AFRICAN JOURNAL OF MEDICINE and medical sciences

VOLUME 32, NO 1 MARCH 2003

EDITOR
B. O. OSOTIMEHIN

ASSISTANT EDITOR
A. O. UWAIFO

ISSN 1116—4077

Afr J. Med. med. Sci (2003) 32, 37-39

Transmigration of mandibular permanent canine in a Nigerian patient: presentation and management

OO Sanu* and MO Ogunlewe**

Department of Child Dental Health, Department of Oral and Maxillofacial Surgery **, College of Medicine, The University of Lagos, P.M.B. 12003, Lagos, Nigeria*

Summary

A rare dental anomaly - transmigration is presented in a 12-year-old female Nigerian who was referred for orthodontic assessment. A right mandibular canine was found completely located in the left side of the body of the mandible having moved ectopically and progressively from its normal developmental site through the symphysis of the mandible. The importance of the radiological diagnosis with the use of panoramic radiograph is highlighted and the management briefly discussed.

Keywords: *Transmigration, mandible, permanent, canine, ectopic, panoramic.*

Résumé

Un cas rare de transmigration d'anormalie dentaire est dècrit chez une female Nigèrianne, agèe de 12 ans , qui ètait pour une èvaluation orthodontique. Une canine dans la mandibule droite ètait complètement situè au cote gauche du corps de la mandibule ayant enlèvè ectopicallement et progrèssivement de la position normale de dèvelopment par la symphyse du mandible. L'importance du diagnostique radiologique avec l'emploi d'un radiographe panaronique est illustrè et le mènagement brèvement dècrit.

Introduction

Transmigration of the mandibular canine is considered to be extremely rare [1-4] and there are very few reports in the literature [1-12]. Transmigration refers to the movement of the unerupted tooth away from its normal developmental position across the midline (symphysis)[2,5]. Furthermore, a tooth can be said to have transmigrated if more than half of the tooth length has passed the midline to the opposite side [2,8]. Transmigration is an anomaly that is unique to the mandibular canine [2,4,11]. In some cases, a transmigrated tooth has been known to erupt into a normal position in the line of the arch and has been taken for supplemental canine [9]. The right side is more commonly affected than the left side, with females more affected than males [1,2,13].

Correspondence. Dr. O.O. Sanu, Department of Child Dental Health, College of Medicine of the University of Lagos, P.M.B. 12003, Idi-araba, Lagos, Nigeria. Tel: 01-7743151, 0803300120.
Email. tosinsanu@hotmail.com

The rarity of this condition is due to the fact that it cannot be easily diagnosed with the use of routine intra-oral radiographs - bitewings and periapicals. The advent of the technique of panoramic radiography and the technique becoming widespread among dental practitioners [1,2] has led to a change in the ideas regarding the rarity of this condition. This radiographic technique has reportedly resulted in more cases of transmigration being observed [2,5]. Transmigration is of sufficient interest especially in our environment, where to our knowledge, there has never been any previous report.

Presentation

FA, a 12-year-old girl, reported to the Oral Diagnosis Clinic of the Dental Clinic of the Lagos University Teaching Hospital with a desire to rearrange her teeth and was referred for orthodontic assessment at the Orthodontic Clinic of the same hospital.

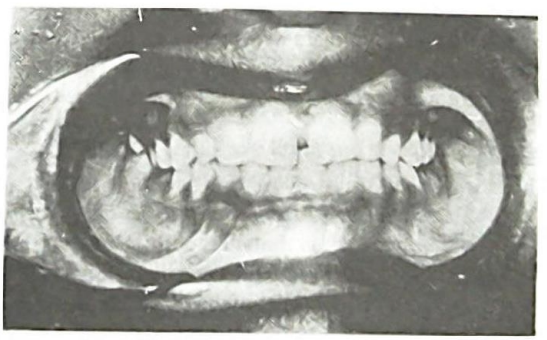

Fig. 1a: Intra-oral view (anterior).

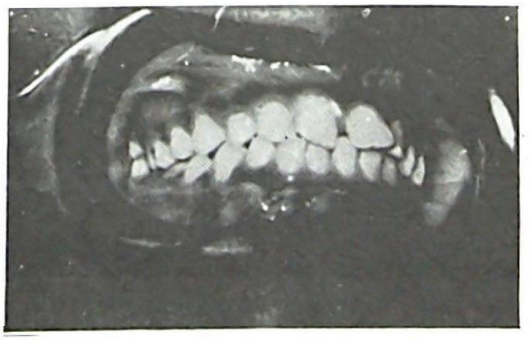

Fig. 1b: Intra-oral view (left side).

