

# Soft Tissue Injuries Following Motorcycle Accidents in South-east Nigeria Nigerian Hospital

Nw

## Abstract

**Background:** Motorcycle accidents have, in recent years, assumed epidemic proportions. This has prompted increasing interests in the circumstances surrounding the accidents and the management of the victims. Victims of these accidents are subjected to a variety of injuries including significant soft tissue injuries. Proper management of these soft tissue injuries is important in reducing morbidity and mortality in these patients. This study therefore aims to determine the nature of motorcycle accidents and management of soft tissue from such accidents.

**Patients and Methods:** This is a retrospective study of the victims of motorcycle accidents admitted into and treated at the National Orthopaedic Hospital, Enugu from Jan. 2004 to Dec. 2007. Relevant data were extracted from the patients' case folders at the Medical Records Department.

**Results:** Most (33.1%) of the patients sustained multiple injuries, 24.8% deep lacerations, 21.2% bruises, abrasions and/ or friction burns, 11.3% had head injury, 6.0% avulsion injuries and 3.6% had crush injuries of the limbs. Plastic surgery services were required in 61.6% of the cases.

The injuries were treated by various methods, 22.2% had wound debridement with primary, delayed or secondary suture and Plaster of Paris (POP) cast. Another 17.2% of the patients' wounds were debrided with primary wound closure, while 3.6% had delayed or secondary closure after debridement and 8.3% had their wounds skin grafted or covered with flaps.

**Conclusion:** Management of these patients in a center that provides outstanding Plastic and Reconstructive surgery services aided the appropriate and definitive care of the soft tissue injuries as well as the effective management of the Orthopaedic care of the bone injuries. Stereotomy compared to its abdominal counterpart, however, other complications were not. Furthermore, the former had the advantage of shorter duration of hospital stay compared to the latter.

**Key words:** *soft-tissue, injuries, motor-cycle accidents*

<sup>1</sup>Department of

Correspondence: D

## Introduction

Motorcycle accident injuries have long been identified as a major public health concern<sup>1,2</sup>. A significant proportion of the injuries

sustained from motorcycle accidents are major injuries and motorcycles have been identified as the cause of the bulk of road traffic related

injuries in Southern Nigeria.<sup>2, 3</sup> Most of the patients are known to spend long periods of time on hospital beds and/ or at home recuperating leading to loss of funds and revenue, while a good number of them would have spent time at the traditional bone setters' centers before presenting at a medical health care facility.<sup>3</sup> Sometimes loss of vital parts of the body, like the limbs, incapacitate some of them for life.

Many of the patients, who sustain road traffic accidents, including motorcycle accidents, sustain multiple injuries and these multiple injuries have been shown to create a major burden in road related deaths.<sup>3, 4</sup> However, multidisciplinary management of these patients, especially involvement of Plastic (and Reconstructive) Surgeons in our setting has greatly reduced hospital stay, financial losses from accumulated hospital bills and loss of revenue from prolonged absence from work and in the case of Commercial Cyclists, loss of a means of livelihood. This involvement has improved the acute management and enhanced the provision of early definitive care of these patients especially with respect to management of soft tissue injuries, which also play a significant role in the treatment of open bony injuries.

This study therefore aims to highlight the various injuries caused by motorcycle accidents, their effects and the management of the soft tissue injuries by the plastic surgical services of the National Orthopaedic Hospital, Enugu as part of a multidisciplinary team management.

### **Materials and Methods**

A retrospective study of the victims of

motorcycle accidents admitted into and treated at the National Orthopaedic Hospital, Enugu from Jan. 2004 to Dec. 2007. Relevant data were extracted from the admission registers and patients' case folders at the Medical Records Department. Information obtained included age, sex, occupation, marital status, position of victim on bike, number of days admitted, the nature and severity of injuries sustained, treatment received and total amount of money spent on admission in Nigerian Naira.

Three hundred and two cases were analyzed and this number excluded some of those with minor injuries that were not admitted and pedestrians that were knocked down. Analysis was done with SPSS statistical package 17.5.

