

Bull Gore Injury - Rural Indian Scenario

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Abstract

Introduction: Bull horn injuries are defined as lesions resulting from collision with the horns of a bull/cow. Bull horn injuries are commonly observed in rural areas where there is a large livestock population and the oxen are frequently employed for ploughing the fields and various domestic works. The injuries sustained include the direct penetrating injuries caused by horns of the animal and blunt injuries sustained such as chest and spine injuries and long bone fractures. Hence, these patients must be thoroughly examined for all the injuries followed by specific treatment for the injured region or affected organ.

Materials and Methods: This is a study of 15 patients admitted to B.L.D.E University, Shri. B. M. Patil Medical College Hospital and Research Centre, Vijayapur, between January 2014 and June 2016, with a history of bull horn injury.

Results: It was observed that, out of the total 15 patients in our study, majority of the patients (80%) were males. All the injuries were unprovoked and had occurred as a result of the animal becoming aggressive all of a sudden. Majority of the injuries (6) were lacerated wounds (40% in the current study), followed by penetrating abdominal injuries (4), degloving injuries (2), blunt chest trauma with multiple rib fractures (1), blunt abdominal trauma (1), and vulval hematoma (1). About half of the patients had injuries over the abdomen and the percentage rises to about 75% when the chest and perineum are also included, thereby making the trunk the most susceptible part for bull horn injuries. The average length of hospital stay was 7.2 days, the shortest being 2 days and the longest being 16 days. The post-operative period of all the patients in our study was uneventful and no major complications were reported and none required any repeat surgery.

Conclusion: Management of bull gore injuries which are commonly encountered among the livestock rearing population of rural India is a challenge and surgeons need to assess the injury and take a call on the type of management, keeping in mind the limited available resources.

Key words: Bull gore injury, Bull horn injury, Penetrating trauma, Chest trauma

INTRODUCTION

Bull horn injuries are defined as lesions resulting from collision with the horns of a bull/cow. Bull horn injuries are commonly observed in rural areas where there is a large livestock population and the oxen are frequently employed for ploughing the fields and various other domestic works. Bull horn injuries are very frequently encountered in villages and rural areas and the incidence is very less in the urban areas.^{1,2} The bull, normally a docile and easily domesticated

animal, may become aggressive for no apparent reason. The injuries sustained include the direct penetrating injuries caused by horns of the animal and blunt injuries sustained such as chest and spine injuries and long bone fractures. Since these animals have very aggressive characteristics, any patient who is a victim of bull gore injury must be evaluated and treated as a case of polytrauma right from the time when he/she presents to the treating facility.³ A distinctive feature of domestic bull horn injuries is that prolapse of the bowel through the abdominal wall is common but rarely associated with damage to or perforation of the intestine itself. Bull gore injuries distinguish themselves from other penetrating injuries due to some special characteristics such as muscular tearing, several wound paths, introduction of foreign bodies, discrepancy between the apparent and actual wounds, massive inoculation of germs, and others. Hence, these patients must be thoroughly examined for all

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the injuries followed by specific treatment for the injured region or affected organ.

MATERIALS AND METHODS

A retrospective study of patients admitted to B.L.D.E University, Shri. B. M. Patil Medical College Hospital and Research Centre, Vijayapur, between January 2014 and June 2016, with a history of bull horn injury was conducted, and the data were analyzed. The data collected included patient particulars, date of admission, discharge date, location of the main wound, type of surgery, anesthesia, use of drains, antibiotics, tetanus vaccination, presence of fever during admission period, need for blood transfusions, need for and repeat surgery, days of hospitalization, and complications. The injuries were grouped based on the anatomical region into upper and lower limbs, axilla, neck, chest, abdomen, and perineum.

RESULTS AND OBSERVATIONS

It was observed that majority of the patients (80%) were males (Table 1). All the injuries were unprovoked and had occurred as a result of the animal becoming aggressive all of a sudden.

All the patients came from rural areas and were associated with livestock rearing or dairy activities or farming in some or the other manner.

Majority of the injuries (6) were lacerated wounds (40% in the current study), followed by penetrating abdominal injuries (4), degloving injuries (2), blunt chest trauma with multiple rib fractures (1), blunt abdominal trauma (1), and vulval hematoma (1) (Table 2).

We encountered four cases of penetrating abdominal injuries with herniation of bowel loop in three cases. Figure 1 shows a lacerated wound in the inguinal region with no herniation of bowel. Figure 2 shows herniating bowel loop.

We have included four patients with injury in the perianal region (Figures 3 and 4). All the injuries were superficial and could be managed by primary suturing alone. Injuries to the anal canal and rectum were not reported in our study (Table 3).

About half of the patients had injuries over the abdomen and the percentage rises to about 75% when the chest and perineum are also included, thereby making the trunk the most susceptible part for bull horn injuries.



