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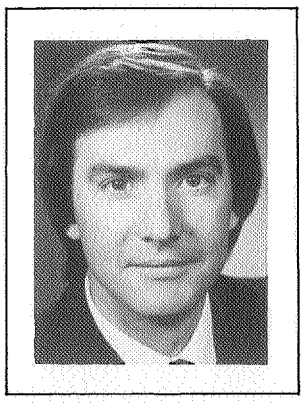
# Skeletal Anchorage Utilising Bone Plates



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**Abstract:**
Skeletal anchorage may be obtained by bone plates in the ramus, to provide the reciprocal forces required in some orthodontic procedures. Distallising of a lower molar in a crowded buccal segment is described in a Case Report.

**Reference:** Aust. Orthod. J. 9(2): 231-233 (1985)

**Keywords:** skeletal anchorage

## INTRODUCTION

A crowded buccal segment may provide special treatment difficulties where,

1. Anterior arch expansion is unacceptable
2. Removal of a tooth is contra-indicated
3. Absence of posterior teeth, insufficient posterior teeth or where unsuitable posterior teeth exist for distal anchorage in the mandible or maxilla
4. Headgear is not possible or desirable (perhaps in respect to a patient's age and/or psychology)
5. Surgical distal repositioning of an individual segment may not be feasible

Insertion of a surgical bone plate containing two or three screws into the ramus, provides a long term anchorage base from which a 24 gauge wire loop passes into the mouth; orthodontic wires or elastics are connected to this loop.

The bone plate may be more conveniently inserted into a patient requiring a general anaesthetic for other purposes such as the removal of impacted third molars and/or osteotomy procedures. Under these circumstances the placement of a bone plate inflicts little additional trauma on the patient.

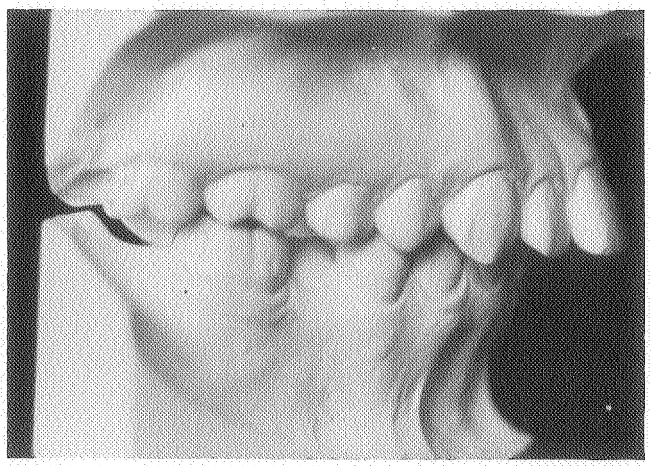

Figure 1. Pretreatment buccal occlusion

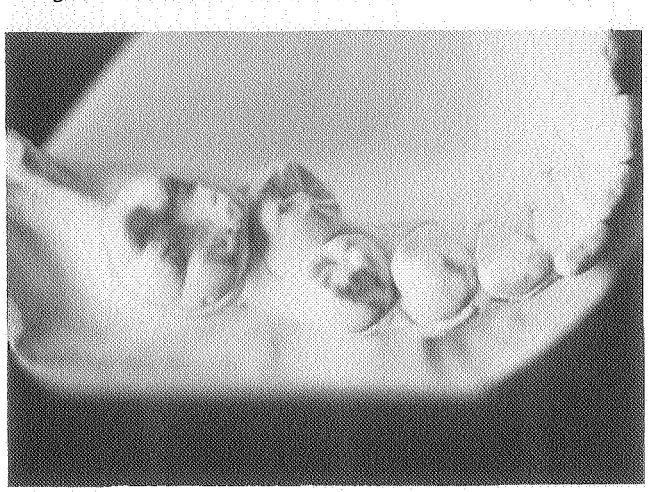

Figure 2. Pretreatment occlusal view (lower right)

