

Cervicofacial infection of dental origin presenting to maxillofacial surgery units in the United Kingdom: a national audit

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VERIFIABLE CPD PAPER

IN BRIEF

- There is a reported increase in cervicofacial infections of dental origin presenting to oral and maxillofacial surgery units.
- Lack of access to primary care dental services was implicated as the root cause.
- Two thirds of patients treated by dental primary care services received inadequate treatment.
- Many patients with cervicofacial infection of dental origin present to primary care medical services.

Introduction Local studies have shown an increase in cervicofacial infections of dental origin presenting to oral and maxillofacial surgery units in the UK. A lack of access to National Health Service (NHS) primary care dental services has been implicated as a root cause. **Study design** Cross-sectional national audit. **Method** Oral and maxillofacial surgery units in the UK were asked to report details of severe cervicofacial infection of dental origin presenting in October and November 2006. Data were collected regarding: patient demographics, referral source, management in primary care, management by maxillofacial surgery, and outcome. **Results** Two hundred and sixty-six episodes of cervicofacial infection of dental origin were reported during the audit period. At the time of presentation, 56.4% of patients were registered with a general dental practitioner (GDP). One hundred and forty (52.6%) patients sought treatment from primary care dental services for their episode of cervicofacial infection and only 20 patients were unsuccessful in obtaining treatment. Forty-seven percent of patients did not seek treatment from primary care dental services. Fifty percent of patients were referred by accident and emergency. Sixty-six percent of patients were prescribed oral antibiotics without operative intervention by primary dental care services. Eighty-one percent of patients required hospital admission and 46% of patients required a surgical procedure under general anaesthesia. Eighty-nine percent of patients made a full recovery and 3% recovered with complications. There were no deaths reported during the audit period. **Discussion** This audit provides a benchmark from which future comparisons can be made and by design cannot prove an increase in the presentation of cervicofacial infection of dental origin. Lack of access to NHS primary care dental services may be less significant than originally thought. A significant proportion of patients preferentially present to primary care medical services rather than dental services. Two thirds of patients treated by primary care dental services received oral antibiotics only which represents an inadequate level of treatment for odontogenic infection.

INTRODUCTION

Local studies have shown an increase in cervicofacial infections of dental origin presenting to oral and maxillofacial surgery units in the United Kingdom.^{1,2} The total number of hospital admissions and bed days as a result of drainage of a dental abscess in the UK has almost doubled between 1998-9 and 2005-6.³ Severity of presentation has also increased.^{2,4-7} A lack of access to National Health

Service (NHS) primary care dental services following changes in service provision and remuneration of dentists over the past ten years has been implicated as a root cause, particularly in areas of high treatment need.³⁻⁸

As a consequence of these worrying trends the clinical effectiveness sub-committee of the British Association of Oral and Maxillofacial Surgeons (BAOMS) carried out a national audit of cervicofacial infection of dental origin presenting to oral and maxillofacial surgery units in the UK.

METHOD

Oral and maxillofacial surgery units in the UK were asked to report details of severe cervicofacial infection of dental origin presenting in October and November 2006. Data were collected using a standard proforma (Fig. 1). Data

were collected regarding: patient demographics, referral source, management in primary care, management by maxillofacial surgery, and outcome. Socio-economic class analysis was based on the Registrar General's classification of occupations (2000). For the purpose of this audit, severe cervicofacial infection was defined as 'infection requiring more than just simple dental extraction/opening of tooth under local anaesthesia - ie could not be done by average GDP'.

