

# TREATMENT OF A MUTILATED DENTITION WITH THE MANDIBULAR PROTRACTION APPLIANCE: A PATIENT REPORT

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*A 35-year-old female presented missing her maxillary right first premolar, left central and lateral incisors, and left second premolar and mandibular left first molar. The referring dentist had requested that only the maxillary left first molar be intruded to facilitate the prosthodontic replacement of the missing mandibular left first molar. After clinical examination and consultation with her dentist, it was decided to protract the mandibular left second and third molars, intrude the maxillary left first molar, replace the missing incisors with a temporary partial denture, and restore the missing maxillary right first premolar with an implant. World J Orthod 2009;10:378–382.*

**Key words:** MPA, missing teeth, partial denture

Adult patients offer challenges for the orthodontist seldom seen in adolescents: Because of their age and dental history, they often present with missing teeth, restorations, and compromised periodontal conditions. This 35-year-old female with a Class I occlusion was missing multiple teeth, had an extruded maxillary left first molar and mesially tipped mandibular left first and second molars, and displayed isolated periodontal problems. Her general dentist had referred her for intrusion of the maxillary left first molar to facilitate a prosthodontic replacement of the missing mandibular left first molar. The missing maxillary left incisors created a big esthetic problem for orthodontic therapy.

## INTRAORAL FINDINGS

After a clinical examination, the following symptom list was compiled (Fig 1):

- Class I occlusion
- Deep anterior overbite with moderate anterior overjet
- Slight midline shift
- Multiple missing teeth
- Extruded and periodontally compromised maxillary left first molar
- Generalized attachment loss
- Mesially tipped mandibular left first and second molars
- Root canal filling of the mandibular left second premolar
- Straight profile
- Frequently locked temporomandibular joints (TMJs) upon awakening

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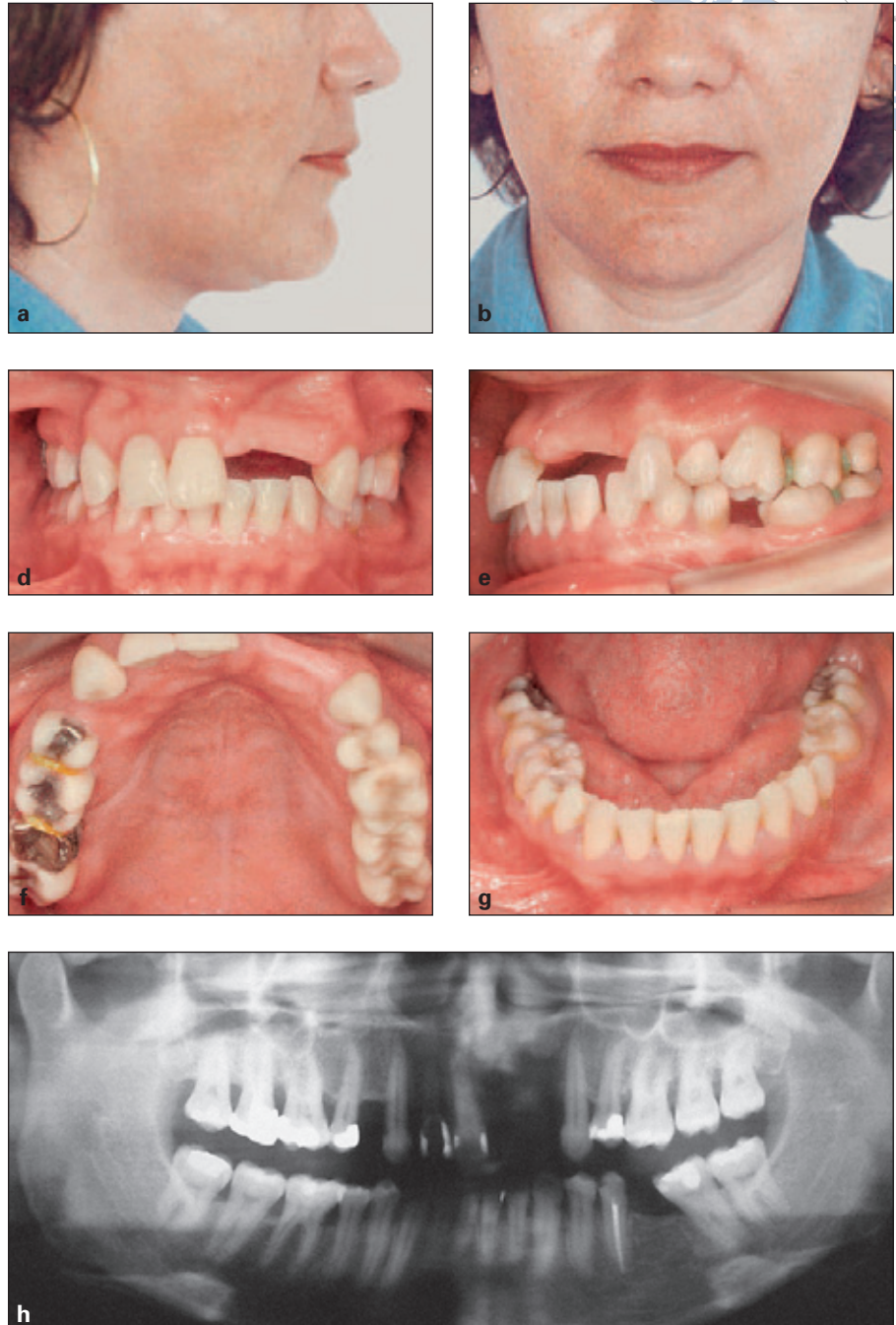
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**Fig 1** Patient before therapy (**a and b**) with a straight profile; (**c to g**) a deep anterior overbite with a moderate anterior overjet, a slight midline shift, multiple missing teeth, an extruded and periodontally compromised maxillary left first molar; and (**h**) a generalized attachment loss, mesially tipped mandibular left first and second molars, and a root canal filling of the mandibular left second premolar.