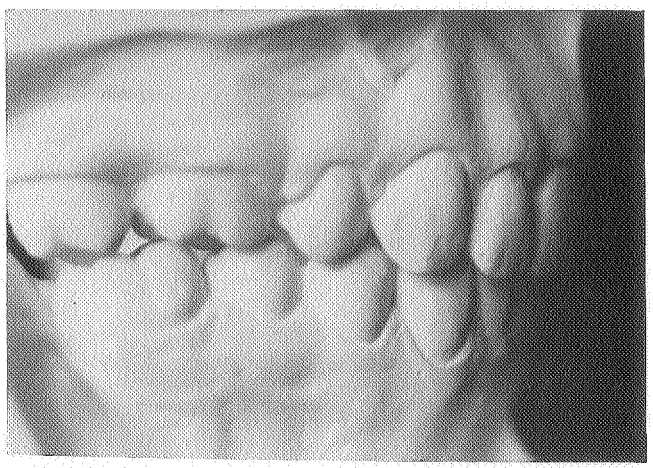

Figure 3. Post treatment buccal occlusion

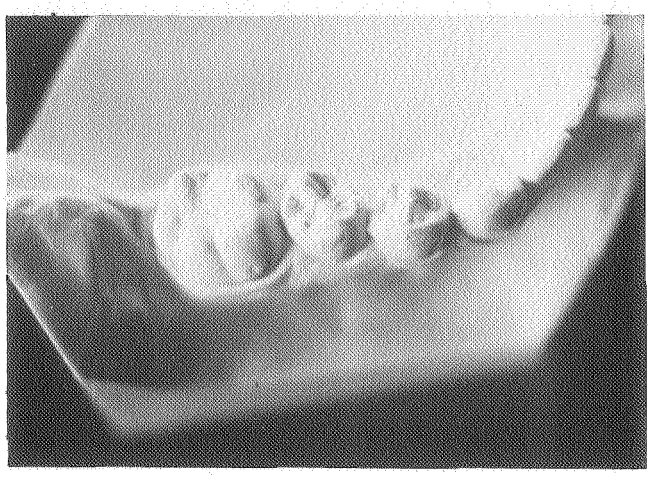

Figure 4. Post treatment occlusal view (lower right)