### **Results**

A total of 302 patients were reviewed in the 4 year period out of which 87.4% (264) were males and 12.6% (38) were females. The peak age group involved was 20-29yrs at 52.6% (159) followed by the 30-39yrs age group which made up 21.5% (65) as shown in figure 1. One hundred and sixty-eight (55.6%) of the patients were single while 133 (44.0%) were married and 1 patient (0.3%) was widowed.

Most of the patients (32.5%) were commercial Motorcyclists, 16.9% were Students, while 8.6% were members of the Armed Forces. Other occupations are as shown in figure 2. Of these patients reviewed, 59.6% were riding the motorcycles while 40.4% of them were passengers. Furthermore, 44.4% of the patients were knocked down by different types of vehicles while 21.2% of the motorcycles had head-on collision with vehicles. Another 15.2% collided head-on with

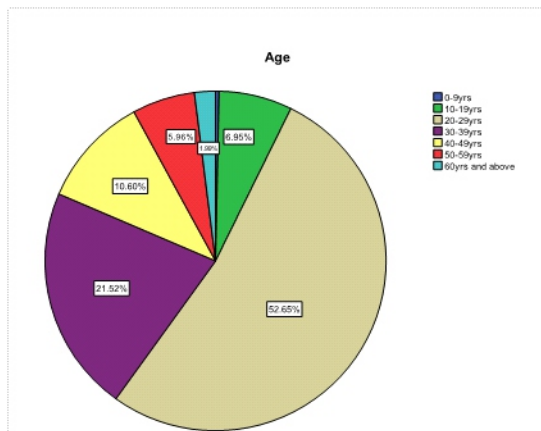


Figure 1. Age Distribution

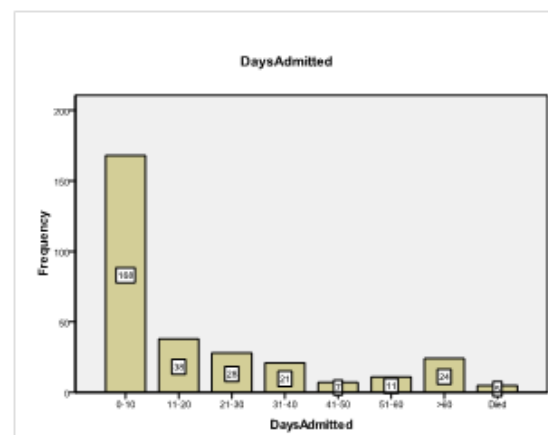


Figure 3. Days spent on Admission

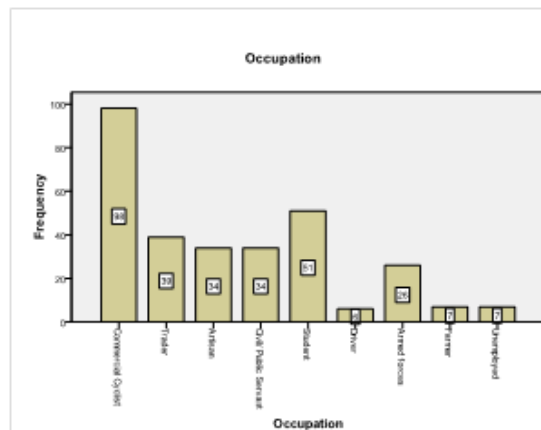


Figure 2. Occupation

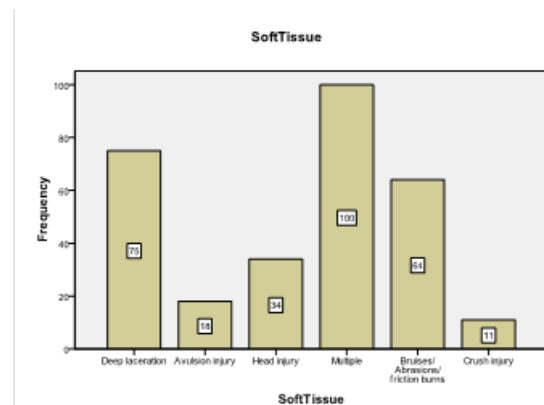


Figure 4. Types of soft tissue injury

other motorcycles, 4.0% were knocked down by other motorcycles, 3.6% fell off the bikes under various circumstances, 4.3% ran into stationary objects and 7.3% of the patients were injured under other circumstances like accidentally putting foot into the spokes of the wheel.

