

A RETROSPECTIVE AND PROSPECTIVE STUDY OF ARROW INJURIES IN MALWA REGIONR. S. Raikwar¹, Sonia Moses², Siddharth Dubey³, Sachin Arora⁴**HOW TO CITE THIS ARTICLE:**

R. S. Raikwar, Sonia Moses, Siddharth Dubey, Sachin Arora. "A Retrospective and Prospective Study of Arrow Injuries in Malwa Region". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 48, June 15; Page: 8355-8360, DOI: 10.14260/jemds/2015/1212

ABSTRACT: Arrow injuries are frequently seen in tribal areas of Malwa region with homemade bows and arrow. The patients are usually tribal who are drawn from a large, densely populated tribal belt which is referred from periphery and received at trauma center and managed by the surgical team on emergency duty. The aim of study is documentation of cases and statistics for morbidity and mortality, to study various modes of presentation and management, to study complication associated with arrow injuries and the incidence of arrow injury. A retrospective review and analysis of patient records over a period a period of 15 years from April 2000 to May 2015. The injuries sustained are divided into four groups for the purpose of study. The management depended on the group of the patient. Of the 64 patients of arrow injury treated at our hospital, there was mortality in 3 patients (4.68%). The causes of mortality were found to be haemorrhagic shock, septicaemia, pneumonia with respiratory failure. The commonest complication was wound infection seen in 12 patients.

KEYWORDS: Arrow injury, Penetrating injury, Emergency.

INTRODUCTION: Arrow injuries are frequently seen in tribal areas of Malwa region with homemade bows and arrow. The patients are usually tribal who are drawn from a large, densely populated tribal belt which is referred from periphery and received at trauma center and managed by the surgical team on emergency duty. Patients present with various mode and clinical presentation as chest, thoracic abdominal and limb injury. The mechanism of injury is a combination of two sharp forces penetrating action and peripheral sharp cutting action of knife. The treatment depends on site of injury, general condition of patient, presence of arrow in situ and depth of penetration.

Arrow injury and its astute management is still relevant in this century. With the limited hospital setup, managing patient is challenging to surgeon. A poor TRISS score reflects adversely on the survival. Optimal exploration, adequate mobilization of structure, minimizing hemorrhage, prevention of additional injuries and repair remain the building blocks of a successful management.

MATERIAL & METHODS: A retrospective review and analysis of patient record extending over a period of 15 years from April 2000 to May 2015.

All consecutive patients with arrow injury treated after admission at Maharaja Yashwant Rao Hospital and Mahatma Gandhi Memorial Medical College Indore M.P. were studied. A total 64 patients with penetrating arrow injury were managed. The mean age of patients was 35. Majority were males with exception of 2 females.

For purpose of analysis of data the patients were segregated into four groups:

1. **Group I:** Chest arrow injury.
2. **Group II:** Abdominal injury.
3. **Group III:** Thoraco abdominal injury.
4. **Group IV:** Limb & head and neck injury.

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STATISTICS:

Clinical presentation	No. of patients
Lung injury	03
Right lung	02
Left lung	01
Upper lobe	01
Middle/Lower lobe	02

Table 1: Injury in Group I

Organ ¹	No. of patients
Jejunum	02
Ileum	02
Duodenum	00
Transverse colon	01
Descending colon	00
Liver	01
Stomach	03
Spleen	00
Gall Bladder	02
Greater Omentum	01
Retroperitoneal hematoma	00
Mesentry	02
Kidney	00
Pancreas	00
Abdominal Aorta	00
Ureter	00

Table 2: Group 2

Organ ²	No. of Patients
Pericardium	00
Right lung	02
Left lung	01
Inferior venacava	00
Diaphragm	03
Liver	01
Spleen	00
Splenic flexure colon	00
Stomach	02

Table 3: Group 3

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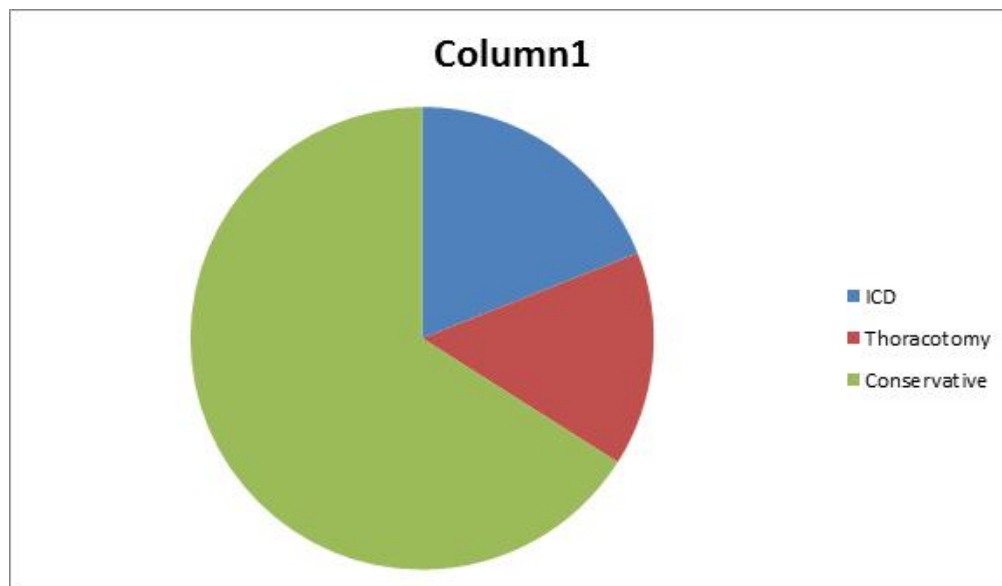
Clinical Presentation ³	No. of patients
Arrow in-situ	10
Axillary wound	01
Thigh wound	02
Forearm	02
Neck	04
Buttock	01

