

# Retrospective analysis of the prevalence and incidence of caries in the distal surface of mandibular second molars in British military personnel

T. Pepper\*, P. Grimshaw<sup>1</sup>, T. Konarzewski, J. Combes

Defence Medical Services, Whittington Barracks, Lichfield, Staffordshire, WS14 9PY

Accepted 13 October 2016

Available online 15 November 2016

## Abstract

Mandibular third molars are commonly removed because of distal caries in the adjacent tooth. To find out the prevalence of distal caries in mandibular second molars we retrospectively studied the primary care dental records of 720 British military personnel (653 men and 67 women) from various centres. These records are standardised and personnel are required to attend for inspection regularly. Those who had been under 20 years of age at enlistment, who had served for at least five years, and had five recorded dental inspections, were included. The median (IQR) period from the first to last inspection was 15 (9.7 – 19.2) years, and inspections were a median (IQR) of 14.1 (12.8 – 15.8) months apart. A total of 59/1414 (4.2%) mandibular second molars developed caries in their distal surfaces. This was 4% higher when they were associated with a partially-erupted mandibular third molar than when associated with one that was fully erupted or absent (29/414 (7%) compared with 30/1000 (3%);  $p=0.001$ ). Carious lesions developed in the distal aspect of 22/133 mandibular second molars (16.5%) that were adjacent to a mesioangularly impacted third molar. Of these, 19/22 were successfully restored. Four mesioangularly impacted mandibular third molars would have to be extracted to prevent one case of distal caries in a second molar (number needed to treat = 3.25). Second molars that are associated with a partially-erupted mesioangular mandibular third molar have a higher risk of caries, and this can be reduced by removal of the third molar. However, distal caries in second molars seems to be a treatable and slowly-developing phenomenon and we recommend that the merits and risks of the prophylactic removal of third molars should be discussed with the patient, who should have long-term clinical and radiographic checks if the tooth is retained.

© 2016 The British Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.

**Keywords:** Mandibular third molars; third molars; wisdom teeth; caries; second molar caries; prophylactic removal; distal caries; impacted; British military

## Introduction

In the UK, national guidance advises against the prophylactic removal of mandibular third molars.<sup>1,2</sup> The National Institute

for Health and Care Excellence (NICE) guidance gives examples of diseases (some relatively rare) that might justify their removal, but caries in the distal surface of mandibular second molars is not included.<sup>2</sup> However, the Scottish Intercollegiate Guidelines Network, which is no longer extant, stated that there is a strong indication for the removal of third molars when “*there is caries in the adjacent second molar tooth which cannot satisfactorily be treated without the removal of the third molar*”.<sup>1</sup>

Although concern has been raised that retention of impacted mandibular third molars, particularly those that are

\* Corresponding author.

E-mail addresses: [tom.pepper@outlook.com](mailto:tom.pepper@outlook.com) (T. Pepper), [smilewizard@mac.com](mailto:smilewizard@mac.com) (P. Grimshaw), [Thomas.Konarzewski808@mod.uk](mailto:Thomas.Konarzewski808@mod.uk) (T. Konarzewski), [james.combes@nhs.net](mailto:james.combes@nhs.net) (J. Combes).

<sup>1</sup> Present address: Eastman Dental Institute, 256 Gray's Inn Rd, London WC1X 8LD.

mesioangular, leads to high rates of caries in the distal aspect of second molar teeth,<sup>1–6</sup> the prevalence remains unknown because previous studies, which have been based on patients referred to secondary care,<sup>3–8</sup> are inherently biased.

We have studied members of the British military who were treated in primary care. After an initial dental inspection on enlistment, all personnel have to attend regular dental inspections, which entail a clinical examination with standard dental charting, and a risk-based radiographic examination. All dental officers have their clinical practice audited every two years to ensure consistency in diagnostic approach, radiographic interpretation, treatment planning, and documentation.

We aimed to establish the incidence of distal caries in mandibular second molars and the association with mandibular third molars, and to find out the fate of these teeth among British military personnel.

## Material and methods

We retrospectively collected data from the records of military personnel registered at three primary care Defence Dental Service centres in the UK. Those who had been under 20 years of age at enlistment, and who had served for five years or more and had at least five documented dental inspections, were included.