RESULTS

Two hundred and sixty-six episodes of cervicofacial infection of dental origin were reported during the audit period. A normal distribution of age was evident and the mean patient age was 34.8 years (SD 15.6 years, range 1 to 83 years), with 155 male and 107 female patients

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BAOMS Benchmark Study 2006–7: Cervicofacial infections presenting to OMFS

PLEASE – Record all severe infections of dental origin

Record only patients requiring *specialist intervention* because of severity of problem

Definition of specialist intervention:

Any patient past the stage where they could be managed by a primary care dentist, including needing GA

HOSPITAL/UNIT NAME _____

PATIENT DETAILS

Age _____ Sex M/F _____ Occupation _____ Postcode _____

Referral source (please tick as appropriate)

Regular dentist (NHS)	<input type="checkbox"/>	General medical practitioner	<input type="checkbox"/>
Regular dentist (private)	<input type="checkbox"/>	Accident and emergency	<input type="checkbox"/>
Emergency dental service	<input type="checkbox"/>	Another hospital speciality	<input type="checkbox"/>
Dental access centre	<input type="checkbox"/>	Other (please state)	<input type="checkbox"/>

TREATMENT HISTORY

Is the patient registered with a general dental practitioner (GDP)?	Yes/No	
If No had the patient attempted to register with a GDP prior to this episode?	Yes/No	
If unable to register was this because of:		
Lack of available NHS dentist in the area	Yes/No	
Unwilling to register with private dentist	Yes/No	
Did the patient seek treatment with dental services for this episode?	Yes/No	
Was the patient treated by dental services prior to presentation?	Yes/No	
If Yes, what treatment was provided? (please tick as appropriate)	Antibiotics only <input type="checkbox"/>	Opening of pulp canal <input type="checkbox"/>
	Incision and drainage <input type="checkbox"/>	Extraction <input type="checkbox"/>

Management of patient by OMFS (please tick all that apply)

Inpatient:	Length of stay (nights):
IV antibiotics <input type="checkbox"/>	Extra oral incision and drainage GA <input type="checkbox"/>
Aspiration of pus <input type="checkbox"/>	Extra oral incision and drainage and exploration tissue spaces <input type="checkbox"/>
Intra oral incision and drainage LA <input type="checkbox"/>	Surgical airway <input type="checkbox"/>
Intra oral incision and drainage GA <input type="checkbox"/>	Admission to ITU/ICU <input type="checkbox"/>
Extraction of teeth LA <input type="checkbox"/>	Surgical debridement of necrotic tissue <input type="checkbox"/>
Extraction of teeth GA <input type="checkbox"/>	Skin grafting <input type="checkbox"/>
Extra oral incision and drainage LA <input type="checkbox"/>	Other (please state) <input type="checkbox"/>

Outcome (please tick as appropriate)

Full recovery	<input type="checkbox"/>
Recovery with complications	<input type="checkbox"/>
Death	<input type="checkbox"/>

Thank you for your cooperation

STUDY PERIOD: OCTOBER AND NOVEMBER 2006

Please return forms when completed to:
Stephen Layton, Maxillofacial Unit, County Hospital Lincoln, Lincoln LN2 5QY

Fig. 1 Data collection proforma

recorded and gender not recorded in four cases. Distribution of socioeconomic class is shown in Figure 2; the majority of patients were socioeconomic class III (non-manual) or V. The geographic distribution of the number of reported cases identified by postcode is shown in Figure 3.

At the time of presentation, 56.4% of patients were registered with a general dental practitioner (GDP), but of those not registered 67.6% had not previously attempted to register with a GDP. The reasons for non-registration were poorly recorded but 48 patients reported a lack of GDPs in their area and 39 patients reported that they were unwilling to register with a private GDP.

Treatment provision by primary care dental services is shown in Table 1 and Figure 4. One hundred and forty (52.6%) patients sought treatment from primary care dental services for their episode of cervicofacial infection. One hundred and twenty patients were treated by primary care dental services meaning only 20 patients who sought treatment were unsuccessful in obtaining treatment.

Figure 4 shows that 66% of patients were prescribed oral antibiotics only and less than 40% of patients had any form of operative dental treatment (incision and drainage, opening of pulp canal or extraction) by primary dental care services.