Table 4: Group 4

Clinical presentation of injury	TRISS (probability of Survival %)
Group I	85.5%
Group II	62.5%
Group III	44.0%
Group IV	99.1%

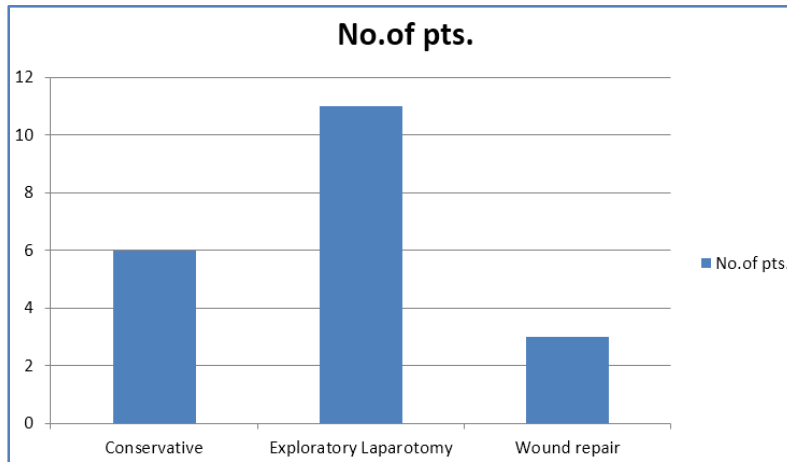
Table 5: TRISS (Trauma and injury severity scoring)

Management in Group I:

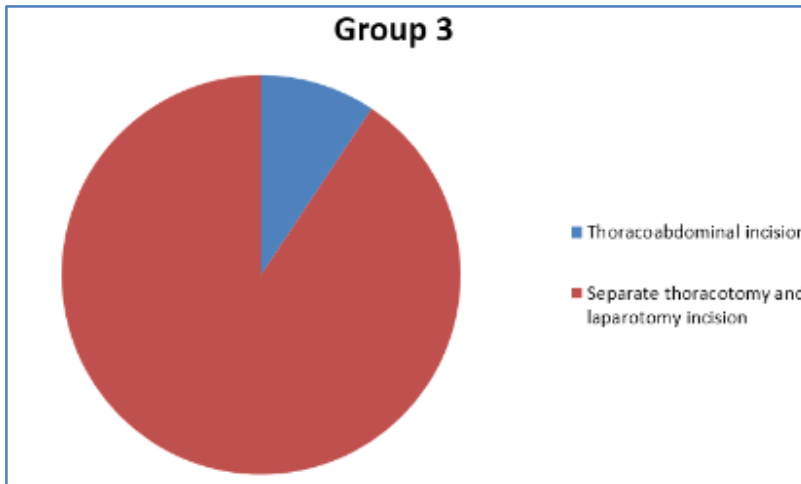


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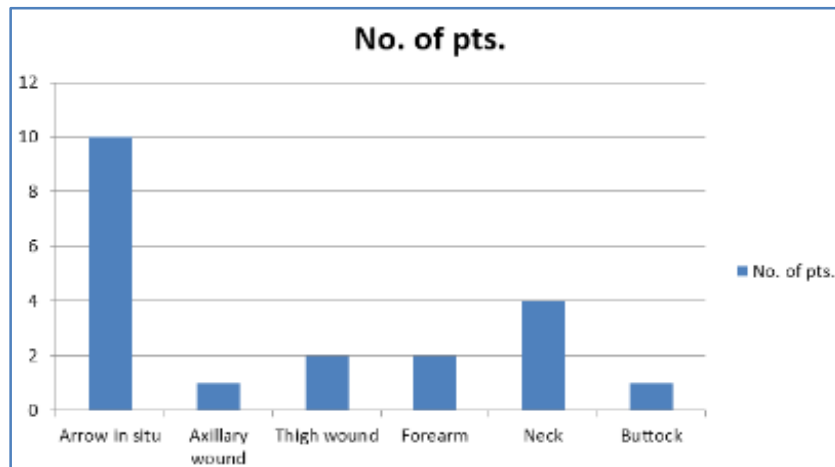
Management in Group II:



