10	0
Grade II	7	1
Grade III	8	2
Grade IV	14	19
Grade V	3	2
MEAN ± SEM	2.8±0.21	3.9±0.11
P Value	<.001(significant)	

**INJURY SEVERITY SCORE**

Mean Score	19.9	23.2
P Value	Not Significant	

**Table 5. Complications**

Complications	Primary Repair n(%)	Diversion n(%)	X <sup>2</sup> (d.f=1, N=66)	P-value
Wound Infection	2(4.87%)	12(40%)	8.59	0.003
Wound Seroma	2(4.87%)	0(0.00%)	1.26	0.26
Wound Dehiscence	1(2.4%)	0(0.00%)	0.62	0.43
Intra-abdominal Abscess	1(2.4%)	3(12%)	2.35	0.12
Anastomotic Leak	2(4.87%)	0(0.00%)	1.26	0.26
Death	3(7.3%)	8(32%)	1.92	0.16
Overall	(14.6%)	(28%)	2.21	0.13

p-value significant &lt;0.05

Table 6: Potential Risk Factors associated with Complications

RISK FACTORS	Wound infection			Intra Abdominal Abscess			Any Complication		
	n	%	p-value	n	%	p-value	n	%	p-value
<b>MANAGEMENT METHOD</b>									
Primary repair (n=29)	2	6.8%		2	6.8%		5	17.2%	
Resection, anastomosis (n=12)	1	8.3%	0.01	1	8.3%	0.31	3	25%	0.17
Diversion(n=25)	9	36%		5	20%	NS	10	40%	NS
<b>LOCATION</b>									
Right colon (n=18)	2	11%		1	6%		3	16.6%	
Transverse colon (n=20)	3	15%	0.24	1	5%	0.67	4	20%	0.89
Left colon(n=25)	0	0%	NS	0	0%	NS	4	16%	NS
Multiple Locations (n=3)	0	0%		0	0%		1	33%	
<b>MECHANISM OF INJURY</b>									
Gunshot (n=44)	4	9%	0.61	1	2%	0.46	11	25%	1.65
Stab wound(n=10)	0	0%	NS	0	0%	NS	1	10%	NS
Blunt (n=12)	1	8.3%		1	8%		4	33.3%	
<b>SHOCK</b>									
Systolic BP <90 (n=4)	1	25%	0.92	1	25%	0.85	2	50%	0.51
Systolic BP ≥90(n=62)	17	27.4%	NS	13	20.9%	NS	21	33.8%	NS
<b>TRANSFUSION</b>									
≥4 Pints (n=11)	1	9.1%	0.73	2	18.2%	0.25	6	54.5%	0.016
<4 Pints (n=55)	7	12.7%	NS	4	7.3%	NS	11	20%	
<b>CONTAMINATION</b>									
Mild(n=43)	6	13.9%	0.86	3	6.9%	0.006	8	18.6%	0.01
Moderate (n=12)	2	16%	NS	2	16%	d.f=2	3	25%	d.f=2
Major (n=11)	1	9%		5	45.5%		7	63.6%	
<b>ASSOCIATED INJURIES</b>									
>2 Organs (n=25)	3	12%	0.001	8	32%	0.009	10	40%	0.019
≤2 Organs (n=41)	5	12.2%	d.f=1	3	7.3%	d.f=1	6	14.6%	d.f=1
<b>INJURY SEVERITY SCORE</b>									
≥25 (n=30)	6	20%	0.023	4	13.3%	0.024	11	36.6%	0.013
<25 (n=36)	1	2.7%	d.f=1	0	0%	d.f=1	4	11.1%	d.f=1
<b>COLON INJURY SEVERITY SCORE</b>									
<III (n=18)	3	16.6%	0.301	2	11.1%	0.16	3	16.6%	0.041
≥III (n=48)	14	29.2%	d.f=1	13	27%	d.f=1	21	75%	d.f=1

NS: Not Significant, d.f. degree of freedom,  $\chi^2$ : Chi Square test value.

## DISCUSSION:

Colonic trauma is highly prevailing now a days, however it has become difficult to identify as many factors affect its origin. Fire arm injuries and stab wounds caused by sharp instruments cause fatal penetrating injuries to colon. The gunshot wounds to colon cause a higher mortality rate which ranges between 3 to 16%. The cause of death in penetrating trauma to colon in early period is mostly due to extensive bleeding and hemorrhage whereas delayed death occurs due to sepsis causing multi organ damage.<sup>[5]</sup> Systemic complications like sepsis, pneumonia, respiratory distress and surgery related specific complications like surgical site infections, abscess formation etc are common post operative complications in these patients.<sup>[2]</sup> In the postoperative patients, factors such as anastomotic leak, abscess formation and/or fistula formation may contribute to the death in the later period.<sup>[5]</sup>