Oral examination revealed a full complement of the teeth except the third molars, maxillary permanent canines and right mandibular permanent canine (Fig. 1). The primary maxillary and right mandibular canines were present. All the erupted teeth were in normal alignment but for the maxillary central incisors that were slightly distolabially rotated with slight crowding of the mandibular lateral incisor. The patient's medical history was non-contributory.

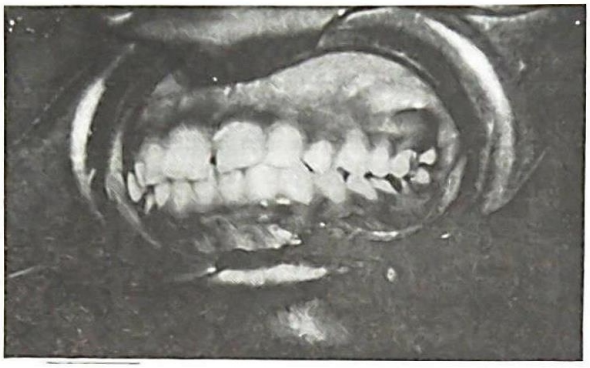

Fig. 1c: Intra-oral view (right side).

Periapical radiograph did not reveal the presence of any unerupted tooth. A panoramic radiograph however, was ordered and it revealed the permanent mandibular right canine very close to the lower border of the mandible on the left side (Fig. 2). It lay across the roots of the mandibular left premolars with the apex situated between the mandibular lateral incisor and canine. There was a translucent area around the crown of the transmigrated canine.

Management

The surgical extraction of the transmigrated right mandibular canine was carried out in the Oral Surgery Clinic of the Lagos University Teaching Hospital under local anaesthesia. Although the transmigrated tooth was lying close to the lower border of the mandible, the surgery was carried out using the intra-oral approach so as to remove the effect of facial scarring.

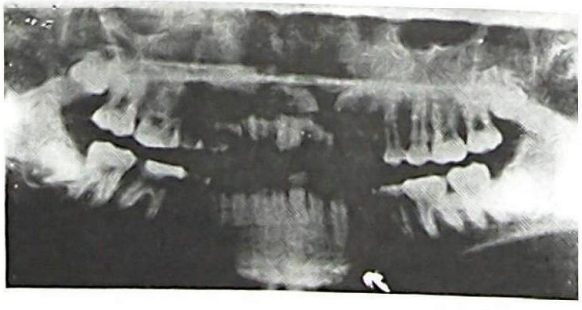

Fig. 2: Panoramic radiograph of patient in Figure 1 showing the transmigrated lower right permanent canine lying across and far below the roots of lower left lateral incisor, canine and permanent premolars. Note its position at the lower border of the mandible.

The inferior alveolar nerve on the left side was blocked using 2% Xylocaine with 1:80,000 adrenaline. A mucoperiosteal flap was raised after a para-gingival incision was made. The overlying cortical bone was removed with the use of a bur and the whole crown of the tooth was exposed. The tooth was elevated and removed with molar forceps. The socket was irrigated, haemostasis achieved, and closed with black silk suture. During the elevation of the tooth, the patient complained of pain and the inferior alveolar nerve on the right side had to be blocked before the tooth could be elevated. The procedure was well tolerated by the patient and was uneventful.

Discussion

The presence of two mandibular permanent canines on one side of the mandible, one in normal occlusion and the other across the arch raises a question as to whether the latter is a supplemental canine or a transmigrated one [2]. A tooth is said to have transmigrated if it has crossed the midline with more than half of it moving away from its developmental position [2,5,8].

Furthermore such tooth is believed to carry its own innervations along with it across the arch [2,5,14]. This has been proved by the fact that attempted removal of the transmigrated tooth during inferior alveolar nerve block of the side where the tooth was elicited pain on the opposite side from where it had originated [2,5,6 14,15]. Such was the presentation in our patient. Having blocked the inferior alveolar nerve on the left side, the patient did not feel pain during the incision and raising of the mucoperiosteal flap but she however felt pain that radiated to the right side during the attempted elevation of the tooth; and subsequently the inferior alveolar nerve on the right side had to be blocked before the tooth could be extracted.

This made us to believe the tooth was an unerupted right mandibular permanent canine that had migrated across the midline into the body of the left side of the mandible and had maintained its nerve fibres from the right trigeminal nerve. Some studies have also confirmed that the pulpal innervations of transmigrated tooth are derived from the opposite side [9,15].

