TECHNIQUE CLINIC

Uprighting an Impacted Second Molar with a Spring Anchored to a Composite Support

This article describes the use of a removable orthodontic appliance with a specially designed spring, anchored to a composite support, to upright a severely impacted second molar.

Procedure

The following procedure was performed in an 11-year-old female patient with radiographically confirmed mesial impaction of the mandibular left second molar (A):

1. The distobuccal cusp of the impacted molar was exposed, and a cast was then made of the full dental arch.
2. A removable orthodontic appliance with an uprighting spring was fabricated from .028" stainless steel wire, incorporating buccal retention clasps for the first molars and first premolars and occlusal clasps for the first molars.
3. A small light-cured composite support was polymerized on the occlusal aspect of the distobuccal cusp, which was the only accessible part of the impacted molar.
4. The uprighting spring was anchored to the composite support and then activated (B). The result (R) of the occlusal (F1) and distal (F2) forces generated a disto-occlusal moment of force (M) on the impacted molar (C).
5. The spring was reactivated every two weeks for five months, until the impacted molar was completely upright (D).

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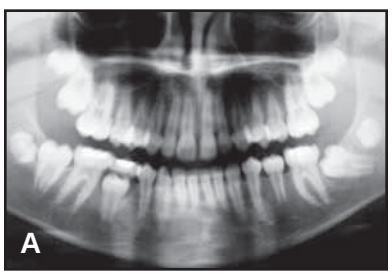

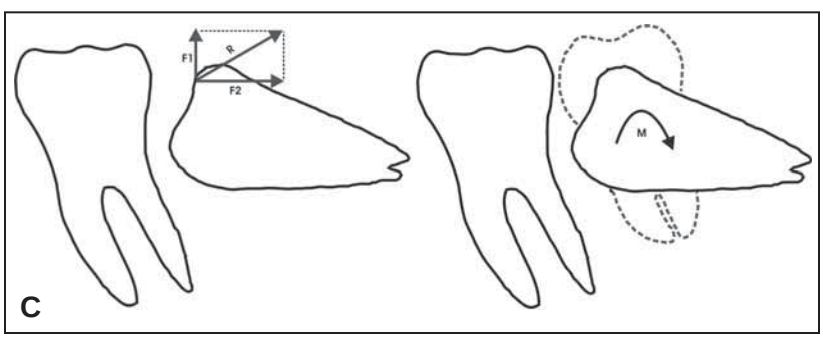

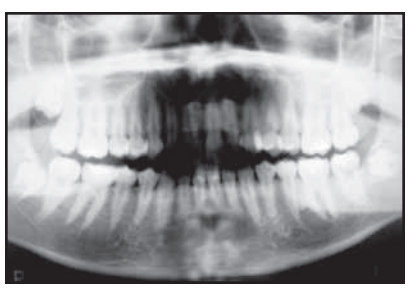

Discussion

A permanent second molar may become impacted because of periodontal problems, trauma, local infection, chemical or thermal irritation, asynchronous resorption and bone repair, crowding, or systemic factors.[1-4] Orthodontic treatment approaches involving minimal surgical intervention are less invasive than surgical procedures such as tooth extraction or complete crown exposure.

In the case reported here, the minimally invasive approach accelerated the initial orthodontic treatment while reducing the risk of long-term postsurgical problems. The use of a fixed uprighting appliance was ruled out by the molar's position, which would have required repeated bonding of brackets as the tooth emerged. These obstacles were overcome with a removable appliance that enabled gradual, well-controlled uprighting of the impacted molar.

REFERENCES

1. Altay, N. and Cengiz, S.B.: Space-regaining treatment for a submerged primary molar: A case report, Int. J. Paediat. Dent. 12:286-289, 2002.
2. Quek, S.L.; Tay, C.K.; Tay, K.H.; Toh, S.L.; and Lim, K.C.: Pattern of third molar impaction in a Singapore Chinese population: A retrospective radiographic survey, Int. J. Oral Maxillofac. Surg. 32:548-552, 2003.
3. Vedtofte, H.; Andreasen, J.O.; and Kjaer, I.: Arrested eruption of the permanent lower second molar, Eur. J. Orthod. 21:31-40, 1999.
4. Otsuka, Y.; Mitomi, T.; Tomizawa, M.; and Noda, T.: A review of clinical features in 13 cases of impacted primary teeth, Int. J. Paediat. Dent. 11:57-63, 2001.

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