Recent literature on the management of colorectal injuries is increasing during the last few decades due to advancing management strategies.<sup>[6]</sup> Penetrating abdominal trauma was used to be managed expectantly during the U.S Civil War. During the World War I, survival of patients suffering from penetrating injuries to rectum improved with the gain of experience.<sup>[7]</sup> Ogilvie advent the method of proximal diversion which was a major advancement in the colonic injury management.<sup>[6]</sup> However, the reported mortality was still high at 50%. During World War II, advent of transperineal presacral drainage caused a decrease in mortality rate to 30%. Similarly during the Vietnam War, the introduction of distal wash out caused a decrease in mortality in penetrating colorectal trauma patients.<sup>[7]</sup> In the 1970s, the advancement in the resuscitation and antimicrobial therapy in the uncomplicated colonic injuries introduced the primary repair procedure in these patients. In 1979, Stone and his colleagues published their research that was against the mandatory stoma formation practiced in that era, which was widely accepted. They showed that the complication rate due to infection was 48% in patients with primary repair and 57% in patients who had colostomies done for colorectal injuries.

However, mortality rates were not statistically different i.e 1.5% in primary repair and 1.4% in the other group.<sup>[8]</sup> Moreover, they demonstrated that the primary repair group was cost effective and had a short duration of hospital stay compared to colostomy group.<sup>[8]</sup>

On the basis of surgical management of colon injuries they can be categorized into two groups: 1 Primary Repair and 2 Diversion with stoma formation. However, low velocity missile causes less severe penetrating injury which favors primary repair or anastomosis according to most studies and High velocity missiles (HVMs) cause more severe injuries and are usually associated with other organ injuries, more blood transfusion requirement and usually have a longer surgical treatment time; these factors complicates their management.<sup>[8]</sup>

The two situations where it was initially thought diversion would be required were civilians with a colonic gunshot wound (GSW) and patients with destructive colonic injuries. Several authors, however, have reported fairly large series of civilian colonic GSWs that were managed successfully by PR. Management of destructive colonic injuries still appears to be highly individualized. The emergence of damage control (DC) surgery towards the end of the 20th century once again changed the debate about primary colonic repair.<sup>[9]</sup> In the critically injured patients with destructive trauma to abdomen, damage control surgery is now standard of choice. During this process of damage control surgery, a disrupted bowel is left as such then the patient resuscitated. Later for definitive treatment, operating surgeon had to decide whether to undergo bowel anastomosis or perform fecal diversion through ostomy.<sup>[10]</sup>

Although, in the non-damage control situations, evidence supports the primary repair of colon with anastomosis.<sup>[10]</sup> Persistent acidosis, however, should be considered a contraindication. The available literature suggests gunshot Wounds and destructive colonic injuries are not in themselves associated with a higher incidence of anastomotic failure than Stab Wound injuries and simple Primary Repair. Nevertheless, Proximal Diversion had high rate of septic complications and mortality rate was twice that

in the PR group. If there are no indications for Damage Control surgery and the colonic injuries are non-destructive, then Primary Repair is uncontroversial. Their results implied that increased mortality is associated Proximal with Diversion and therefore suggested that the two acceptable options are Primary Repair or a Damage Control operation.<sup>[9]</sup> The triad of hypothermia, coagulopathy, and acidosis causes increased death rate in the patients with severe injury, therefore damage control surgery is preferred in them. These metabolic factors form a deadly triad and have a negative effect in outcome of any surgical procedure.<sup>[5]</sup>

Many literature reviews and analysis are available regarding the assessment of best treatment options based on different parameters. Burch and his colleagues did a retrospective study on 1006 patients during 1980-1989 and showed that frequency of primary repair has increased from 55% to 70% during the study period whereas morbidity decreased from 12% to 9.3%. Curran and Borzotta (1998) did analysis of 27 retrospective studies conducted on 2964 total patients presenting with traumatic colonic injuries. Similarly, Sasaki et al. did a prospective study by randomizing 71 trauma patients to the primary repair or diversion irrespective of any criteria. All these papers suggested that primary repair is the procedure of choice in patients with colonic injuries. The retrospective analysis of 140 patients done by Murray et al. showed that resection and anastomosis is a safe procedure in both right and left colon injuries requiring resection.<sup>[11]</sup>

In 1998, Eshraghi and his colleagues determined the objective criteria for selecting the management option for traumatic colonic injuries by evaluating reviews of different trauma surgeons and suggested that on the basis of mechanism of injury, presence of shock, fecal contamination and colon injury severity (CIS) associated with ATI (abdominal Trauma Index) procedure of choice should be either

- 1) Colostomy, if patient has injury to colon due to Gunshot wound; presence of shock at the time of admission; has severe peritoneal contamination or has a CIS score

>3 with ATI >30.

