Conservative orthodontic treatment for a patient with a unilateral condylar fracture

Carlos Alberto Estevanell Tavares[a] and Susiane Allgayer[b]
Porto Alegre, Rio Grande do Sul, Brazil

Trauma to the mandible often causes condylar fracture. This article reports the conservative treatment of a 10-year-old girl with a unilateral condylar fracture, highlighting the diagnostic aspects involved and the strategy used. The conservative approach used for this patient—bionator followed by full fixed orthodontic appliances—provided adequate esthetic and functional results. The outcomes throughout the 7-year follow-up and the remodeling process of the condyle observed in the panoramic radiographs proved the success of this treatment. (Am J Orthod Dentofacial Orthop 2012;141:e75-e84)

The proportion of condylar fracture among all mandibular fractures ranges from 17.5% to 52%.[1-7] Condylar fracture is probably the maxillofacial trauma with the most controversial opinions on the classification, diagnosis, and therapeutic management, which have raised discussions and arguments in the literature.[2,6,8-12]

There are 2 types of fracture—intracapsular and extracapsular—yet for practical purposes, the anatomic level of the fracture is divided into 3 sites: condylar head (intracapsular), condylar neck (extracapsular), and the subcondylar region.[3,13,14] Depending on the direction of the causal force, the position of the jaw at the time of the accident, the activity of the lateral pterygoid muscle, and the whole trauma to the mandible, the fractured part can remain in place, or can be partially or completely displaced.[12] Usually, the displaced fragments are directed medially or anteromedially.[8] According to Lindahl,[13] condylar head displacement is more frequent in children.[3]

The principal causes of condylar fractures in growing children vary according to age, with bicycle accidents the most common,[3,7,13-18] especially in patients aged 6 to 12 years.[5,6,19] The clinical consequences of condylar trauma directly depend on the child's age at the moment of the lesion, growth potential, and extent of the fracture.[6] Experimental studies and clinical observations have shown large adaptive changes in fractured condyles, as well as in contralateral condyles, that can cause functional disturbances and alterations in dentofacial growth.[12,20] The consequences of these fractures on maxillofacial growth and occlusal development might be as severe as mandibular deficiency, asymmetry, retrusion, or ankylosis.[3,12,18,21] It is known that there is a better potential for bone remodeling when fractures affect the higher regions of the mandible; a poor potential is noted in the lower regions, with luxation of the fragment and a greater tendency for facial asymmetry.[16,21]

The treatment depends on the patient's age, coexistence of other mandibular or maxillary fractures, whether the condylar fracture is unilateral or bilateral, the level and displacement of the fracture, the state of the dentition, and the dental occlusion. The treatment planning depends on the characteristics of each patient and the type of fracture, varying from conservative treatment comprising observation, analgesia, and a soft diet, to maxillomandibular fixation or functional appliance therapy,[8,10] up to surgical intervention.[1,3,4,9,12,14,16,18] In growing patients, with growth potential of the condyle, most authors recommend conservative therapy.[3,14,18]

This report describes a pediatric patient with a unilateral condylar fracture who was treated conservatively with functional appliances. Satisfactory remodeling of the condylar process and possible repositioning of the temporomandibular fossa by apposition occurred, and normal occlusion and jaw movements were obtained.[17]

DIAGNOSIS AND ETIOLOGY

A 10-year-old girl received an orthodontic evaluation for a left condylar fracture resulting from a bicycle

[a]Private practice, Porto Alegre, Rio Grande do Sul, Brazil; professor, Department of Orthodontics, ABORS - Associação Brasileira de Odontologia - Seção Rio Grande do Sul, Porto Alegre, Brazil.
[b]Postgraduate student, Department of Orthodontics, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil.
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Reprint requests to: Susiane Allgayer, Clínica Tavares Ortodontia e Odontopediatria, Rua Furriel Luiz de Vargas, 250/1404, CEP 90470-130, Porto Alegre, RS, Brazil; e-mail, susianeallgayer@gmail.com.
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Fig 1. Pretreatment facial and intraoral photographs.

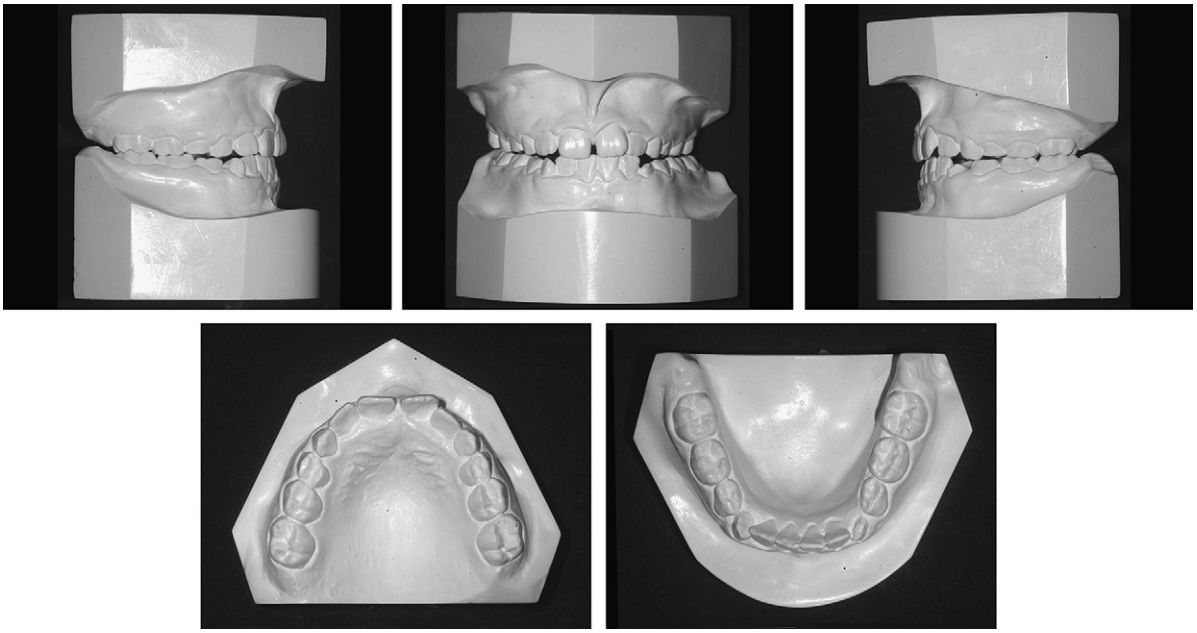

Fig 2. Pretreatment dental casts.