

AUSTRALASIAN EDGEWISE STUDY GROUP: THREE CASE REPORTS

AUTHORS

G.J. Moore, B.D.S. (Adel.), M.S.D. (Washington)
R.J. Pedley, B.D.Sc. (Qld.), Cert. Orth. (Oregon)
E.C. Crawford, M.D.Sc. (Melb.), L.D.S. (Vic.)

At a recent meeting of the Australasian Edgewise Study Group it was decided to submit three case reports to this Journal, including the winner of The Steven Seward Memorial Award. Each of the cases refers to a different aspect of cuspid involvement in malocclusions that have been successfully treated.

CASE REPORT No.1

Non-Extraction Treatment of a Class II Malocclusion including Horizontal Lower Cuspid Impaction.

Author:

GRAHAME J. MOORE
B.D.S. (Adel.), M.S.D. (Washington)

Introduction

The position of the lower left canine within the chin complicated the correction of a Class II Division 2 malocclusion.

Three treatment alternatives for the canine were considered:

1. remove
2. uncover and align
3. transplant.

Medical and Dental History

The patient was a female aged 11 years and 5 months who had no relevant medical history.

Following an initial consultation, and in light of the Class II pattern, no treatment was recommended and the patient was placed on 18 months recall.

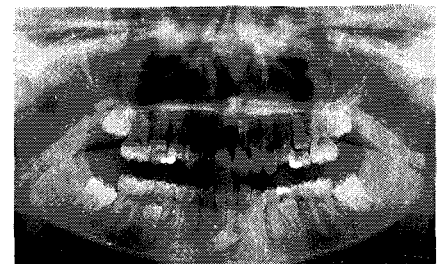


Fig. 1. Horizontal impaction, lower left canine.

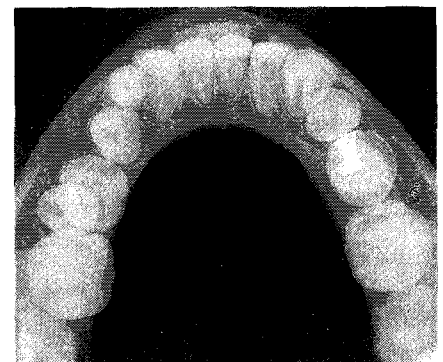


Fig. 2. Horizontal impaction, lower left canine.

The patient was seen again in 1986, and then in February 1988 when she was 11 years and 5 months. Delayed eruption of the lower left canine was noted. Radiographs revealed horizontal impaction of this tooth (Fig. 1, 2).

Orthodontic records were obtained (Fig. 3-8).

Radiographic Evaluation

The cephalometric radiograph (Fig. 8) showed a convergent orthognathic pattern with a low mandibular plane angle. Both upper and lower incisors were retroclined.

Panoramic and true occlusal radiographs (Fig. 1, 2) showed all teeth developing except the lower right third permanent molar. Retained deciduous



Fig. 3. Pre-treatment facial photograph.



Fig. 4. Pre-treatment facial photograph.

second molars were wider than the unerupted premolars indicating adequate arch length.

The lower left canine was lying horizontally within the anterior portion of the mandible and anterior to the incisor root apices. Its crown tip was to the right of the mandibular midline. Follicular dilatation around the crown was suggestive of a dentigenous cyst. Root structure of the lower incisors appeared normal.

Intra-oral Examination

The patient was in the late mixed dentition stage with deciduous second molars present and near to exfoliation (Fig. 5-7).

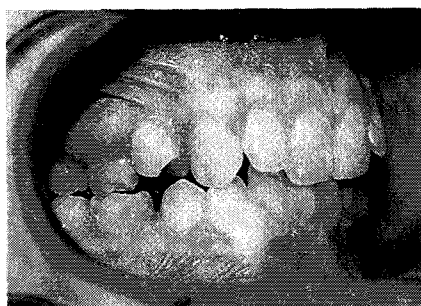


Fig. 5. Pre-treatment intra-oral photograph.

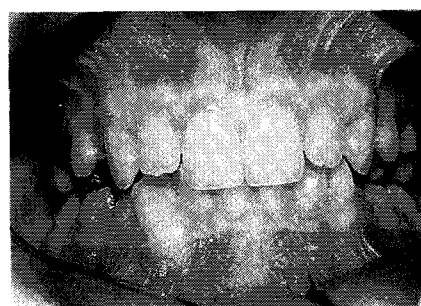


Fig. 6. Pre-treatment intra-oral photograph.