Management in Group III:

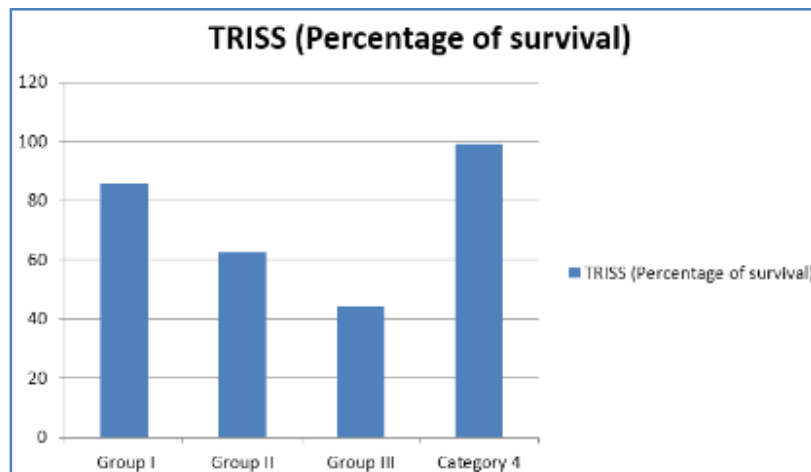


Management in Group IV:



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TRISS⁴ (percentage of survival):



DISCUSSION: A majority of tribes in Malwa region India belong to the poor socio-economic group depending on farming or hunting for livelihood. The tribes are vengeful clan fighting over limited resources.

The mechanism⁵ of injury by arrow is a combination of two sharp forces, penetrating action of a dagger and peripheral sharp cutting action of knife. Laceration of tissues is minimal. Because of the sharp margins and pointed ends of the arrowhead the injury is localized to the tissue in direct contact. The external ballistic performance of an arrow is excellent due to the elongated shape and high sectional density. This enhances the arrow's capability to penetrate deeper.

The quantum of tissue injury and the rate of haemorrhage from arrow injury is generally less. Hence unless vital structure most patients with arrow wounds survive for longer period without treatment.

The diagnostic investigations⁶ used were X-ray Chest and abdomen, USG chest and abdomen, CT Scan (spiral), MRI. Intestine, lungs and diaphragm were the organs most frequently injured.

The treatment depends on the site of injury, general condition of patient, presence of arrow in situ and depth of penetration. Those with arrow in situ require additional care and skill in removing the arrow without causing further injury to internal organs. If neurovascular injury is suspected proximal and distal mobilization and control is required before arrow can be extracted. For abdominal injuries, laparotomy is essential.

Stomach, duodenum, jejunum and ileum perforations need to be repaired in two layers. Patients with multiple perforations in small bowel undergo resection and anastomosis.

All colonic perforations need to be primarily except if there is loaded colon with gross contamination or with gross contamination of peritoneal cavity. Liver wounds are sutured with absorbable gelatin sponge. Retroperitoneal haematomas are not to be disturbed unless an active bleed is present. Mesentric and omental tears are repaired with silk suture. Postoperative drainage of the peritoneal cavity is done in all the patients. Early postoperative mobilization is encouraged and chest physiotherapy provided.

CONCLUSION: Of the 64 patients of arrow injury treated at our hospital, there was mortality in 3 patients (4.68%). The causes of mortality were found to be haemorrhagic shock, septicaemia,

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pneumonia with respiratory failure. The commonest complication was wound infection seen in 12 patients.

Those with penetrating thoracic wounds were managed conservatively with intercoastal drainage. In patients with abdominal wound, stomach was the most frequently penetrated organ (11/20 i.e. 50%) Exploratory Laparotomy was done in all the patients with abdominal wound.

The management⁷ of arrow injury should be along the lines of standard principles of trauma management. Few patients who presented in a state of shock, shock management were the first priority. Simple investigations like X-ray and USG usually suffice for workup and planning of management. The indications of aspiration were very clear as mentioned earlier. Trauma and Injury Severity Score (TRISS) reflects the morbidity and mortality.

REFERENCES:

1. Jacob OJ. Penetrating Thoracoabdominal injuries with arrows: Aus NZ J Surg 1995; 65: 394-7.
2. Fingleton U. Arrow wounds to heart and mediastenum. Br J Surg 1987; 74 (2): 126-8.
3. Vishvanathan R. Penetrating Arrow Injury: Br J Surg. 1988 vol. 75, 647-48.
4. Champion HR et al. A Revision of trauma score. J Trauma 1989; 29: 623-9.
5. Cina SJ, Radentz 55, Smialek JE. Suicide using a compound bow and arrow. Am J Forensic Med Pathol 1998; 102-5.
6. Singh RJ, Singh NK. Arrow injury. J Indian Med Assoc. 1985; 83(2): 65-2.
7. VanGurp G, Hutcinson TJ, Alto WA. Arrow wound management in Papua New Guinea. J Trauma. 1990; 30(2): 183-2.

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