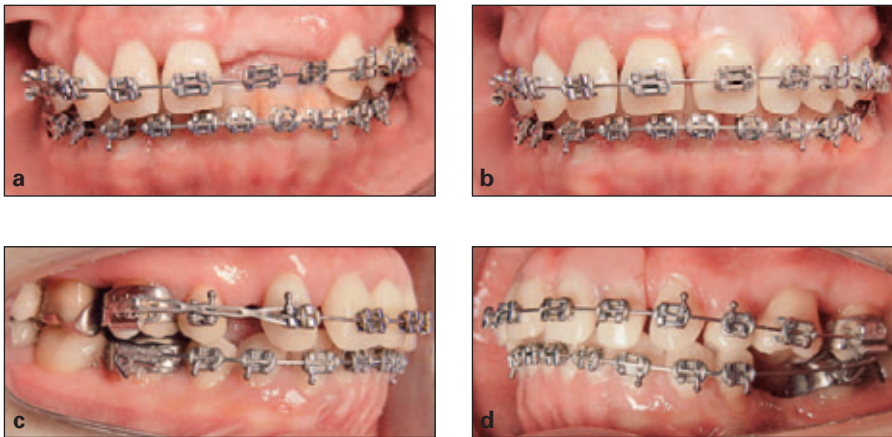


## TREATMENT OBJECTIVES

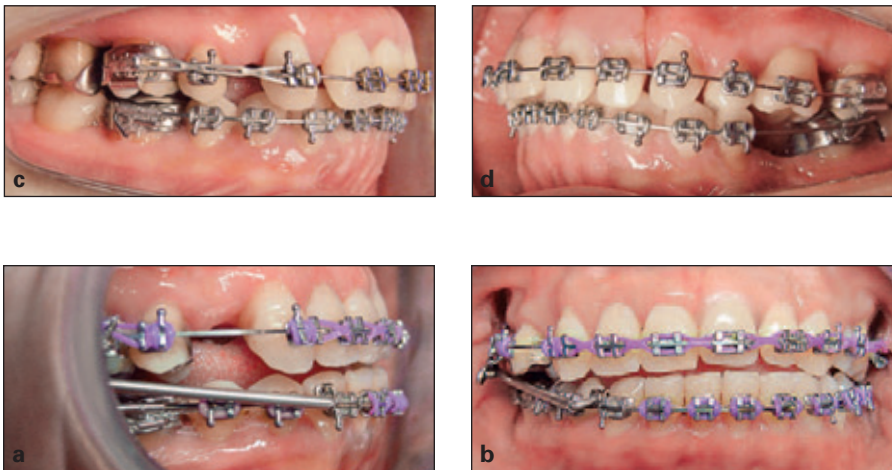
A prime task prior to orthodontic therapy was to establish normal periodontal conditions. Rather than uprighting and retracting the mandibular left first and second molars, these teeth were protracted using a closing arch and a mandibular protraction appliance (MPA). This procedure for successful posterior space