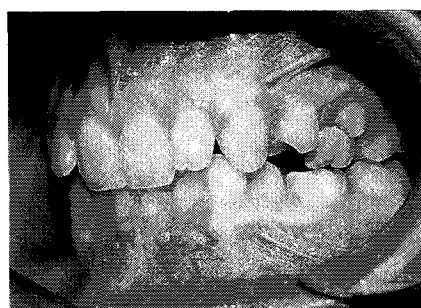


Fig. 7. Pre-treatment intra-oral photograph.

The dentition was classified as Class II Division 2 with a 5 mm overbite and 2 mm overjet.

The maxillary arch had a square form with delayed loss of the upper left second deciduous molar causing buccal eruption of the upper left second bicuspid. Buccal eruption of both upper first bicuspid resulted in scissor bites against both of the lower first bicuspid.

The crowding of the lower anterior segment was due to lingual collapse of the lower incisors. Arch length appeared satisfactory. The lower left deciduous canine was retained.



Fig. 8. Pre-treatment lateral cephalometric headfilm.

Diagnosis and Treatment Plan

A convergent orthognathic facial pattern was related to a Class II Division 2 malocclusion. The horizontal impaction of the lower left canine complicated the malocclusion.

The treatment plan was dictated by the position of the lower left canine.

The following alternatives were considered:

1. extract the lower left canine and retain the lower left deciduous canine
2. uncover and align the lower left canine
3. transplant the lower left canine.

An oral surgeon's opinion was sought prior to commitment to treatment.

The treatment chosen after consultation with the patient, parents and oral surgeon was:

- i) extract all second deciduous molars
- ii) fit fixed Edgewise appliances
- iii) uncover the lower left canine while retaining the lower left deciduous canine until movement of the permanent canine is confirmed.

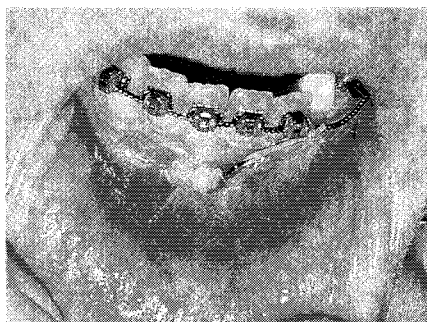


Fig. 9. November 1989 - Elastic thread to 33.

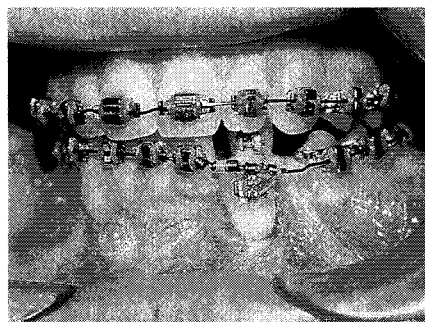


Fig. 12. August 1991 - 0.022 bracket bonded.



Fig. 10. April 1990 - Progress.

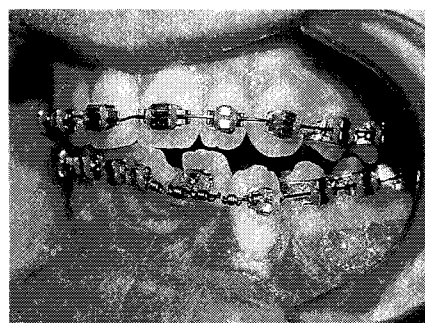


Fig. 13. April 1992 - 0.020 archwires placed.



Fig. 11. June 1991 - Decision to extract 73.



Fig. 14. September 1992 - Torque to 33.



Fig. 15. Post-treatment facial photograph.



Fig. 16. Post-treatment facial photograph.

Progress of Treatment

February 1989: extraction of deciduous molars.

March 1989: 0.022 x 0.028 Edgewise appliances placed with 0.0175 braided round archwires.

June 1989: 0.016 round archwires - referral to oral surgeon for uncovering of the lower left canine.

July 1989: elastic thread (ET) to the lower left canine.

November 1989: 0.018 x 0.025 braided archwire and ET to the lower left canine - offset the lower left central and lateral incisor lingually (Fig. 9).

