

# Rotational drift of mandibular third molar teeth: a series of four cases

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## ABSTRACT

Rotational drift of mandibular third molar teeth is a challenge for clinicians to predict and manage. Evidence on the incidence and degree of rotation is sparse. As the factors influencing rotation are not defined, prediction is impossible. A series of four cases with lower third molar rotation are presented and discussed. Significant rotation can alter the degree of difficulty for an extraction. A lack of well-documented cases has hindered investigation of this phenomenon. Further research is required to identify the aetiology, incidence and increase in risk factors caused by such rotational drift.

**Key words:** Rotation, third molar, case report, drift, oral surgery.

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## INTRODUCTION

It is accepted that mandibular third molars may cause symptoms necessitating their removal. The removal of asymptomatic or pathology-free mandibular third molar teeth is controversial. In 2000, the National Institute for Clinical Excellence<sup>1</sup> (NHS, United Kingdom) published guidance to practitioners, recommending against the removal of pathology-free third molars in the United Kingdom. A counter-claim has been made that waiting for pathology to cause damage is a lower standard of care when early preventive measures may be possible. This paper challenges the frequently held assumption that mandibular third molars do not alter position after hard tissue impaction. Previous publications report cases of mandibular third molars rotating throughout the second and third decade.<sup>2–7</sup> It is impossible from published data to draw conclusions about the frequency or causation of this phenomenon.

Pathology such as cysts and tumours of the mandible has been shown to feature displaced mandibular third molar teeth and in this situation the aetiology is obvious. However, when such pathology is absent, the aetiology of rotation and drift in third molar teeth is not understood. Francis<sup>4</sup> postulated that severe aggressive periodontal disease of the adjacent molars is a possible cause of third molar drift. Nance reported<sup>8</sup> that erupting mandibular third molar teeth were more

likely to have periodontal probing depths in excess of 4 mm and concluded that it is possible that pericoronal pathology, such as a dentigerous cyst or hyperplastic dental follicle, may be a cause.

The incidence in the population of rotating third molars is unknown. Sequential screening panoramic radiographs have been used to identify cases. Nance<sup>8</sup> examined a series of 237 patients to assess any change in third molar angulation. Over a median of 2.2 years, 26 per cent of impacted mandibular third molars changed angulation or position. In this study, there was no mention of the root development status; it might be expected that mandibular third molars with developing roots could have some eruptive potential and so change position over time. Movement after root formation is complete is more difficult to explain.

Hattab<sup>5</sup> conducted a follow-up study, using sequential panoramic radiographs to evaluate changes in angular position and eruption status of mesially impacted mandibular third molars. Forty-two per cent of teeth demonstrated eruption to full occlusion during the observation period. The author concluded that a significant proportion of mesially impacted mandibular third molars had changed their angulation to become fully erupted by age 24, and also that the positional change and eruption of impacted mandibular third molars is an unpredictable phenomenon.



Fig 1. Panoramic radiograph of patient A, age 18 years.



Fig 5. Panoramic radiograph of patient B, age 25 years.

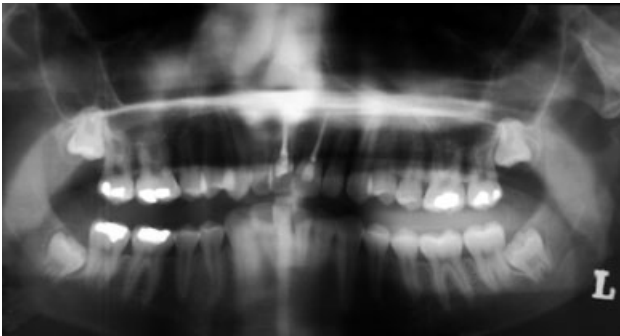


Fig 2. Panoramic radiograph of patient A, age 21 years.



Fig 6. Panoramic radiograph of patient C, age 20 years.



Fig 3. Panoramic radiograph of patient A, age 32 years.

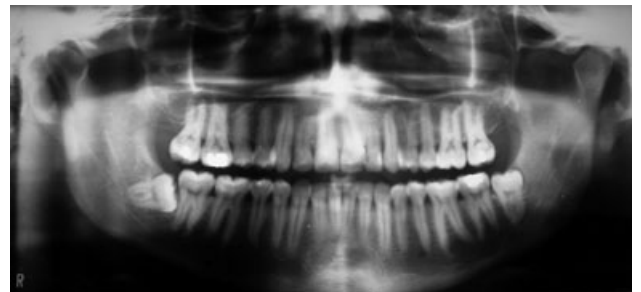


Fig 7. Panoramic radiograph of patient C, age 26 years.