The aetiology and exact mechanism of transmigration is not fully understood, though tumours, cysts, odontomes, supernumeraries, crowding and early loss or retained primary canines have been implicated [2,11]. Kaufman and Buchner [6] in a report believed that migration was due to ectopic growth of the tooth bud, which developed buccally and thus permitted the tooth to migrate without disturbance. However, abnormal displacement of the tooth bud in embryonic life is a commonly accepted explanation [1]. In the present study, the transmigration may have been associated with the retained primary mandible right canine. Joshi [1] confirmed this finding where he reported in his study that transmigration has been associated with

prolonged retention of the deciduous canine. However, a supernumerary tooth was the aetiology in another reported study [13]. It was concluded in another study that the canine transmigration phenomenon appears to show signs of having some genetic determinants [4].

In 1957, Burst was quoted to have formulated a theory concerning migration of the canine to the opposite side and presented a diagrammatic illustration of the process [6]. This theory was confirmed by another study, which reported success in tracing the process of migration by periodic radiographs and study models. They followed the canine migration over a period of eight years and they obtained radiographs showing the step-by-step migration. Thus, they could prove that the canine really migrated [6], moving through the body of the left side of the mandible through the symphysis and over to a stop beneath the mental foramen on the opposite side [5].

In the past, transmigration was considered to be a rare occurrence [1-4]. This was thought to be so because the condition lies just outside the limits of the usual radiographic survey. Some authors have demonstrated this phenomenon with the use of panoramic radiograph [2,3,5,14]. In our case the periapical radiograph did not demonstrate the presence of the right permanent mandibular canine. This prompted the authors to request panoramic radiograph, which showed the tooth lying across the arch on the lower border of the mandible on the left side. With the advent of panoramic radiograph the authors now know that the condition may not be rare after all, but that it is just rarely reported.

Conclusion

Unusual delay in eruption of permanent canines should be viewed with great suspicion and would therefore necessitate radiographic investigation. It is recommended that a panoramic x-ray of the jaws be taken to visualize the complete mandible and maxilla. Where possible intra-oral approach is recommended in surgical removal of transmigrated teeth in order to prevent facial scarring.

Pain during surgical removal of a transmigrated tooth without blocking the nerves of the affected side confirms the theory that the tooth retains its original nerve supply from the opposite side of the jaw from where it has migrated.

References

1. Joshi MR. Transmigrant mandibular canines: a record of 28 cases and a retrospective review of the literature. Angle Orthod 2001; 71: 12-22.
2. Costello JP, Worth JC, Jones AG. Transmigration of permanent mandibular canine. Br Dent J 1996; 181: 212-213.
3. Joshi MR, Shetye SB. Transmigration of mandibular canines: a review of the literature and report of two cases. Quintessence 1994; 25: 291-4.
4. Peck S. On the phenomenon of intraosseous migration of nonerupting teeth. Am J Orthod Dentofacial Orthop 1998; 113: 515-7.
5. Tarsitano JJ, Wooten JW, Burditt JT. Transmigration of nonerupted mandibular canines: report of cases. JADA 1971; 82: 1395-1397.
6. Kaufman AY, Buchner A. Transmigration of mandibular canine: report of a case. Oral Surg Oral Med Oral Pathol 1967; 23: 648-650.
7. Stafne EC. Malposed mandibular canine. Oral Surg 1963; 16: 1330.
8. Javid B. Transmigration of impacted mandibular cuspids. Int J Oral Surg 1985; 14: 547-549.
9. Bruszt P. Neurologic anomaly associated with extreme malposition of a mandibular canine. Oral Surg Oral Med Oral Pathol 1958; 11: 89-90.
10. Pratt RJ. Migration of canine across the mandibular midline. Br. Dent J 1969; 126: 463-464.
11. Shanmuhasuntharam P, Boon LC. Transmigration of permanent mandibular canines. Case report. Aust Dent J 1991; 36: 209-213.
12. al-Waheidi EM. Transmigration of unerupted mandibular canines: a literature review and a report of five cases. Quintessence Int 1996; 1: 27-31.
13. Alaejos-Algarra C, Berini-Aytes L, Gay-Escoda C. Transmigration of mandibular canines: report of six cases and review of the literature. Quintessence Int 1998; 29: 355- 8.
14. Fiedler LD, Alling CC. Malpositioned mandibular right canine: report of case. J Oral Surgery 1968; 26: 405- 407.
15. Caldwell JB. Neurological anatomy associated with extreme malposition of mandibular canine. Oral Surg Oral Med Oral Pathol 1955; 8: 484-487.