The source of referral to oral and maxillofacial surgery is shown in Table 2. Fifty percent of patients were referred by accident and emergency with only 25% referred by primary care dental services. Eighty-one percent of patients required hospital admission by oral and maxillofacial surgery with a median hospital stay of two nights (interquartile range 2 to 3 nights). The treatment provided by oral and maxillofacial surgery is shown in Figure 5. Forty-six percent of patients required general anaesthesia for dental extraction and/or intra-oral incision and abscess drainage. Eleven percent required general anaesthesia for extra-oral incision and abscess drainage and/or exploration of tissue spaces. Eighty-nine percent of patients made a full recovery and 3% recovered with complications. There were no deaths reported during the audit period.

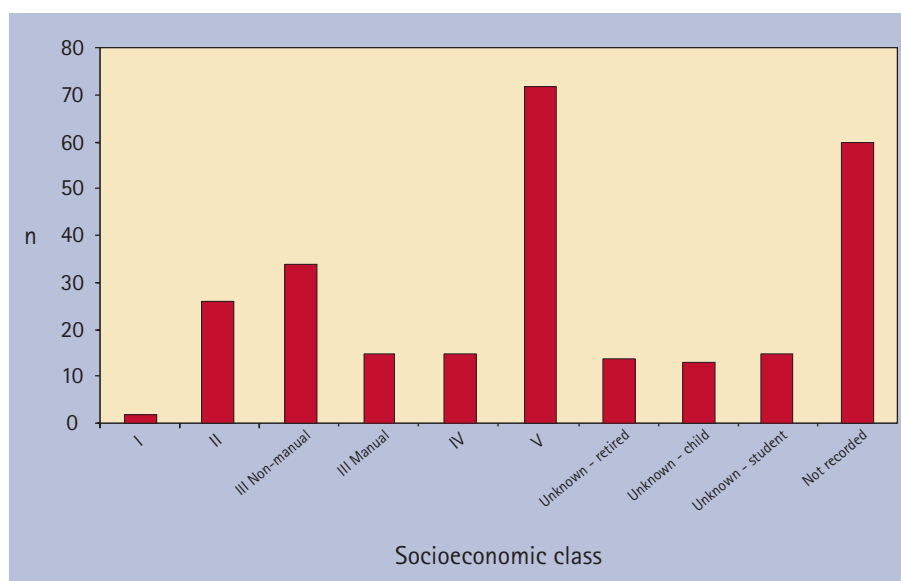


Fig. 2 Patient socioeconomic class

Table 1 Treatment sought and provided by primary care dental services

Treatment provision by primary care dental services	n	%
Sought treatment	140	52.6
Did not seek treatment	125	47.0
Not recorded	1	0.4
	n	%
Treatment provided	120	45.1
Treatment not provided	145	54.5
Not recorded	1	0.4
Sought treatment but unable to obtain	20	7.5

Table 2 Patient referral source

Referral source	n	%
A&E	134	50
GDP NHS	41	15
GMP	25	9
Another hospital specialty	19	7
Emergency dental service	16	6
Dental access centre	10	4
GDP private	4	2
NHS direct	2	1
Self referral	2	1
Other	2	1
Not recorded	11	4

DISCUSSION

This audit provides a benchmark from which future comparisons can be made and by its cross-sectional design cannot

prove an increase in the presentation of cervicofacial infection of dental origin. Not all oral and maxillofacial surgery units replied therefore the absence

of data may represent non-compliance rather than a true absence of data. Also this audit is likely to under-estimate the true number of cases of cervicofacial infection of dental origin and therefore generalisations to all areas of the UK must be made with caution.

Changes in remuneration of dentists over the last decade has been reported to have caused a reduction in the proportion of NHS treatment carried out by general dentists.³ The number of NHS general dental practitioners decreased after a further change in dentists' remuneration by introduction of the new contract in April 2006. The NHS information centre reported a reduction of 1,649 (8%) in NHS dental practitioners after introduction of the new contract in 2006.⁹ However, lack of access to primary care dental services may not be as important as originally thought. This study showed that of the 52.6% of patients who sought treatment from primary care dental services only 20 of these patients were unable to obtain treatment.