closure is described in the literature.<sup>1-3</sup>

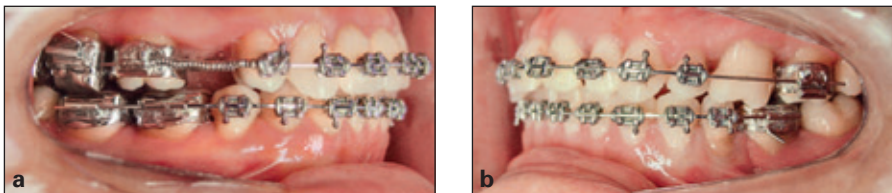
The maxillary left first molar had to be intruded, and the maxillary right second premolar was to be moved mesially into the area of the first premolar so an implant could replace the second premolar. The missing maxillary left central and lateral incisors were to be replaced by a partial denture with brackets.



**Fig 2** Intraoral situation after placement of a standard 0.022-inch twin bracket system. Figure 2a shows the situation after the brackets were placed on the archwire, while Fig 2b shows the situation after they were bonded to the denture.



**Fig 3** Intraoral situation after leveling and aligning. Placement of an archwire with a closing loop on the left side to protract both molars and insertion of an MPA on the right side to reinforce anchorage in the mandible.



**Fig 4** Intraoral situation after protraction of the mandibular left molars and moving the maxillary right second premolar into the first premolar's position.

## TREATMENT ALTERNATIVES

One alternative would have been to remove the maxillary left first molar so the second and third molars could move forward. However, the periodontist counseled against this approach because of the poor osseous condition in that area. Also, the missing maxillary right first premolar could have been replaced by an implant, but as treatment progressed, the periodontist decided to move the second premolar mesially with a compressed coil spring. Thus, a better implant site was accomplished in the original position of the second premolar.

## TREATMENT PROGRESS

Standard 0.022-inch twin brackets were placed on all teeth except for the molars, which received bands. Brackets for the denture were initially attached to the archwire; after insertion of the partial denture, they were bonded to the artificial teeth (Fig 2).

After leveling and aligning, an archwire with only one closing loop on the left side was placed in the mandible (Fig 3). At the same time, an MPA was inserted on the right side to reinforce the anchorage in the mandible. Figure 4 shows the situation after the mandibular left molars were protracted and the maxillary right second premolar moved into the first premolar's position.

**Fig 5** Situation at the end of treatment. **(a and b)** Unchanged profile. **(c to g)** Bilateral Class I canine occlusion with a Class I molar occlusion on the right and a Class II occlusion on the left side, good overbite and overjet, and midline correction. The maxillary right second premolar was replaced by an implant with a crown, and the partial denture was still in place. **(h)** The panoramic radiograph reveals parallel root orientation and no pathologies.



## RESULTS

At the conclusion of treatment, the patient displayed an unchanged profile, a bilateral Class I canine occlusion with a Class I molar occlusion on the right and a Class II occlusion on the left side, good overbite and overjet, and a midline correction

(Fig 5). The maxillary right second premolar was replaced by an implant with a crown. The patient was to keep the partial denture until her dentist determined what the optimal final restoration of this area would entail. The patient no longer suffers from TMJ symptoms.

## DISCUSSION

Protracting mandibular posterior teeth is complicated because the anterior teeth may move too far distally. The MPA is proven to prevent this and therefore became an integral part of this patient's treatment plan. Herbst appliances, Jasper jumpers, or Forsus springs could provide the same stability for the mandibular anterior teeth. The many dental deficits of this patient necessitated a multidisciplinary approach (periodontist, restorative dentist, and orthodontist).

## CONCLUSION

After 20 years of author use that demonstrates high levels of efficiency in the treatment of several orthodontic problems, the MPA shows once again how versatile a tool it can be as a part of the orthodontic armamentarium.

## REFERENCES

1. Coelho Filho CM, White LW. Treating adults with mandibular protraction appliance. *Orthod Cyber J*. 2003; <http://www.oc-j.com/jan03/MPA2.htm>.
2. Coelho Filho CM. Emprego do aparelho de protração mandibular. In: Grupo Brasileiro de Professores de Ortodontia e Odontopediatria. 9<sup>o</sup> Livro Anual do Grupo Brasileiro de Professores de Ortodontia e Odontopediatria, ed 1. São Paulo: IMC - Image Maker Comunicações, 1997:122-129.
3. Coelho Filho CM. Mandibular protraction appliance IV. *J Clin Orthod* 2001;35:18-24.

