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Management of maxillofacial trauma in prisoners

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Abstract

The incidence of injuries among prisoners is much higher than in the general population, and in the UK the number of prisoners and the incidence of injuries are rising. Maxillofacial trauma is common. Based on the cases of 12 patients, we have identified eight challenges that are associated with the management of maxillofacial trauma in this group: patient-reported mechanisms of injury that are often inconsistent with the fracture pattern, complex fracture patterns, delayed presentation, high prevalence of dental disease and of smoking, complicating medical factors such as drug use and blood-borne viruses, increased risk of further violence after discharge, and problems with follow-up logistics. By actively addressing these challenges we can provide a better service to these patients.

Keywords: Maxillofacial trauma; prisoners; management

Introduction

The incidence of injury (including maxillofacial trauma) in prisoners is considerably higher than it is in the general population,[1] and rates are increasing. The latest United Kingdom (UK) safety in custody statistics show a 31% increase in assaults from September 2015 to September 2016, with a record high of 25 049. Of these, 13.5%, which include lacerations that require suturing, fractures, and hospital admissions, were classified as serious.[2] To raise awareness of these patients and to improve the delivery of care, and outcomes, we discuss the challenges that may arise during treatment.

Prison demographics in England and Wales

Currently, the 118 prisons across England and Wales have an "uncrowded capacity" of 77 884,[3] but the long-term steady rise in the number of prisoners (as of March 2017) has resulted in 84 652 being held.[3–5] At the end of December 2016, 95% were male, and the most common length of sentence was a determinate one of over four years (43% of prisoners).[5]

Most prisoners are aged between 21 and 39 years and, compared with the general population, a disproportionately high number is not white. Within the general population 88% are white, but this falls to 74% within the prison population. Twelve per cent of this group are foreign nationals.[5]

The rate of injury among prisoners is considerably higher than it is in the general population. One North American study showed that the fracture rate in prisoners was more than twice that of the general population, and that rates for head injuries and hospital admissions were five times higher and over 10 times higher, respectively.[6]

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Around one third of all prisoners are assaulted,[2] and recently there has been a surge in this number, with an increase of 31% in the past year alone.[2]

Data are limited on the types of injuries sustained by prisoners in the UK. Data from the Ministry of Justice[2] include only the incidence of assault and serious assault rather than details of the specific injury sustained. Serious assault includes sexual assault, and any physical attack that results in admission to hospital. Data from North America are more detailed, and one New York-based study[7] showed that mandibular fractures were the injuries that most commonly required patients to be admitted to hospital. Of the 251 patients included in the study, 241 were admitted and 85% of them required an operation. The most common injuries were mandibular fractures (47%) and other facial fractures (15%). The most common reported mechanism of injury was assault with a fist.[7]

Method

We searched the Salisbury NHS Foundation Trust database to find patients who presented to accident and emergency or the maxillofacial department between 2011 and 2016. The search criteria included patients whose addresses were one of the two local prisons (Her Majesty's Prison (HMP) Erlestoke and HMP Guys Marsh) and a clinically coded diagnosis of facial fracture. Twelve prisoners with facial fractures were found. Evaluation of the clinical notes and imaging highlighted several potential challenges that may be faced when treating this group of patients.

Results

Of the 12 patients identified, seven had fractures of the mandible and five had fractures of the zygomatic complex. The mean (range) age was 34 (24-49) years, and all patients were male, which correlates with the demographics of this group.

Based on the history and clinical examination, which indicated potentially complex injuries, three patients required additional imaging of the head and cervical spine. Of the mandibular fractures, five were severely displaced, one patient had previously fractured their mandible, and the radiographs of two who had had a delay in presentation to accident and emergency showed the formation of callus. One fracture of the zygomatic complex was severely displaced.

Discussion

Analysis of these 12 cases identified eight common themes that highlight the challenge of managing this group of patients (Table 1).

Table 1
Eight challenges associated with the management of maxillofacial trauma in prisoners.

Patient-reported mechanisms of injury are often inconsistent with the fracture pattern
Complex fracture patterns
Delayed presentation
High prevalence of dental disease
High prevalence of smoking
Complicating medical factors such as drug use and blood-borne viruses
Increased risk of further violence after discharge
Problems with follow-up logistics

Fig. 1. Computed tomogram of fracture of the right zygomatic complex that seems to be inconsistent with the reported mechanism of injury.

Patient-reported mechanisms of injury are often inconsistent with the fracture pattern

A 27-year-old man presented with right-sided facial bruising and swelling after reportedly slipping in the shower. Imaging, however, showed a complex, comminuted fracture of the right zygomatic complex that was unlikely to have resulted from a simple fall (Fig. 1).

Because of the necessary presence of the accompanying prison officers, prisoners are denied the usual privacy and confidentiality that most patients expect, and may be reluctant to disclose the true mechanism of injury. A high index of suspicion of the true history is therefore needed, and diagnosis may rely on further imaging such as computed tomography.