Interestingly 47% of patients did not seek treatment from primary care dental services and presented to accident and emergency or their general medical practitioner which is consistent with previous studies.¹ Reasons for this were poorly recorded although some patients reported a lack of NHS general dental practitioners in their area and some patients were unwilling to register with a private dental practitioner. The cost of dental treatment may therefore be a reason for presentation to their general medical practitioner or accident and emergency and may be reflected in the fact that the majority of patients were from socioeconomic class V. There was a further peak of patients from socioeconomic class III (non-manual) who may be unable to access private dental services due to cost and cannot access exempt care because their earnings are too high. In addition, the more immediate availability of the patients' general medical practitioner or accident and emergency may be another reason for preferential presentation. Although not recorded in this audit dental phobia or previous bad experiences may also be reasons not to present to a GDP. Of the total number of patients,

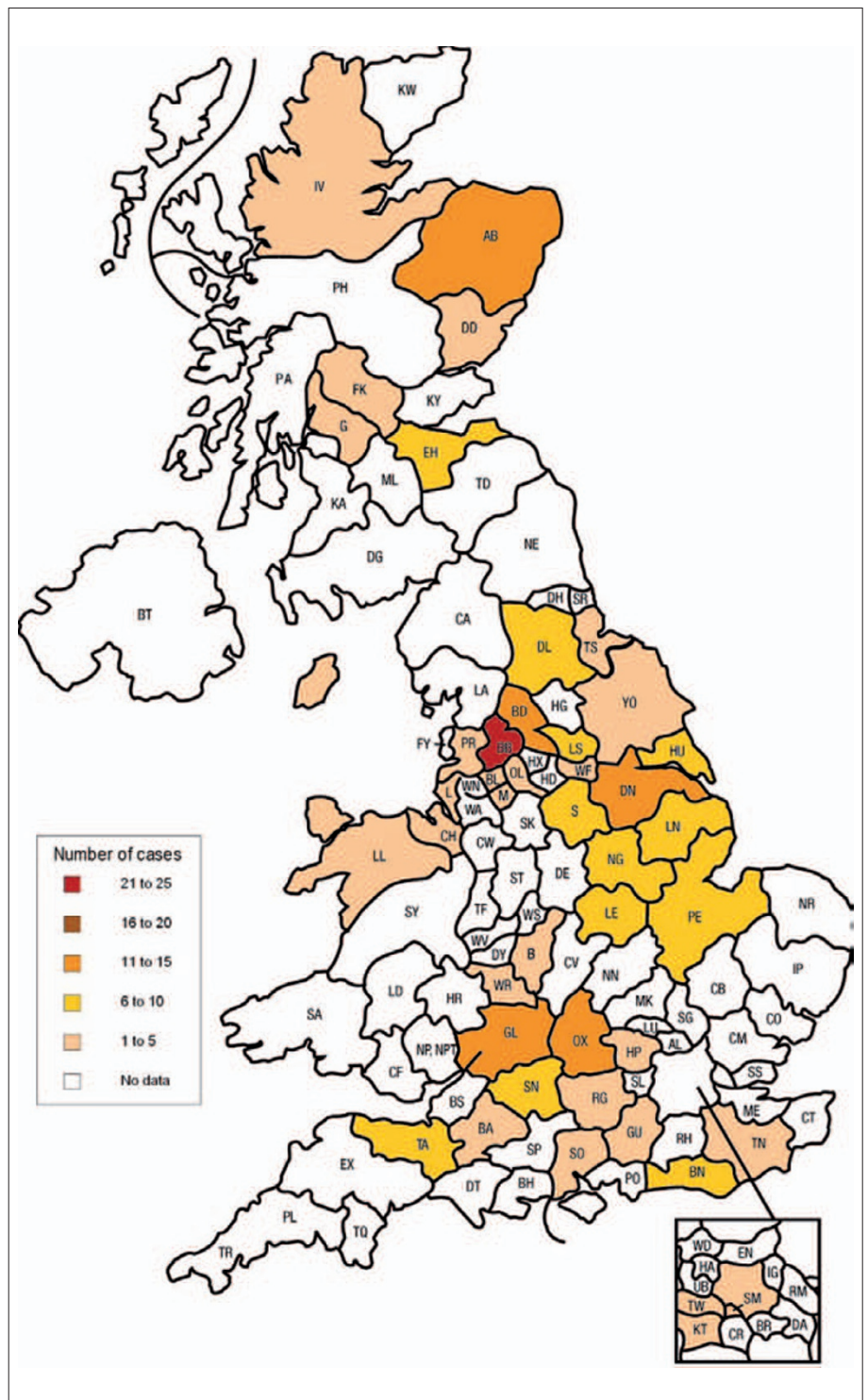


Fig. 3 Number of reported episodes of cervicofacial infection by postcode

52.6% sought treatment from primary care dental services yet only 25% of patients were referred from this source. Fifty-nine percent of patients were referred by accident and emergency or their general medical practitioner. Therefore there must be a proportion of patients who seek treatment from primary care dental services but are ultimately referred by primary care medical services.

Of concern is that 66% of patients treated by primary care dental services were prescribed oral antibiotics only. This contradicts guidelines from the Faculty of General Dental Practitioners (UK) which state that antimicrobials should be prescribed as an adjunct to removal of the source of infection.¹⁰ The majority of dentoalveolar infections are caused by necrotic pulp tissue. Removal of the source of infection ie

the necrotic pulp tissue either by dental extraction or extirpation of the pulp and drainage are well established as the most effective treatment for dentoalveolar infection.^{11,12} The most successful form of drainage is via the soft tissues with drainage via the root canals the next most successful form.¹³ Therefore prescription of oral antibiotics without operative intervention represents an inadequate level of treatment for dentoalveolar infections. However, the number of patients successfully treated by GDPs using oral antibiotics alone is unknown and the number presenting to oral and maxillofacial surgery may be the tip of the iceberg. This warrants further study. Prescription of oral antibiotics can also expose patients to more courses of antibiotics which can lead to development of antibiotic resistance. The incidence of penicillin resistance in odontogenic infection in the UK has

