J. Maxillofac. Oral Surg. (Apr-June 2012) 11(2):182–185
DOI 10.1007/s12663-011-0275-0

ORIGINAL PAPER

Cricket Related Maxillofacial Fractures

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Received: 16 May 2011 / Accepted: 15 August 2011 / Published online: 4 September 2011

Abstract
Background Cricket is a popular sport in New Zealand, enjoyed both at social and competitive level. Although it is a non-contact sport and there is in place good facial protection, injury to the head and neck region is still frequently seen in the emergency department.
Methods Data were collected from departmental records between 1996 and 2006. Variables examined included incidence, demographics, site of fracture and treatment method.
Results Of the 561 patients with sports-related maxillofacial fractures during the study period, 40 were cricket-related. Male to female ratio was 36:1. 45% of patients were in the 16–30 year age group. 55% of injuries were due to impact from cricket ball. 70% of injuries occurred at midface level, while 30% at the mandible. 38% of patients required surgery and hospitalization.
Conclusion Maxillofacial fracture from cricket playing is a frequent injury in patients presenting with sports-related injuries. Cricket players need to be educated on the safety measures in playing the sport, including facial protection devices.

Keywords Cricket · Maxillofacial · Facial · Fracture

Introduction

Cricket is a popular sport played in some commonwealth countries and is enjoyed by players of all levels of ability. Amongst the recreational players, it is played at club competition level and enjoyed socially on the cricket pitch or in the backyard. Studies have described the characteristics of cricket-related injuries at elite competition levels. In particular, injuries to fast bowlers have been documented in the literature and such injuries are commonly found to be due to overuse [1, 2]. However, injuries to the head and neck region are less frequent as facial protections are required for players in competitive games. An English study reported less than 5% of patients with sports injuries to the face are cricket related [3].

This study will look at a cohort of patients who presented with cricket related facial fractures to a tertiary hospital.

Methods

The study is a retrospective review of patients who presented to the oral and maxillofacial unit at the Christchurch Hospital between 1996 and 2006 with cricket related facial fractures. The unit is responsible for treating patients with maxillofacial fractures in the Canterbury region in New Zealand with the exception of isolated nasal fractures. Patients were included in the study if they sustained a facial fracture whilst playing cricket. In case of patients with incomplete data, the departmental file was reviewed and the missing data was retrieved. Patients with soft tissue injuries only were not included in the study. Patients with incomplete data were also included in data analysis.

Results

Over the 11-year period, 561 patients had sports-related facial fractures and 40 these patients presented following cricket-related injuries (7.1%).

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Table 1 Distribution of cricket-related fractures according to age and gender

Age (years)	Male no (%)	Female no (%)
<16	3 (7.5%)	0 (0%)
16–30	17 (42.5%)	1 (2.5%)
31–45	13 (32.5%)	0 (0%)
>46	3 (7.5%)	0 (0%)
Total	36 (90.0%)	1 (2.5%)

Three patients had missing data

Demographics

The age of the patients ranged from 12 to 52 years with a mean age of 29. The ratio of males to females was 39:1. Male accounted for 90% of all patients and 45.0% of all patients were in the 16–30 age group. One female patient presented with injury (2.5%) in the 16–30 age group (Table 1).

Trend

The average number of rugby-related facial fractures (per annum) decreased from 4.5 to 2.7 in the second half of the study period (Fig. 1). Eighty-five percent of patients presented during October to April period (Fig. 2).

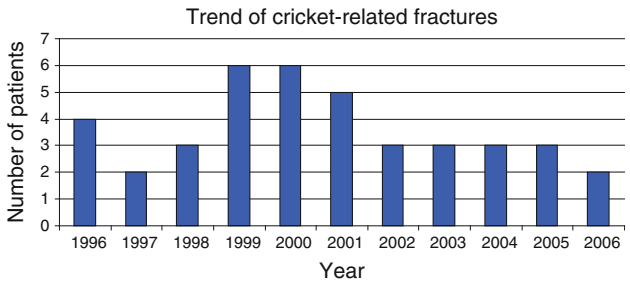

Fig. 1 Yearly distribution of cricket-related fractures

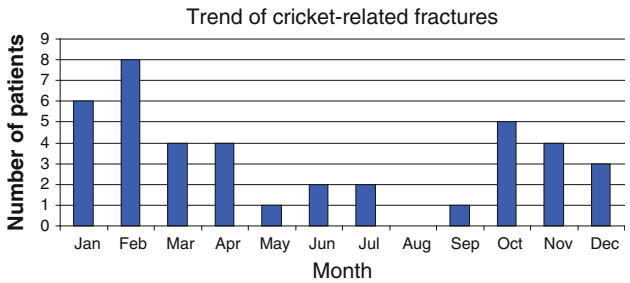

Fig. 2 Monthly distribution of cricket-related fractures

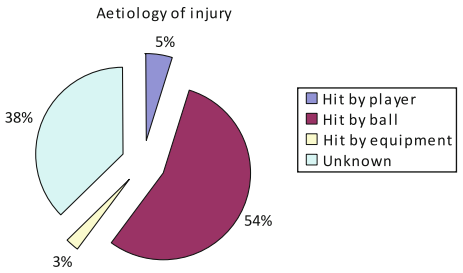

Fig. 3 Causes of cricket-related fractures

Mechanism of Injury

Majority of the injuries were due to impact by the balls (55.0%), followed by collision with players (5.0%) and hit by instrument (2.5%). Fifteen patients had incomplete data (37.5%) (Fig. 3).