* Maxillo-facial surgeon, Adelaide

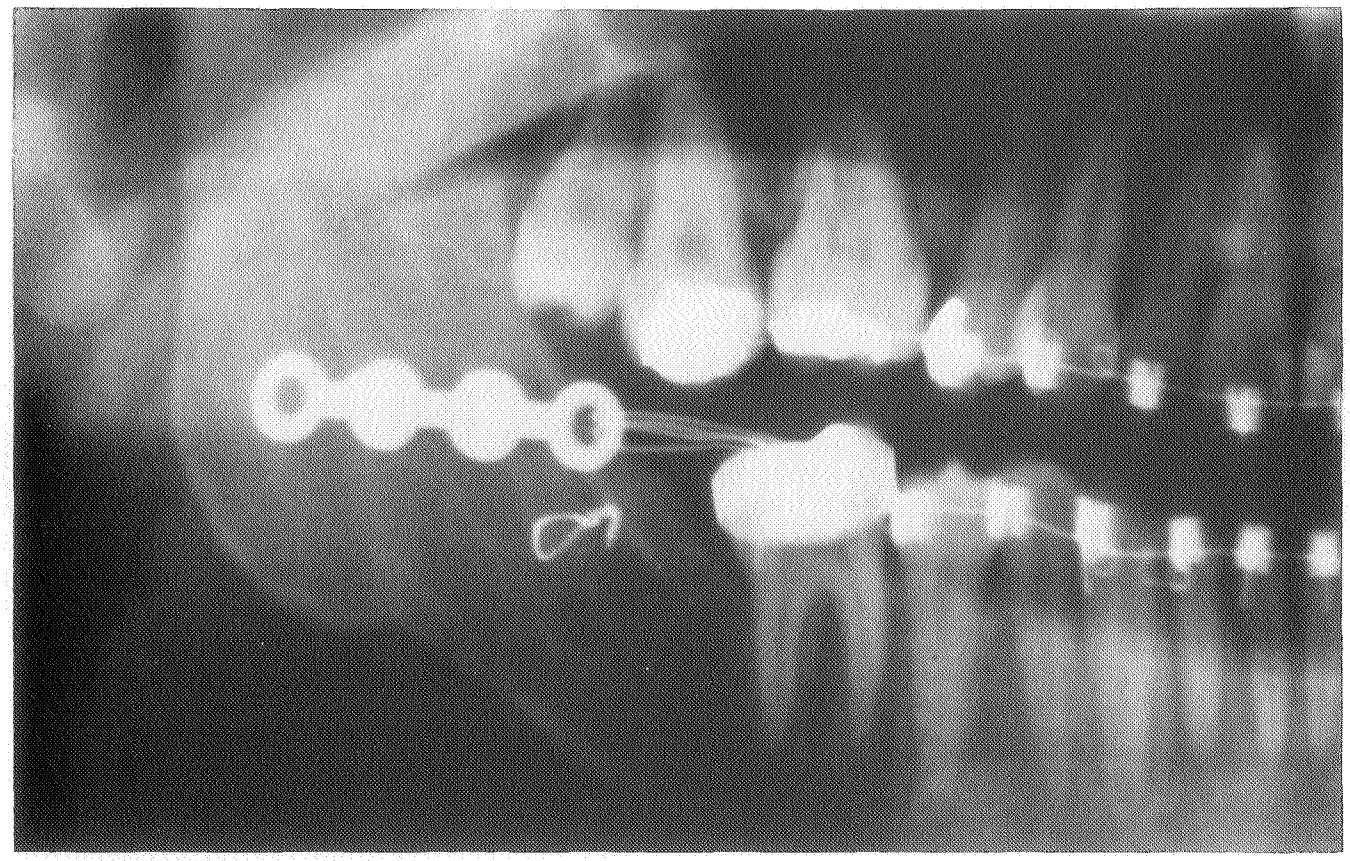

Figure 5. Radiograph, showing 'Peri' bone plate in the ramus with a wire ligature providing the orthodontic attachment

The removal of the bone plates may be performed under L.A. in a tolerant patient but normally requires a general anaesthetic on a day hospital basis.

*In a series of three cases there has been no complications such as looseness of the plate or infection in the site.*

## CASE REPORT

A female, aged 30 years, sought orthodontic treatment for her prominent upperteeth.

Orthodontic reduction of the 10mm overjet with removal of upper first premolars was possible, but difficult. However, surgery to advance the mandible was agreed to because of the social demands of a long adult orthodontic treatment, the short roots of the upper central incisors and in particular, the serious risk of compromise in the patient's soft tissue profile.

The residual problem was the crowding of the lower right buccal segment with lingual displacement of the second premolar and previous loss of the second and third molars *(Figures 1 and 2)*. Space provided by arch expansion, proclination of anterior teeth, tooth width reduction and extraction were considered undesirable. The orthodontic writer, intending to use coil spring and class III elastic mechanisms to move the first molar distally, expressed his wish for some suitable extra-dental anchorage.

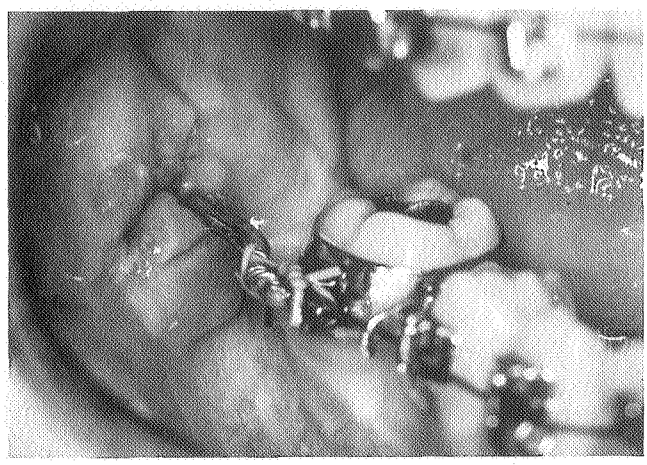

Figure 6. Post surgery orthodontics demonstrating distal molar mechanics, using a wire ligature from the bone plate