dramatically risen over the last decade and is reported to be at least 55% now.^{13,14} This has led to the role of penicillin in the treatment of odontogenic infection being questioned and is certainly not as important as achieving drainage.¹³

The proportion of patients receiving operative intervention in dental primary care may improve with education of general dental practitioners or introduction of local or regional audit of the management of dentoalveolar infections. Regional audit has proved successful in rationalising antimicrobial prescribing but will require multidisciplinary co-operation between primary care dental services and oral and maxillofacial surgery.¹⁵ Financial incentives or introduction of government targets may be the only realistic methods to improve the proportion of patients receiving operative intervention in dental primary care.

There is significant financial cost and health related morbidity associated with uncontrolled odontogenic infection. Eighty-one percent of patients required hospital admission, 75% received intravenous antibiotics and 46% required a surgical procedure under general anaesthesia. Three percent of patients required admission to intensive therapy units and 1% required a surgical airway. These procedures and inpatient admissions are not only costly in themselves but this unplanned activity can result in cancellation of elective procedures at times of low availability of emergency theatres. In addition the large proportion of patients presenting to accident and emergency increases the accident and emergency workload where staff are not primarily trained to deal with dental problems. These features have a deleterious effect on workforce planning and in provision of elective services in the target driven NHS environment. Although there were no deaths in the audit period, cervicofacial infection of dental origin is still associated with mortality, particularly in patients with complicated medical histories.^{2,16}

In summary, by its cross-sectional design, this audit cannot prove an increase in the presentation of cervicofacial infection of dental origin. It does, however, provide a benchmark from which future comparisons can be made. The reasons for presentation of cervicofacial infection to oral and maxillofacial surgery are clearly complex. Lack of access to NHS primary care dental services may be less significant

