CASE SERIES

Fodder cutter (Tokka) injuries: A preventable morbidity

Danish Ali, Muhammad Adeel kaiser, Muhammad Imran khokhar, Anwer Zeb, Hassan Zaheer, Muhammad Farooq Afzal

Abstract

Pakistan is an agricultural country where fodder cutter (Tokka) is a commonly used machine on the farms. While using it, farmers often meet with accidents causing injuries which are disastrous, and mainly involve the young generation often causing lifelong disability.

This is a hospital-based case series, conducted from June 2018 to January 2019 in the Department of Surgery, Lahore General Hospital, Lahore. For this study the patient's demographic data, site of injury, procedure performed and post-operative outcome were recorded.

The study includes a total of 30 cases of tokka injury, (23 males and 07 females) with median age of 25 years. Most commonly injured part of the body was the upper limb, in 26 patients, while the lower limb was involved in 2 patients. There were 18 amputations, 8 stumps formation and 4 debridements. Out of the 18, 9 had to be amputated at the wrist, and 9 amputations were performed higher than the wrist. Post-op recovery was uneventful in all cases.

Measures such as safer machine design and education of farmers about the safety procedures can significantly avoid these tragedies.

Keywords: Chaff cutter, Agricultural injuries, Amputations, Farm injuries

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Introduction

Agricultural injuries are common amongst occupation-related injuries and are a serious risk to the health of the rural public.[1] The severity and violence with which these injuries occur reflect the occupational dangers of the agricultural industry. The risk of fatality associated with farming is more than five times higher than the aggregate rate for all other occupations.[2] Internationally, data about the prevalence of agricultural injuries/amputations is sparse even in developed countries where 30-50% of the total population is related to farming.[3] Epidemiological studies are the need of time to project the seriousness of these injuries in agriculture workers.[4]

Pakistan is an agricultural country, and Lahore is famous for its fertile lands. In Pakistan, 44% of the labour belongs to the farming sector.

Fodder cutter (tokka machine), Chaff cutter and chopping chest are different names of the device used by farmers to chop straw, hay and corn fodder into small pieces that the livestock can easily digest.[5] Initially, it was available in a standard hand driven form which was safer but more time and labour was required to get the desired result. Now fodder cutters have evolved from the primary machines into commercial standard motor driven tools.[6]

People of all age groups and genders are involved in these activities, and the resulting morbidity is very high and alarming. These injuries mostly involve the upper extremity, causing devastating lifelong disability among young population and result in a lot of social, cultural, and monetary loss.[7]

Quite a large number of patients with fodder cutter (Tokka) injuries present at the hospital. Hence, it is immense need of time to conduct a study to highlight this critical issue for the prevention of disability resulting from these injuries and to promote the safety protocol while working with these machines.

Case Series

This case series was conducted in the emergency department of Lahore General Hospital, from June 2018 to January 2019. All the patients with an injury secondary to fodder cutter (tokka) machine were included in this study (Figure). All other farm-related machine injuries were excluded from the study. All the patients were received in

Figure: Patient with amputation of fingers of left hand by tokka.

Department of Surgery Unit 1, Lahore General Hospital, Lahore, Pakistan.
Correspondence: Danish Ali. e-mail: danish.dani@gmail.com

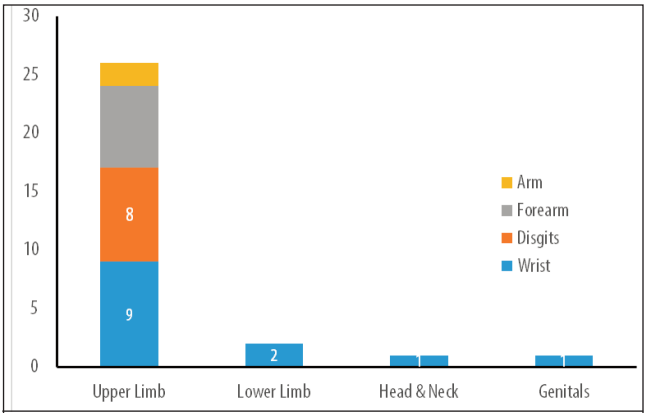

Chart-1: Distribution of the injuries according to the regions of the body.