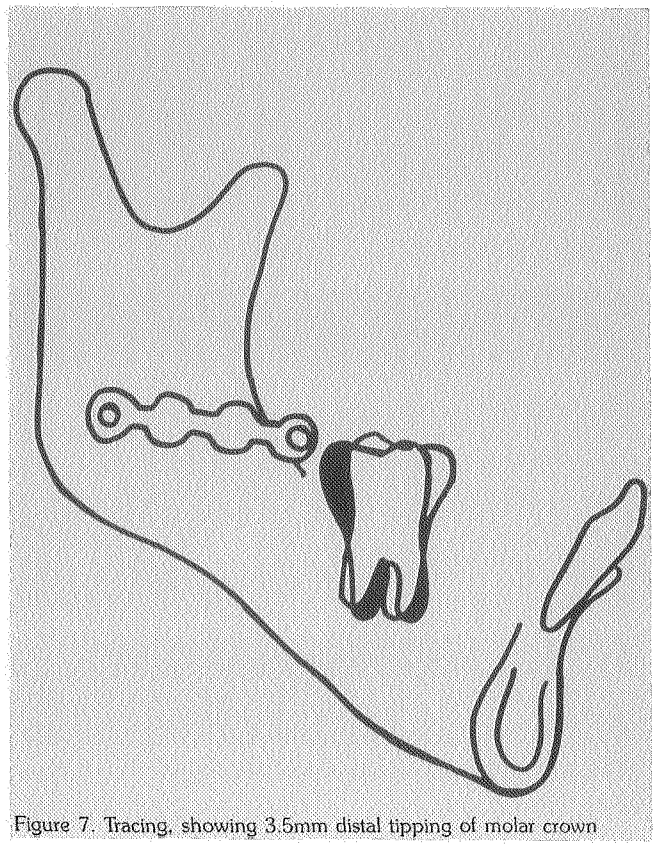

Figure 7. Tracing, showing 3.5mm distal tipping of molar crown

A solution to the problem was provided by means of a 'Peri' bone plate *(Figure 5)* inserted into the ramus at the time of a sagittal split performed to advance the mandible.

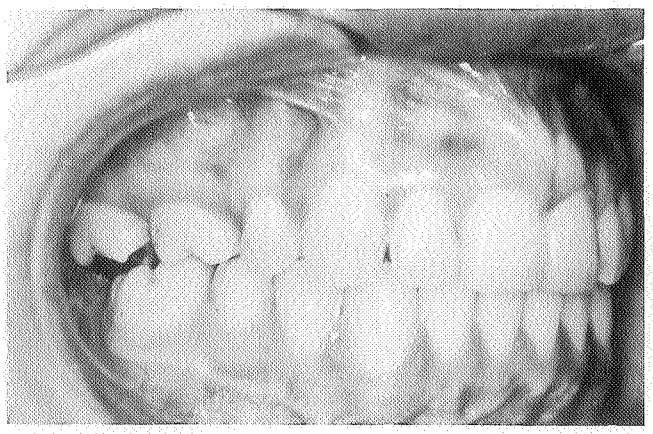

Figure 8. Post treatment occlusion - clinical photograph

Following a period of inter-maxillary fixation, orthodontic treatment was commenced, using elastic thread to apply a distal force to the first molar *(Figure 6).*

After five months, a 3.5mm distal movement of the lower right first molar was achieved *(Figure 7).* This provided the necessary space for alignment of the second premolar and an occlusal contact for the over erupted upper second molar *(Figures 3 and 4).* As a consequence, the buccal occlusion and the stability of anterior alignment were not compromised *(Figure 8).*

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