Fracture Site

Twenty-eight patients suffered midface fractures (70.0%) (Table 2). There were a total of 47 fractures, with an average of 1.2 fractures per patient. The mandible and the zygoma were the most frequently involved bone (31.9%) (Tables 3 and 4). The most frequent fracture site in the mandible was the parasymphysis (12.8%), followed by the body (8.5%).

Management

Thirty-eight percent of patients were hospitalized and required surgery (Table 5). Patients in the 31–45 year age group accounted for the highest proportion (20.0%). Open reduction and internal fixation was the most common form of active treatment (25.0%), followed by closed reduction only (7.5%). Two patients required exploration and reconstruction of orbital wall.

Table 2 Location of fracture sites (by patient)

	Total (%)
Frontal	0 (0%)
Midface	28 (70.0%)
Mandible	12 (30.0%)

Table 3 Site of midface fractures (by site)

Midface	Total (%)
Zygoma	15 (31.9%)
Orbital wall	8 (17.0%)
Maxilla	4 (8.5%)
Nasal	5 (10.6%)
Nasoethmoidal	0 (0%)

Table 4 Location of mandibular fractures (by site)

Mandibular fracture site	No (%)
Condyle	2 (4.3%)
Angle	2 (4.3%)
Body	4 (8.5%)
Parasymphysis	6 (12.8%)
Ramus	1 (2.1%)

Discussion

Research into sport-related injuries is important in identifying risky components of the game and to implement methods to address and reduce potential injuries. A Scottish study found 42% of an adolescent sample had a medically attended injury in a 12 month period, with lower limb injuries most frequent [4]. Review of cricket injury literature has found injury data collection in three major cricket playing countries, namely Australia, England and South Africa, at national and provincial levels [5].

There are few studies in literature highlighting cricket-related facial injuries in a cricket playing region. This study does not break down the players into level of cricket played but serves to emphasize the frequency and pattern of facial fracture presentation secondary to cricket. Unlike contact sports such as rugby and soccer, injuries to the head and neck region in cricket are markedly infrequent. However, in this unit cricket was reported to be the third most common sports (behind rugby and cycling) in the Christchurch region in patients with sport-related facial fractures and one that commonly required surgical intervention [6]. This finding highlights cricket as a dominant cause of sports-related injuries in the region as well as the severity of these injuries.

Soccer accounted for the highest proportion of injuries in the United Kingdom while rugby is associated with the greatest risk of substantive injuries (potentially serious injuries which require treatment or which stop participants from taking part in usual activities) [7]. Previous studies on cricket-related injuries looked more at cricket injuries at elite levels. These studies found injuries more frequent in bowlers and wicket keepers and injuries commonly involve the lower and upper limbs [2, 8, 9]. At this level of cricket, overuse injuries due to the physical demand of the game are common [1], especially in fast bowlers due to repeated strain in the delivery of the ball [9]. One study reported that only 6% of injuries were found to occur in the head and neck region [2].

Injuries from impact of cricket ball are more commonly found in club grade competition or in social cricket [1, 10]. This reinforces the importance of protective gear such as facial mask. A study looking at players at a junior cricket club found batting accounted for half of all injuries and contact with a moving ball was responsible for 55% of injuries, with face (20%) being the most commonly injured body part [11]. After helmet was made compulsory to this club, the frequency of head/neck/facial injuries in batters fell from 62 to 4% over a 2 year period. The study concluded that adequate facial protection is required for the less experienced and younger players. In this study, more than half of injuries were sustained as the players were hit in the face by the ball. The zygomatic bone is a prominent point in the midfacial region which is prone to be struck by errand bowling. This study reported 31.9% of patients sustained zygomatic fractures. To extrapolate the result from this study, serious head injuries from cricket can also occur in inexperienced players and such injuries have been reported [12].

Most cricket related injuries have been reported to occur early in the season when the least cricket is played [2]. The injuries may be due to a lack of conditioning early in the season. This study found significantly more injuries during summer period, most likely as this falls in school holiday and more social cricket is played during this time. Approximately a third of patients in this study required surgery, with most of these patients undergoing active treatment required fixation of the fractures with miniplate and screws.

Injuries in recreational sports players are not widely researched and injury prevention for community level sports requires stronger multidisciplinary collaboration [13]. This study emphasized that facial fractures are common injuries in a cricket playing region and that facial protection, even in informal cricket, needs to be addressed to prevent such injuries. By isolating the study to look at cricket-related facial fractures, this article highlights the high frequency of this type of injury and raises the importance in facial protection during social cricket.

Conclusion

Although cricket is not associated with high frequency and severity of injuries when compared to contact sports such

Table 5 Hospitalisation and surgery in different age groups

	<16	16–30	31–45	46–60	Total (% of all patients)
Hospitalisation	0 (0%)	5 (12.5%)	8 (20.0%)	2 (5.0%)	15 (37.5%)
Surgery	0 (0%)	5 (12.5%)	8 (20.0%)	2 (5.0%)	15 (37.5%)

as soccer and rugby, this study found a high proportion of sports-related injuries in the facial region in cricket players. This reinforces the importance of facial protection as well as education of social players.

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