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Development of a financially viable model for the management of mandibular fractures as day cases in a level 1 major trauma centre

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Abstract

There is a subgroup of patients with mandibular fractures who could safely and effectively be managed in an outpatient day-care unit. Suitability depends on medical, social, and operative factors, and identification of the correct criteria will govern management after that in the emergency department. Reduced use of beds would lead to less money being spent on emergency treatment, and increased capacity for elective surgery. The aims of this study were to identify a group of patients with mandibular fractures whose duration of operation and period of recovery would be suitable for treatment in the day-care unit, and to evaluate the potential financial benefits. Inpatients were assessed for day surgery using medical, social, and surgical criteria. Each patient's suitability for discharge was assessed two, three, and five hours postoperatively. A financial feasibility study was made retrospectively on a larger sample of patients with mandibular fractures. The discharge criteria from the day-care unit were fully met by 26/40 patients at five hours postoperatively, mean (range) duration of operation was 145 (40–285) minutes, and mean (SD) Mandibular Injury Severity Score was 13 (3), range 7–20. When all the criteria were combined (n = 100), 12 of the patients were suitable for day care. With 24 bed-day savings/100 patients, potential earnings would increase to around £80 000/year at this hospital. In conclusion, we have identified a group of patients who were suitable for management of mandibular fractures in the day-care unit. Considerable cost savings are anticipated.
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Keywords: Mandible; Day surgery; Ambulatory care; Maxillofacial trauma

Introduction

Inpatient beds are the most valuable resource in the NHS,[1] and admissions for the management of mandibular fractures account for a considerable number of inpatient bed-days.[2] A proportion of these are patients who are waiting on a clinically-prioritised emergency operating list and then recovering as inpatients. The complexity and duration of these operations varies depending on factors such as the severity of the fracture, the presence of infection, and coexisting conditions.

There is already a system for rapid access to the day-care unit operating theatres, which relies on assessment of the patient followed by booking from the emergency department. This has been adopted for other surgical specialties (general surgery and gynaecology) for management of minor acute conditions when we anticipate a short operation, and discharge the same day.

In this paper we present evidence in favour of the adoption of a rapid-access, day-care service for outpatient management

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of an identified group of patients with mandibular fractures. Such patients must be medically and socially suitable for day care, with the duration of operation being less than one session, and the postoperative recovery period short enough to permit discharge the same day before 8 pm.

We hope that, through the adoption of primary scoring of the severity of the injury and medical and social screening, a group of patients can be identified who can safely be sent home from the emergency department with an appointment booked for operation in the day-care unit. This will reduce our use of inpatient beds while maintaining good clinical practice. We know of no reports that have suggested that patients with mandibular fractures are being managed as outpatients elsewhere in the UK, or that it results in poorer clinical outcome.

Patients and methods

Aims

We first wanted to identify a group of patients whose duration of operation and recovery period were suitable for the management of mandibular fractures by outpatient day surgery.

We also wanted to evaluate the potential financial benefits of outpatient management of mandibular fractures that resulted from the reduced use of both inpatient beds and the main operating theatre.

Methods

Non-consecutive adults who were admitted with isolated mandibular fractures over a 12-month period were included in the study. These patients followed the traditional path of assessment and admission from the emergency department to an inpatient ward, fasting until an emergency (NCEPOD classification) theatre slot became available, being operated on, and recovering postoperatively on the ward.

These patients were then assessed for their theoretical suitability for parallel management as outpatients in the day-care unit. Data for each patient were collected prospectively using a proforma that assessed their suitability for day-care management by established general medical, anaesthetic (American Society of Anesthesiologists' grade), and social criteria. The injury was scored using the mandibular injury severity score (MISS).[3] Duration of operation from induction to extubation, and method of fixation, were also recorded.

Each patient was then assessed at two, three, and five hours postoperatively to see if they were suitable for discharge according to the established criteria (Table 1). There was no further difference from current accepted practice.

After we had identified a clinically suitable group of patients, we made a retrospective financial feasibility study on a larger group of patients with mandibular fractures.

Table 1
Day surgery unit guidelines for patients suitable for discharge.

Blood pressure and pulse within preoperative range	Yes/No
Has minimal or no pain	Yes/No
Is able to tolerate fluids and food	Yes/No
Has minimal nausea	Yes/No
Can breath comfortably	Yes/No
Is fully conscious and orientated	Yes/No
Has passed urine	Yes/No
Operation site is satisfactory	Yes/No
Does patient feel ready to go home?	Yes/No

Results

Forty complete proformas were returned and these comprised the study group. There were 32 men and eight women, mean (range) age 30 (17-46) years. Thirty-one of them would have been suitable for admission to the day-care unit based on their ASA grade and domestic arrangements. Of the nine who would not have been suitable, six had nobody to take them home or stay with them overnight, and three were ASA grade II or more.

The mean (range) delay from injury to treatment was 3 (0-14) days and each of them would have taken up an inpatient bed for one day. The mean (SD) MISS was 13 (3), range 7-20, and details of the fractures are shown in Table 2.

Thirty-three of the 40 operations started during working hours (8am–5pm), the latest at 10 pm, and the mean (range)

Table 2
Details of the fractures by their Mandible Injury Severity Scores.

Fracture	No.
Fracture:	
Simple	34
Comminuted	5
Bony defect	1
Site:	
Parasymphysis	18
Body	10
Angle	26
Condyle	9
Ramus	5
Canine	2
Occlusion:	
Malocclusion	38
Normal	2
Involvement of soft tissue:	
Closed	4
Open intraorally	34
Open extraorally	1
Soft tissue defect	1
Infected:	
Yes	2
No	38
Displacement:	
Mild	8
Moderate	19
Severe	13

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