Complex fracture patterns

Blunt instruments are often used to inflict injuries on prisoners – for example, a hard object put into a sock and swung like a mace. This results in more complex fracture patterns, for

Fig. 2. Radiograph showing a fracture of the left angle of the mandible with a comminuted segment.

Fig. 3. Radiograph showing a fracture of the right angle of the mandible with evidence of callus formation.

instance, a left angle fracture with a comminuted segment (Fig. 2). Recognition of the greater potential for complex fractures can assist surgical planning, which may include a longer operating time, ensuring that senior support is available, making customised arch bars, and obtaining consent for extraoral approaches.

Delayed presentation

Delayed presentation of fractures in this group is multifactorial. Prisoners may be reluctant to seek healthcare or find it difficult to access. Although prisoners are entitled to the same healthcare and treatment as people outside prison, transporting a prisoner to hospital safely can cause logistical challenges.

A 63-year-old man presented to the maxillofacial team with a vague history, and pain in the right side of his jaw. Radiographs showed a fracture of the right mandibular angle with evidence of callus at the fracture site (Fig. 3). Delayed presentation increases the risk of infection and may complicate reduction. Recognition of delayed presentations allows for the appropriate planning of treatment.

High prevalence of dental disease

Social determinants of poor oral health are reflected among prisoners,[8,9] and levels of untreated dental disease are roughly four times higher than those found in equivalent socioeconomic groups in the general population.[8,9]

A poor dentition can pose challenges when treating mandibular fractures (Fig. 4), and it can be difficult to find

Fig. 4. Radiograph showing a right condylar fracture and large number of dental caries.

a patient's correct occlusion when many teeth are missing or grossly decayed. Similarly, the placement of arch bars on a poor dentition is technically demanding, and devices may need to be custom-made, which increases time and costs. Poor levels of oral hygiene increase the risk of postoperative infection.

High prevalence of smoking

Before the introduction of the recent government smoking ban in prisons, around 75% of prisoners smoked tobacco.[9] Anecdotally prisoners are continuing to do so. Smoking is well known to delay wound healing and to increase the risk of infection. Nicotine withdrawal during an inpatient stay can increase agitation so prophylactic nicotine replacement patches should be considered.

Complicating medical factors

The limited privacy that affects the accurate disclosure of the mechanism of injury has a similar effect on the medical history. A reluctance to disclose personal medical problems in front of prison officers has important implications for the provision of optimal care. Recreational use of drugs is a particularly sensitive but widespread problem, with 40% of new prisoners having injected them in the 28 days before imprisonment, and 69% having taken them in the preceding 12 months.[10] The management of intravenous drug users is associated with a number of challenges, including difficulties with cannulation, and dealing with drug-seeking behaviour and the unpredictable effects of non-prescribed drugs on anaesthetic agents and analgesia. Withdrawal symptoms from recreational drugs can include agitation and aggression, which makes care on the ward difficult for the medical team and distressing for other patients.

The rate of blood-borne viruses in the prison population is higher than it is in the general population, and includes human immunodeficiency virus (HIV), and hepatitis B and C.[11,12] Whilst universal precautions are used for all patients, procedures such as the placement of arch bars carry a high risk of needlestick injuries. The operating team should be aware of these risks to ensure the full concentration and safety of all its members.

Increased risk of further violence

When fractures are treated, patients are discharged back to the same environment that led to the injury and where they are at risk of being injured again. During healing, even minor injuries may displace the fracture and necessitate further treatment, and the ongoing long-term exposure to high levels of violence can result in the presentation of patients who have had multiple previous fractures (Fig. 5).

Logistics of follow up

The follow-up arrangements after discharge are controlled by the prison service rather than the patient, and patients are specifically forbidden to know when the next appointment will be. The logistics involved in organising a clinic appointment for a prisoner and associated officers is difficult both for the prison service and the NHS. Compromises often have to be made on both sides and these can affect the patient's care. If prisoners move to another prison or are released during an episode of care, they risk being lost to follow up.

In conclusion, raising awareness of the specific challenges that are associated with the management of facial fractures in prisoners will help maxillofacial teams deliver optimal care. The coordination of care so that it does not place unnecessary demands on the public purse is a further challenge. Prisoners

Fig. 5. Radiograph showing multiple previous fractures.

are invariably escorted by two or occasionally three prison officers, which not only adds to the overall cost of care, but potentially also puts a strain on prison resources.

Reports about facial trauma in prisoners, particularly in the United Kingdom, are limited. Our own data set is small, and more data would help to evaluate the issues further. Comparison to other specialities such as orthopaedics or plastic surgery may highlight further trends in traumatic injuries in this population of patients. Evaluation of presentations to accident and emergency may facilitate identification of patients for analysis.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Ethics approval: none needed. Patients' permission: none needed, confirmed with radiology PACs department Salisbury District Hospital.

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