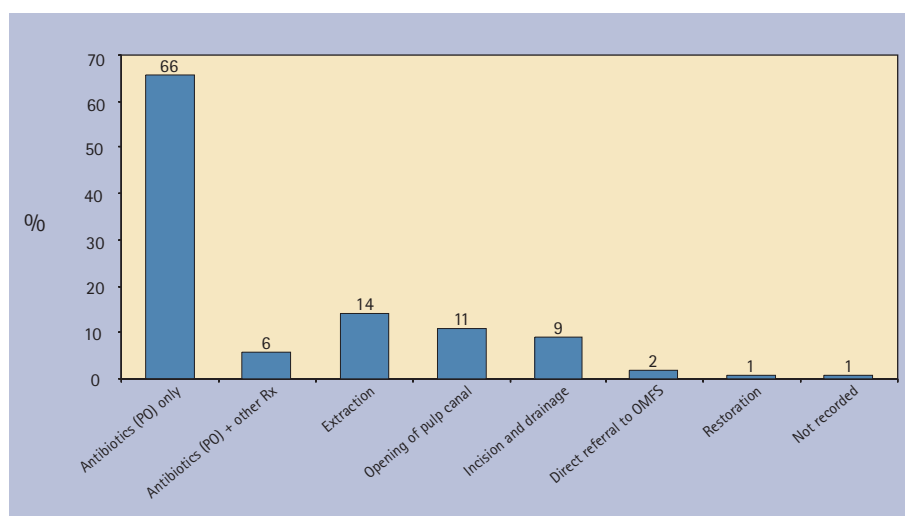


Fig. 4 Treatment provided by primary care dental services

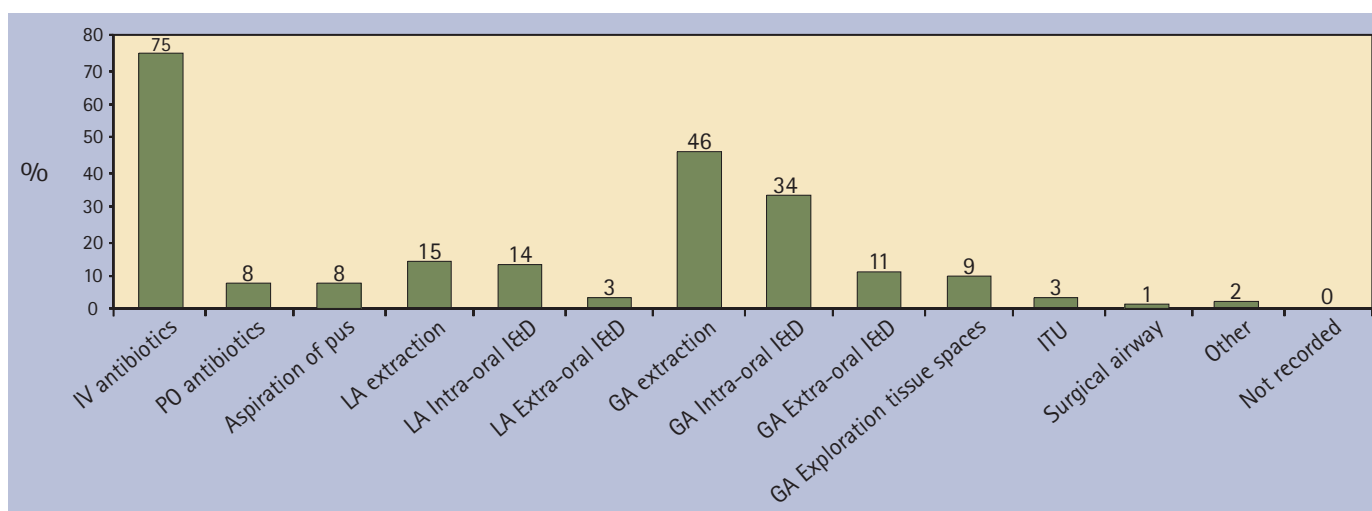


Fig. 5 Treatment provided by oral and maxillofacial surgery

than originally thought as only 20 of those who sought dental treatment were unable to access it. A significant proportion of patients preferentially present to primary care medical services rather than dental services. The reasons for this are unclear and further study is indicated. Two thirds of patients treated by primary care dental services received oral antibiotics only which represents an inadequate level of treatment for odontogenic infection.

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