We used dental charts (completed at each inspection) and radiographs (predominantly bitewings) to find out the incidence of caries in the distal surface of mandibular second molars. We recorded the age, decayed/missing/filled teeth (DMFT) index, and the eruption and impaction status of mandibular third molars at the time caries was diagnosed. The angulation of third molars was categorised using Winter's method.<sup>9</sup> Where radiographs were unavailable or insufficient for this method, angulation was recorded as unknown, unless there was a clear entry in the clinical notes.

We used the tenth Newcombe method to calculate confidence limits.<sup>10</sup> All other statistical analyses were done with the help of IBM SPSS Statistics for Windows, version 20.0 (IBM Corp, Armonk, USA). We used the chi square test to analyse differences between frequencies, and the Mann-Whitney U test to analyse differences between median values. Probabilities of less than 0.05 were considered significant.

The Ministry of Defence Research Ethics Committee deemed the study “service evaluation” so formal ethics approval was not required.

## Results

Of the 720 patients included, 125 (17%) were in the Royal Navy, 475 (66%) in the Army, and 120 (17%) in the Royal Air Force. There were 653 men (91%) and 67 women (9%). The median (IQR) age at initial dental inspection was 18 (17.0 - 18.9) years, the median (IQR) duration from the initial inspection to the last recorded inspection was 15.0 (9.7 - 19.2)

Table 1

Status of mandibular third molars and decayed/missing/filled teeth (DMFT) at time of diagnosis of distal caries in mandibular second molars.

Status of mandibular third molar	No. (n = 59)	Median (IQR) DMFT at diagnosis of caries
Partially erupted	29	6.0 (5.0 - 12.0)
Fully erupted	13	11.0 (9.0 - 14.0)
Unerupted	12	11.0 (5.0 - 11.3)
Previously removed	3	14.0 (11.0 - 15.5)
Congenitally absent	2	18.0 (16.0 - 20.0)

years, and the median (IQR) interval between inspections was 14.1 (12.8 - 15.8) months.

At the initial inspection, 26 of the possible 1440 mandibular second molars were missing. The overall prevalence of distal caries in second molars was 4.2% (59/1414) (Table 1). Patients were followed up for a median (IQR) of 7.7 (2.9 - 12.3) years; 14 teeth (23.7%) were removed at a median delay of 1.4 (0.3 - 2.6) years after caries had been diagnosed.

### Partially-erupted mandibular third molars

Cariou lesions were found in the distal surface of 29/414 (7%) second molars that were adjacent to partially-erupted mandibular third molars (visible clinically but not achieving full eruption during the study period, or before caries was noted). They occurred a median (IQR) of 3.6 (2.1 - 6.7) years after the third molar had partially erupted. The prevalence of distal caries in second molars was 4% greater when associated with a partially-erupted mandibular third molar (29/414, 7.0%) than when associated with one that was fully erupted or absent (30/1000, 3%) (95% CI 1.6% to 7.0%;  $p=0.001$ ).

The median age of the patients that were diagnosed with distal caries in second molars adjacent to partially-erupted mandibular third molars was 3.7 years greater than that of patients with distal caries in teeth associated with fully erupted, unerupted, or missing third molars (24.7 compared with 21.0 years; Mann-Whitney  $U=302.0$ ;  $p=0.044$ ). In patients with carious second molars that were associated with a partially-erupted third molar, the median DMFT score was five points lower than in those with distal caries that were associated with a third molar that was not partially erupted (6.0 compared with 11.0; Mann-Whitney  $U=291.0$ ;  $p=0.028$ ).

### Partially-erupted mesioangular third molars

Of the partially-erupted third molars that were associated with distal caries, 22/29 were mesioangular, and 18/29 were extracted a median (IQR) of 1.2 (0.3-1.9) years after caries had been diagnosed. Three of the 22 carious second molars associated with mesioangularly impacted third molars were extracted a median (IQR) of 2.6 (1.4 - 2.8) years after diagnosis of caries. The remaining 19 were recorded as present at the end of the study period, which was a median (IQR) of

Download English Version:

<https://daneshyari.com/en/article/5638621>

Download Persian Version:

<https://daneshyari.com/article/5638621>

[Daneshyari.com](https://daneshyari.com)