Figure 1: Laceration in iliac fossa without herniation of bowel

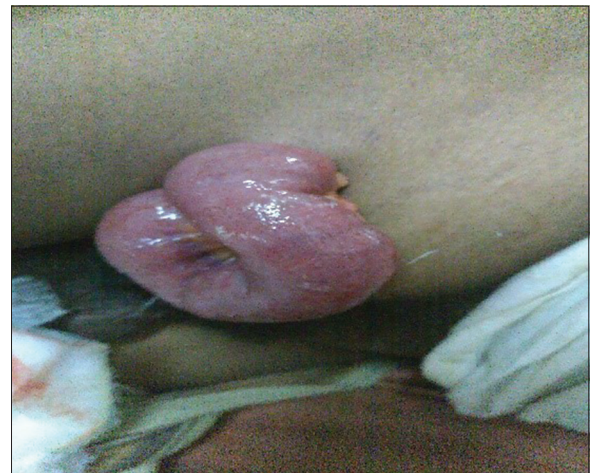


Figure 2: Herniating bowel loop



Figure 3: Laceration in perianal region

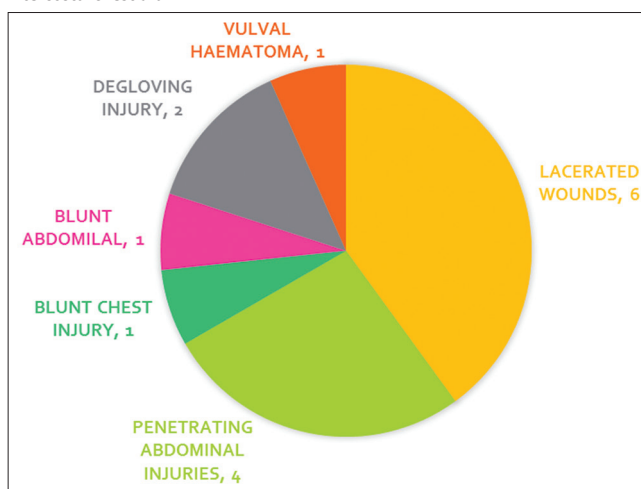
Table 1: Gender distribution

Male	Female
12	3

Table 2: Table showing patient particulars, Injuries and Surgical Interventions

Case no.	Age	Sex	Hospital stay	Mode of injury	Location	Description of injury	Surgery	Anesthesia	Use of drains	Tetanus vaccine	Blood transfusion	Complications
1	28	M	16	Unprovoked	Axilla	Lacerated wound in the right axilla	Primary suturing	Ga	No	Given	No	Subcutaneous emphysema
2	45	M	5	Unprovoked	Gluteal region	Lacerated wound over the left gluteal region	Primary suturing	La	No	Given	No	Nil
3	35	M	2	Unprovoked	Neck	Lacerated wound over the neck	Primary suturing	La	No	Given	No	Nil
4	22	M	3	Unprovoked	Abdomen (RIF)	Penetrating abdominal injury. No prolapse of bowel	Exploratory laparotomy	Ga	Yes	Given	No	Nil
5	65	M	2	Unprovoked	Abdomen	Blunt abdominal injury	Conservative		No	Given	No	Nil
6	35	F	6	Unprovoked	Abdomen (LIF)	Traumatic interparietal hernia	Primary suturing + mesh repair	Sa	Yes	Given	No	Nil
7	40	M	4	Unprovoked	Perianal region	Perianal laceration	Primary suturing	Sa	No	Given	No	Nil
8	35	F	4	Unprovoked	Abdomen (LIF)	Penetrating wound in the left iliac fossa	Primary suturing	La	No	Given	No	Subcutaneous emphysema
9	65	M	12	Unprovoked	Chest	Left hemothorax with multiple rib fractures	ICD insertion	La	Yes	Given	Yes	Nil
10	80	M	9	Unprovoked	Axilla	Degloving injury in the left axilla	Primary suturing	Ga	Yes	Given	No	Nil
11	50	M	15	Unprovoked	Abdomen (RIF)	Penetrating abdominal injury	Exploratory laparotomy	Ga	Yes	Given	No	Surgical site infection
12	35	M	7	Unprovoked	Perianal region	Laceration scrotum	Primary suturing	Sa	No	Given	No	Nil
13	60	M	10	Unprovoked	Arm	Laceration right arm	Local exploration + suturing	La	No	Given	No	Nil
14	45	F	4	Unprovoked	Perianal region	Vulval hematoma	Conservative		No	Given	No	Nil
15	60	M	9	Unprovoked	Axilla	Left axilla degloving injury	Primary suturing	Ga	Yes	Given	No	Nil

RIF: Right iliac fossa, LIF: Left iliac fossa, ICD: Intercostal chest drain



Graphical representation of types of injuries observed in our study

Table 3: Location of injury

Location of injury	Number
Neck	1
Chest	1
Abdomen	5
Perineum	4
Upper and lower limbs	1
Axilla	3

Most of the lacerated wounds (5) could be sutured under local anesthesia whereas the three axillary injuries were repaired under general anesthesia and spinal anesthesia being employed for the perianal lacerations and degloving injury of the scrotum.