Remarkably, 55.6% of the patients were admitted for 10 days or less, while 12.6% for between 11 and 20 days and 1.7% of the patients died (Figure 3). Majority of the patients (64.9%) sustained various degrees of soft tissue and bone injuries, while 33.1% sustained soft tissue injuries only and 2.0%

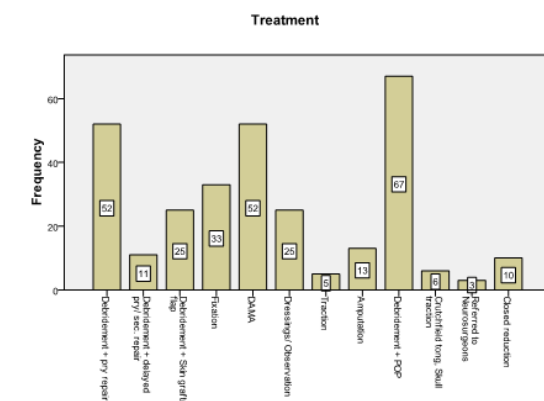


Figure 5. Distribution of the Types of Treatment given

sustained mainly bone injuries. More specifically, most of the patients (33.1%) sustained multiple injuries as shown in figure

4. For the bony injuries, 23.2% had open fracture of a single bone, 16.6% closed fracture of a single bone whereas 22.2% of the patients fractured multiple sites, 4.0% had dislocations, 1.7% had spinal cord injuries, 1.3% had traumatic amputation, 0.3% skull fracture and 30.8% of the patients did not have any bone injury.

Plastic surgery services were required in 61.6% of the cases. The injuries were treated by various methods, 22.2% had wound debridement with primary, delayed or secondary suture and Plaster of Paris (POP) cast. Another 17.2% of the patients' wounds were debrided with primary wound closure, while 3.6% had delayed or secondary closure after debridement and 8.3% had their wounds skin grafted or covered with flaps. Others are as shown in figure 5 but unfortunately, 17.2% of the patients, some with very severe open fractures, discharged themselves against medical advice.

Over half of the patients (52.6%) spent less than #10,000 (ten thousand naira) in total for their treatment, while 17.2% of the patients spent between #10,000 and #20,000 and 13.2% spent over #50,000. Out of the remaining patients, 7.0% spent #21,000 - #30,000, 5.3% spent #41,000 - #50,000 and 4.6% of them spent #31,000 - #40,000.

## Discussion

Motorcycle accidents have assumed epidemic proportions.<sup>1,2,3</sup> In a period of 4 years a total of 302 patients were admitted at the National Orthopaedic Hospital, Enugu and treated for various injuries sustained in motorcycle accidents. This high number of accidents didn't even include those with minor injuries

that were not admitted, those treated in other centers and pedestrians that were knocked down. Of this number, 87.4% were males; most of them were in the very active age groups between 20 and 29 years, followed by those 30-39 years of age, a combined percentage of 74.1. This, as well as the fact that most of the patients were Commercial Motorcyclists, is in agreement with previous reports.<sup>3, 5, 6</sup> It has long been noted that the recklessness exhibited by the Cyclists themselves constitutes them into a peculiar risk group that could be likened to a suicide squad, the motorcycle related injuries impact the society negatively, because the young, active and economically productive males constitute the group at highest risk.<sup>3,7</sup>

From our series, emerging issues are also brought to light. Firstly, it is observed that contrary to previous findings where pillion riders were more at risk of injuries than the riders<sup>3, 8, 9, 10</sup>, in our series, riders themselves were more at risk of accidents and this is also the finding of Seleye-Fubara and Ekere<sup>4</sup>. This change could be due to a greater level of awareness and personal security of most of the passengers who now look out for themselves, as well as the new sitting position whereby both males and females sit in similar manner when on motorcycles and so can be shielded by the riders, as opposed to the past when women used to sit sideways on bikes and could easily fall off. Secondly, a new occupation at risk is emerging and it is the armed forces. This group is coming to the fore because in recent years many State Government Authorities in Nigeria are increasingly placing various degrees of bans on motorcycles, some States ban motorcycles from 7pm till dawn, others ban movements across city centers while

others restrict movement of motorcycles across certain parts of the cities. The more interesting bit is that these periods of curfew are monitored and enforced by law-enforcement agents and so their colleagues see an opportunity to monopolize this means of transport. So by simple logic, since they are the only ones riding, they and their passengers are the only ones at risk of motorcycle accidents at these odd times.