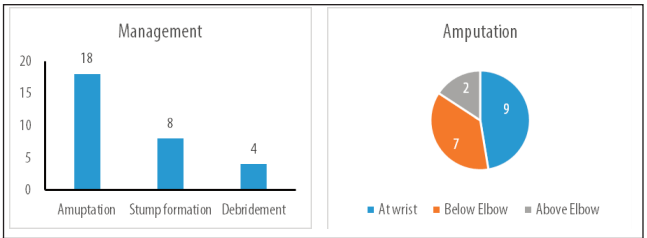

Chart-2: Details of the procedures performed in these patients.

the emergency department. Resuscitation of all the patients was done with standard protocol. Wounds were immediately treated with a compression dressing. Laboratory investigations such as blood complete examination and blood grouping were done. Radiological studies of the injured area and wherever needed were carried out. Blood transfusion was given wherever required. Antibiotics were started on an empirical basis, and tetanus prophylaxis was administered. Patients received surgical treatment depending on their injury in the form of debridement or stump formation. Patients were admitted to the indoor facility. Later, these patients were discharged and followed up in the OPD.

Demographic data regarding age, sex, side, level of injury, type of treatment given, and type of fodder cutter machine used was recorded in the Performa. All the data was analysed in SPSSv20.

A total of 30 patients were included in this series for the six-month period. There were 23 males and 7 females. Male to female ratio was 3:1. The median age was 25 years (IQR 12-60). Age ranged from 9 years to 70 years.

These injuries involved different parts of the body. Most commonly affected part was the upper limb in 26 patients. The lower limb was involved in 2 patients, while there was one case each for head and neck and genitals (chart 1).

Amongst the upper arm injuries, right upper arm was involved in 16 patients and left upper arm was involved in 10 patients. The most commonly involved site was the wrist, followed by digits, forearm (below the elbow) and arm (chart 1).

Both the lower limb patients were males and had degloving injuries at the ankles. One female patient had scalp avulsion and damage to the right ear. One patient had a degloving injury to buttock without any bone involvement.

None of the patients received replantation due to late presentation, multilevel injuries, an element of the avulsion, crushing and unavailability of the amputated part. There were 18 amputations, 8 stumps formation, 4 debridements (chart 2). Chart 2 also describes all the different types of amputations performed in the patients. All the patients were sent for rehabilitation after amputation and stump formation.

Discussion

The agricultural industry has been modernised by the introduction of new motor machines. But they are not risk-free and cause preventable severe injuries and even deaths. Pakistan being a rich agricultural country is at an immense risk of agricultural farm injuries.

Tokka machine is amongst the commonly used tools in the farms; hence, injuries related to them are quite common and devastating. Tokka is often referred to as "Snake of the Sleeve" or Double-Sided Sword.

Agricultural injuries are highly gender specific with 90 to 97% of these injuries occurring in males.[6] Results of our study follow the same pattern, as there were 23 males (76.6%). However, females were not immune to farm injuries. Children are also at risk as most of them go with their parents for fun and are left unattended when parents get busy in work.

In agriculture-related injuries, trauma to hand and upper extremity is common, representing from 40% to 70% of total accidents that occur on a farmyard.[8] In our study also, the upper limb was involved in 26 patients (86.6%), out of which the most commonly involved site was the wrist (9 cases), followed by digits (8 cases), forearm (below elbow) 7, and arm 2 cases. Other less commonly involved parts were lower limb, head and neck, and genitals.

Amputations were the most frequent procedure to be offered, because the mechanism by which most agricultural equipment causes injury is a combination of compression, shear, and thermal components along with contamination, hence causing variety of traumatic de-gloving injuries or complete amputations of either fingers or hands.[9]

While keeping in mind the magnitude of these devastating injuries, one can well conclude that prevention is the only solution to offer. An ounce of prevention is better than a pound of cure. Although we have adopted modern Western machines, unfortunately, most of our farm workers are reluctant to practice safety measures due to ignorance or absolute neglect.[10] Most of the agricultural machines have pulleys, gears and rotating shafts which can easily entangle loose clothes, especially like dhoti ad kurta in males and dupatta in females.

Unfortunately, farming has not been taken as industry and is being neglected both at the government and social levels. We strongly recommend that in the manufacturing of these machines, safety should be the top priority. While manufacturing, simple measures such as reducing the exposure of pinch and cutting part of the device with the help of safeguards and shields, disengaging gear, emergency brake, flash sensor, and automatic switching should be assured. Laws should be formulated and implemented for the manufacturing of safer tokka machines. Formers should be educated regarding machines and their safety manuals. Awareness campaigns with the help of media at the national level should be promoted.

People should be educated to immediately reach an appropriate healthcare facility in shortest possible time, and medical and paramedic staff in the periphery should be trained in handling and transporting amputated limbs while transferring the patient to specialised centres.

Conclusion

Tokka injury is a severe and constant endangerment to the farm workers, especially the young male population. Prevention is the only solution to this horrendous morbidity. Measures such as safer machine design and education of farmers regarding the safety measures can significantly reduce these tragedies. It is immense need of time to highlight this critical issue at local as well as national level to educate the public at large to adopt the safety protocol while working with tokka machines.

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