April 1990: periapicals of the lower left central incisor, the lateral incisor and the lower left canine continuing ET to the lower left canine (Fig. 10).

June 1991: letter to dentist to extract the lower left deciduous canine (Fig. 11).

August 1991: bracket bonded to the lower left canine, 0.014 round archwire fitted. Uprighting continued (Fig. 12).

April 1992: 0.020 round archwires placed (Fig. 13).

May 1992: 0.021 x 0.021 archwires with lingual root torque to the lower left canine.

September 1992: 0.021 x 0.025 nitinol mandibular archwire with lingual root torque to the lower left canine (Fig. 14).

February 1993: Appliances removed (Fig. 15-19).

Maxillary Hawley retainer and Mandibular Dohner splint fitted.

Full time wear for six months.

March 1993: Lateral head and OPG radiographs taken (Fig. 20-21). Recommended: removal of the upper right, upper left and lower left third molars.

Considered: Section arch mechanics in 1994 to upright the lower left second molar.

September 1993: Night-time retainer wear continuing.

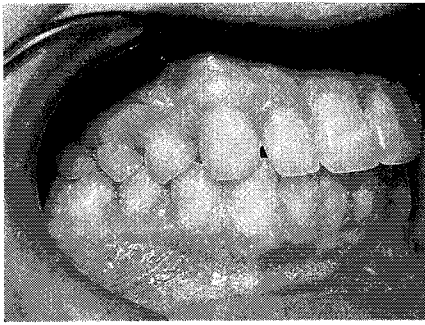


Fig. 17. Post-treatment intraoral photograph.



Fig. 18. Post-treatment intraoral photograph.

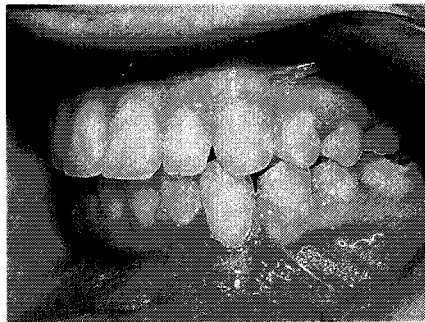


Fig. 19. Post-treatment intraoral photograph.



Fig. 20. Post-treatment lateral cephalometric headfilm.

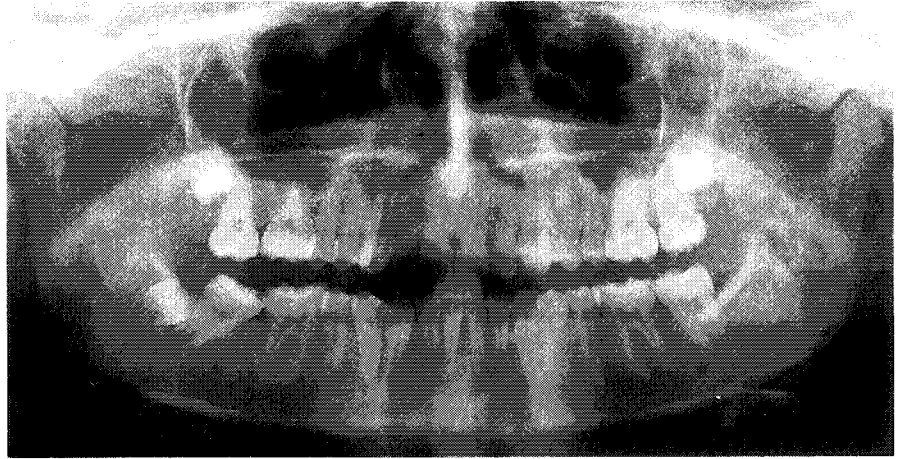


Fig. 21. Post-treatment OPG radiograph.

Comments

Alignment of a horizontal lower left mandibular canine and correction of a Class II Division 2 malocclusion was achieved; however, treatment time was prolonged: 3 years 11 months. Gingival health of the lower left canine needs to be watched with the possibility of a gingival graft to improve attachment.

Torque control of the positions of the lower right central incisor, the lower right lateral incisor, the lower left central incisor and the lower left lateral incisor during uprighting of the lower left canine was essential. This produced lingual positioning of the roots of the lower incisors to allow uprighting of the canine across the arch without root damage.

Resolution of the impacted third molars and uprighting of the lower left second molar is to be undertaken in 1994.