

Treatment of the Temporomandibular Joint in a Child with Juvenile Idiopathic Arthritis



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KEYWORDS

- Temporomandibular joint • Juvenile idiopathic arthritis • Facial asymmetry
- Temporomandibular joint disorders

KEY POINTS

- The prevalence of juvenile idiopathic arthritis (JIA) involving the temporomandibular joint (TMJ) varies widely, with reports ranging from 11% to 87%.
- Recently, MRI with gadolinium has shown a higher prevalence of TMJ involvement of up to 87%, often without clinical signs or symptoms.
- Early recognition of JIA involvement of the TMJ is critical in minimizing deleterious effects of facial growth, such as facial asymmetry with unilateral TMJ involvement or mandibular retrognathia with counterclockwise rotation with bilateral TMJ involvement.

INTRODUCTION

The prevalence of juvenile idiopathic arthritis (JIA) involving the temporomandibular joint (TMJ) varies widely, with reports ranging from 11% to 87%.¹⁻³ The large variation in reported incidence has been attributed to the method used to diagnose TMJ involvement. Pain, physical signs/symptoms, and plain radiographs underestimate the true incidence of TMJ involvement.¹ Recently, MRI with gadolinium has shown a higher prevalence of TMJ involvement of up to 87%, often without clinical signs or symptoms.³ The clinical significance of this asymptomatic involvement of the TMJ is not known. As the TMJ is a secondary growth center for the face, early recognition of JIA involvement of the TMJ is critical in minimizing deleterious effects of facial growth, such as facial asymmetry with unilateral TMJ involvement or mandibular retrognathia with counterclockwise

rotation with bilateral TMJ involvement. In addition, persistent inflammation in the TMJ may result in degenerative arthritic changes, decreased function, and pain. This article reviews the incidence of JIA involvement in the TMJ, early presenting clinical signs, as well as long-term sequelae. Treatment strategies for initial management and subsequent long-term surgical care are also presented. Current limitations in our knowledge and gaps in care are highlighted throughout this article. Future research needs are also discussed.

JUVENILE IDIOPATHIC ARTHRITIS AND TEMPOROMANDIBULAR JOINT *Incidence of Juvenile Idiopathic Arthritis in Temporomandibular Joint*

The incidence of JIA affecting the TMJ varies widely, largely to variations in how involvement

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is defined and evaluated. Reports of JIA and TMJ involvement vary between 11% and as high as 87%.¹⁻³ Definitions of TMJ involvement using MRI alone yield the highest percentage of TMJ involvement in JIA. The clinical significance of asymptomatic involvement with positive MRI findings is unknown, and further research is needed in this area. It is unclear whether facial growth is effected when asymptomatic or silent inflammation is present in the TMJ or how progressive arthritic changes occur in patients with these findings. Clinical assessment and/or self-report yields the lowest incidence of JIA disease in the TMJ.⁴ Using imaging and examination with clinically meaningful involvement set the incidence at approximately 40% to 45%.⁵ Unfortunately, no uniform definition exists for when the TMJ is considered effected by JIA. In the literature and throughout this article the term *involvement* is often substituted for a precise definition, making comparison among studies difficult.^{6,7} It is also worth noting that the frequency of unilateral or bilateral involvement seems to be equal. Patients with unilateral involvement, particularly at a younger age, may develop facial asymmetry and maxillary canting along with arthritic degeneration of the TMJ. Children with bilateral involvement effecting growth often have mandibular retrognathia and counterclockwise rotation of the lower third of their facial skeleton.⁸ The incidence of JIA involvement in the TMJ also varies widely based on JIA subtype. The discussion of JIA subtypes is beyond the scope of this article, and the reader is referred to a recent review.⁵ In summary, patients with oligoarticular, polyarticular (rheumatoid factor negative), and psoriatic arthritis have the highest incidence, whereas polyarticular (rheumatoid factor positive) has the lowest incidence of TMJ involvement.^{5,9} Recently, the Pediatric Rheumatology International Trials Organization following 3342 patients with health-related quality-of-life surveys identified 387 or 11% of patients with TMJ involvement.² Polyarticular disease, duration of disease activity, and cervical spine involvement were predictive of TMJ activity. Although the incidence was low in this study subtype, age of onset has also been associated with TMJ involvement and severity in other publications.¹⁰

Initial Presentation and Evaluation

Patients typically first present with decreased jaw opening or stiffness without associated joint pain.¹¹ This presentation is markedly different

than patients with more typical TMD/internal derangement, who often present with pain on jaw function. It is important to remember that over time, patients with JIA and TMJ involvement will likely develop degeneration and internal derangement, with pain occurring later in the disease course. Maximal incisal opening can be difficult to assess in the pediatric population as a result of their mixed dentition and erupting permanent incisors along with patients' growing facial skeleton. Particular attention should be given to patients who report a decrease in their opening or have a decrease in opening as measured clinically overtime. Rarely, the TMJ has been described as the only involved joint in JIA and may be the initial presenting joint symptom in other JIA subtypes.¹² Diagnosing TMJ involvement secondary to JIA can be particularly difficult in the pediatric population, as TMJ internal derangement and myofascial pain are common.^{13,14} It is important for the oral and maxillofacial surgeon to keep JIA in the differential in the pediatric population, as the treatment approach is different and other joints or organs may also be involved. For younger patients, jaw stiffness without pain or severe condylar degeneration is suggestive of a cause different than internal derangement. In addition, a thorough review of systems, including a review of other joint symptoms and a history of fevers of unknown cause, may suggest JIA as the cause of patients' TMJ disorder.

The initial examination for patients with a history of JIA should include an assessment of their facial morphology. Special attention should be given to patients' lateral profile, evaluating for convexity and mandibular retrognathia. Canting of the maxilla should be evaluated as well. Placing a tongue blade perpendicular to the mandibular molars and measuring the distance to the lateral canthus can easily assess for the presence of canting in the maxilla. Maximal incisal opening and lateral excursive movements should be documented. Pain on manual palpation should be examined by palpating the lateral pole of the condyle as well as the muscles of mastication through bimanual palpation. The dental occlusal relationship should be evaluated and documented. Recently, the *EuroTMJoint* interest group, an interest group of pediatric rheumatologists, researchers, and oral and maxillofacial surgeons, published a position article on the clinical examination of patients with JIA and TMJ involvement. They surveyed a group of clinical experts to determine what they consider clinically relevant in the evaluation of this patient cohort, reviewed the literature, and made recommendations. The

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