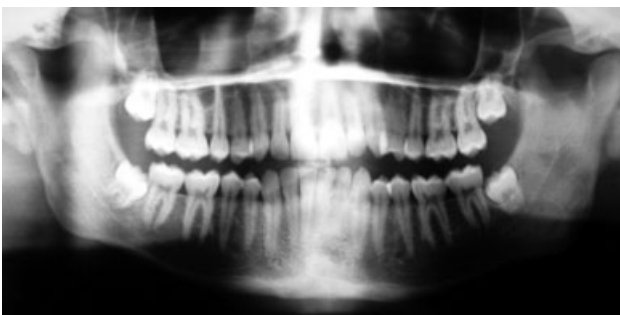


Fig 4. Panoramic radiograph of patient B, age 19 years.

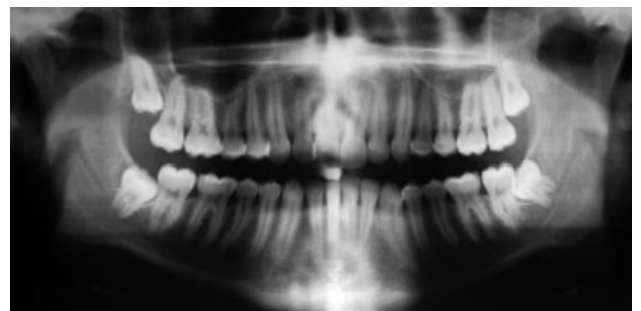


Fig 8. Panoramic radiograph of patient D, age 19 years.



Fig 9. Panoramic radiograph of patient D, age 28 years.

**Table 1. Radiographs, patient age and impaction status**

Patient				
A	Radiograph	1	2	3
	Age	18	21	32
	Impaction 38	mesioangular	mesioangular	horizontal
	Impaction 48	mesioangular	mesioangular	distoangular
B	Radiograph	4	5	
	Age	19	25	
	Impaction 38	mesioangular	horizontal	
	Impaction 48	mesioangular	distoangular	
C	Radiograph	6	7	
	Age	20	26	
	Impaction 38	mesioangular	distoangular	
	Impaction 48	mesioangular	distoangular	
D	Radiograph	8	9	
	Age	19	28	
	Impaction 38	mesioangular	distoangular	
	Impaction 48	mesioangular	horizontal	

The aim of this paper was to describe four cases of extreme rotational drift of mandibular third molars. The degree of tooth rotation is beyond the range of image variation expected from using a variety of panoramic radiograph machines. Each patient presented for consultation with an oral and maxillofacial surgeon, and brought previous panoramic radiographs taken by other clinicians (unknown). The vast majority of patients seen by this private surgical practice did not provide radiographs taken by previous dentists or surgeons. This limits the statistical value of calculating prevalence based on these four cases, as the opportunity to identify such cases is rare.

### CASE REPORTS

A series of four patients with sequential panoramic radiographs taken between age 18 and 32 were identified (Figs 1–9). The data and rotations are shown in Table 1.

All of the third molars that demonstrated rotational change were initially observed to be mesioangular impactions that rotated to either a horizontal or distoangular impaction. Root development was signi-

ficantly advanced prior to rotation, and no obvious pathology was observed to cause the rotation.

### DISCUSSION

Rotation of mandibular third molars can occur and is unpredictable. In this series all of the mesioangular impactions rotated to become either horizontal or distoangular impactions. These impactions are frequently more difficult to remove surgically, and may result in increased complications, especially with increasing age. Early treatment would be indicated for these cases where unwelcome rotation is occurring, especially if accompanied by symptoms or pathology. When surgical removal of mandibular third molars is planned, a recent radiograph is required to determine the position of each tooth. Patients in their second or third decade with impacted mandibular third molars should be regularly reviewed when surgical removal of these teeth is not planned.

### DISCLAIMER

The statements or opinions expressed in this paper reflect the views of the authors and do not represent the official policy of the Defence Health Service Branch.

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