- 2) Primary Repair, if patient is having injury due to blunt trauma or stab wound, is hemodynamically stable at the time of admission, has mild to moderate contamination or has a Colon Injury Severity grade  $\leq 3$  with ATI <25.<sup>[11]</sup>

Trust and Brown presented the review of the recent literature on the management of penetrating colon injuries in 2015 showing that Primary repair is an excellent option for the vast majority of penetrating injuries to colon. Resection and anastomosis for more destructive injuries, and diversion should be considered in those who have more severe injuries and have higher blood transfusion requirement or comorbid medical illness.<sup>[6]</sup>

Thus, the information gained from these studies suggests that management option varies from patient to patient depending on potential risk factors. However, main aim is to decrease the morbidity and mortality of patient with colonic injuries.

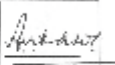
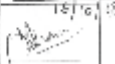
### CONCLUSIONS:

Various factors influence the patient prognosis significantly which compared to others include transfusion with 4 or more units of blood ( $p$ -value=0.016), increasing levels of colon injury scale ( $p$ -value=0.041), more than 2 associated injuries ( $p$ -value=0.019), significant contamination ( $p$ -value = 0.01) as well as having an Injury Severity Score >25 ( $p$ -value=0.013) and suggested that almost all civilian colonic trauma can be managed by primary repair preferably as compared to diversion as it is safe and a cost-effective method of managing traumatic colonic injuries keeping in view the above mentioned factors.

### REFERENCES:

1. Sharpe JP1, Magnotti LJ1, Fabian TC1, Croce MA1. Evolution of the operative management of colon trauma. *Trauma Surg Acute Care Open.* 2017 Jul 31;2(1).
2. Ay N1, Alp V2, Aliosmanoğlu İ3, Sevük U4, Kaya Ş5, Dinç B6. Factors affecting

- morbidity and mortality in traumatic colorectal injuries and reliability of validity of trauma scoring systems. *World J Emerg Surg.* 2015 May 12;10:21.
3. Johnson EK<sup>1</sup>, Steele SR. Evidence-based management of colorectal trauma. *J Gastrointest Surg.* 2013 Sep;17(9): 1712-9.
  4. Demetriades D, Inaba K. Chapter 33: Colon and Rectal Trauma. In: Mattox K, Moore EE, Feliciano DV, editors. *Trauma.* 7 ed. New York City, NY: McGraw-Hill; 2013. p. 620-631.
  5. Lazovic R<sup>1</sup>, Radojevic N<sup>2</sup>, Curovic I<sup>3</sup> Performance of primary repair on colon injuries sustained from low-versus high-energy projectiles. *J Forensic Leg Med.* 2016 April; 39: 125-129.
  6. Marc D. Trust<sup>1</sup> & Carlos V. R. Brown<sup>1</sup> Penetrating Injuries to the Colon and Rectum. *Curr Trauma Rep (2015)* 1:113-118.
  7. Brown SR<sup>1</sup>, Swisher JP, Hofmann LJ, Coviello LC, Davis KG. Surgical management and associated complications of penetrating rectal injuries sustained in Iraq and Afghanistan. *Mil Med.* 2013 Nov;178(11):1213-7.
  8. Kaymak Ş<sup>1</sup>, Ünlü A<sup>2</sup>, Harlak A<sup>2</sup>, Ersöz N<sup>2</sup>, Şenocak R<sup>2</sup>, Coşkun AK<sup>2</sup>, Zeybek N<sup>2</sup>, Lapsekili E<sup>2</sup>, Kozak O<sup>2</sup>. High velocity missile-related colorectal injuries: In-theatre application of injury scores and their effects on ostomy rates. *Ulus Trauma Acil Cerrahi Derg.* 2016 Mar;22(2):169-74.
  9. B Shazi, JL Bruce, GL Laing, B Sartorius, DL Clarke. The management of colonic trauma in the damage control era. *Ann R Coll Surg Engl* 2017; 99: 76-81.
  10. Patrick Georgoff, MD<sup>a,b</sup>, Paul Perales, MD<sup>c</sup>, Benjamin Laguna, BS<sup>a</sup>, Daniel Holena, MD<sup>c</sup>, Patrick Reilly, MD<sup>c</sup>, and Carrie Sims, MD, MS<sup>c</sup>. Colonic injuries and the damage control abdomen: does management strategy matter? *J Surg Res.* 2013 May; 181(2): 293-299.
  11. Jinescu G, Lica I, Beuran M. Traumatic colon injuries – factors that influence surgical management. *Chirurgia (Bucur).* 2013 Sep-Oct;108(5):652-8.

AUTHOR NAME	CONTRIBUTION	SIGNATURE
Dr. Atta Ul Lateef Email: <a href="mailto:attalateef@jstken.com">attalateef@jstken.com</a>	Main research and writing of the above named article	
Dr. Mansoor Mansoor Rana Email: <a href="mailto:mansoor@jstken.com">mansoor@jstken.com</a>	Composing and proof reading of the article.	

Submitted for publication:	15.10.2018
Accepted for publication: After Revision	15.02.2019

When you have to depart from this world and have to meet death (eventually), then why wish delay (why feel nervous about death).

***Hazrat Ali (Karmulha Wajhay)***