Abdominal drains were used in all the laparotomies, and suction drains were employed during primary repair of the axillary injuries.

Only one patient in our study required blood transfusion. None of the patients required any repeat surgery.

The average length of hospital stay was 7.2 days; the shortest being 2 days and the longest being 16 days.

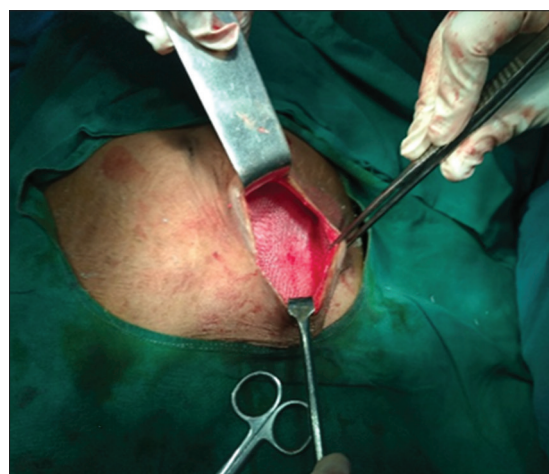
We had a case of interparietal hernia (Figures 5 and 6) following bull gore injury over the right inguinal region which was repaired after an interval of 2 weeks after the primary suturing of a laceration over the iliac crest. The fascial defect was closed, and polypropylene mesh of appropriate size was placed over it.

Two patients in our study developed extensive subcutaneous emphysema which was controlled over a period of 1-2 days. One patient who underwent laparotomy developed surgical site infection. The post-operative period of all the patients in our study was relatively uneventful with complete recovery and no mortality reported in our study (Figure 7).

DISCUSSION

In India, bull gore injuries are frequently observed in the rural setup where frequently people come in contact with these animals. The horn of bull is long, curved, and directed forward with smooth tapering ends that produce lacerations and can also penetrate the body cavities.^{4,5} The patterns of injuries sustained by the victim vary depending on the height of the victim, the height of the bull, and position of the animal and the victim at the time of the attack by the bull.

According to all the series reviewed, the most frequent wound is the goring wound (81% in the study of

**Figure 4: Sutured perianal laceration****Figure 5: Interparietal hernia being repaired with mesh placement****Figure 6: Interparietal hernia repaired**

Monferrer-Guardiola);⁶ although bull horn wounds can occur anywhere on the body, the anatomic regions that



Figure 7: Degloving injury of axilla before and after suturing

could be affected more commonly are the abdomen, perineum, pelvis, chest, and upper limbs.

The largest series of bull goring injuries published to date have been obtained from Spain and Latin America, but these injuries as they occur during bull fighting events and are mostly provoked injuries with a probably higher intensity are much different from the injuries in the Indian rural scenario.

The injuries occur more commonly on the abdomen and perineum.^{4,5} In the abdomen, the horn first enters the skin and subcutaneous tissues and later muscles, and further if the violence is more, the peritoneum is punctured with the involvement of viscera with tear.⁵

A distinctive feature of domestic bull horn injuries is that prolapse of the bowel through the abdominal wall is common but rarely associated with damage to or perforation of the intestine itself. Knowledge of the mechanism of horn injuries is of particular interest for understanding the magnitude of these wounds. When the bull charges, it flexes its neck and then extends it, pressing one or both horns into the body of its opponent. The curved nature of the horns and the extension of the neck

by the bull result in an upward wound path preventing extensive injury to deeper abdominal viscera.

The anatomy of the perineal region is complex, and visualization and access to various structures in the region is difficult.⁷ Hence, the repair of injury in the area needs a complete knowledge about the anatomy of the region and expert surgical skills. Usually, these injuries are associated with injury to abdominal and urological structures. In females, the anatomy of the perineum is further complicated by the presence of the uterus, vagina, and the various supporting ligaments.¹ Most of the time, when an injury is missed or when a patient undergoes primary repair, the patient end up coming back to hospital with complications such as anovaginal fistula and urethrorectal fistula, thus causing more morbidity to the patient in terms of physical, mental, social, and economical sufferings.

CONCLUSION

Management of bull gore injury is a challenge and surgeons need to assess the injury and take a call on the type of management. Most of the injuries are sustained over the abdomen and perineum and hence a thorough knowledge of anatomy of these regions would aid the surgical skills of the surgeon in the management of bull horn injuries.

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