The skin has long been identified as the most commonly injured tissue<sup>11</sup> and this is also our finding where the skin, along with other soft tissues suffered a myriad of injuries ranging from bruises, through abrasions and friction burns, to lacerations, avulsion injuries and various degrees of crushing. Majority of the patients however, sustained multiple injuries rather than single injuries. We also agree according to previous reports that the treatment of motorcycle injuries can be difficult and may require a multidisciplinary approach if these patients are to recover uneventfully,<sup>11,12,13</sup> but we are happy to report that the treatment of these patients is likely to improve in a center that has Plastic surgery service in addition to Trauma surgeons. In our series with a strong Plastic surgery presence, majority of the patients (55.6%) were admitted for less than 10 days and more than one half of the patients (52.6%) spent only ten thousand naira (#10,000) or less in total for all treatment. The advantage of the Plastic surgery service is that more cases can be sorted out definitively as early as possible, as complex soft tissue injuries can have adequate debridement followed by primary, delayed primary, secondary closure or skin grafting and/ or a wide range of flaps. The early soft tissue repair also enhances

appropriate management of bone injuries.

### Conclusion

Motorcycle accidents are common in our environment and cause a variety of single and multiple injuries. Soft tissue injuries are numerous and often severe, therefore plastic and reconstructive surgical services are very necessary for prompt, appropriate and adequate management of such patients.

### References

1. Asogwa SE. Road traffic accidents: a major public health problem in Nigeria. *Public Health*. 1978; 92: 27-30.
2. Eke N. Road traffic accidents in developing countries: who is liable? Anil Aggrawal's Internet Journal of Forensic Medicine and Toxicology. January - June 2001; 2: 1.
3. Ekere AU, Ibeanusi S. Pattern of motorcycle-accident associated injuries in Port-Harcourt - A hospital-based study. *Orient Journal of Medicine*. Jan-June 2003; 15(1&2): 36-40.
4. Seleye-Fubara D, Ekere AU. Vehicular road deaths in the Niger Delta region of Nigeria: A referral center's experience. *Orient Journal of Medicine*. Jan-June 2003; 15(1&2): 41-44.
5. Achibong AE. Abdominal trauma in children. *Postgraduate Doctor Africa*. 1994; 17: 56-60.
6. Kraus JF, Riggins RS, Franti CE. Some epidemiological features of motorcycle collision injuries II & I. *Am. J. Epid*. 1975; 102(1): 74-113.

7. Harvard JDJ. Alcohol and road accidents. *The Practitioner*, 1962; 188: 498-507.
8. Bothwell PW. The problem of motorcycle accidents. *The Practitioner*, 1962; 188: 474-488.
9. Gissane W, Bull J. Injuries from road traffic accidents. *The Practitioner*, 1962; 188: 489-496.
10. Adedoye A, Odeku E, Latunde. The pattern of road traffic accidents seen at the University College Hospital, Ibadan, Nigeria. A preliminary study. *West African Journal of Medicine*. October 1970; 153-157.
11. Oluwadiya K, Olasinde AA, Odu OO, Olakulehin OA, Olatoke SA. Management of motorcycle limb trauma in a teaching hospital in South-west Nigeria. *Nigerian Journal of Medicine*. January – March 2008. Vol. 17, No. 1: 53-56.
12. Deaner RM, Fitchett VH. Motorcycle trauma. *J. Trauma*. 1975; 15(8): 678-681.
13. Zettas JP, Zettas P, Thanasophon B. Injury pattern in motorcycle accidents. *J. Trauma*. 1976; 19(11): 833-836. uteri : a randomized clinical trial. *Am J. Obstet Gynaecol* 2002; 187 (6) :1561-5.