

TEMPOROMANDIBULAR JOINT (TMJ) DISLOCATION DURING INTUBATION AND DENTAL PROCEDURES

Kamil Serkan AGACAYAK^{1*}, Ibrahim KOSE¹, Belgin GULSUN¹, Yusuf ATALAY¹,
Ferhan YAMAN¹, Musa Can UCAN¹

1. Department of Oral & Maxillofacial Surgery, Faculty of Dentistry, Dicle University Diyarbakır /TURKEY.

Abstract

Dislocation of the temporo-mandibular joint (TMJ) is an infrequent condition involving a permanent, to some extent complete, disruption of the joint.¹ TMJ dislocation may occur as a result of everyday activities such as yawning or laughing, or during activities that require mouth opening for a prolonged time, such as dental treatment.¹

The data in the literature suggest that the lifetime prevalence of chronic TMJ dislocation is about 3%–7% in the general population,² with a strong female representation.³ Dislocation may be unilateral or bilateral,⁴ the latter being more frequent.² These disorders share symptoms characterized by pain in the TMJ area and inability to close the mouth.⁵

Many techniques have been advocated for the treatment recurrent TMJ dislocation. Nonsurgical approaches have been proposed to prevent excessive abnormal excursions of the condyle including bandages and splints and extra-articular sclerosing agent injections.⁶

Surgical procedures can be categorized under 2 main headings: 1) procedures that enhance the path of condylar movement; and 2) those that inhibit it.⁷

Case report (J Int Dent Med Res 2012; 5: (3), pp. 165-168)

Keywords: Temporomandibular joint, surgical procedures, dislocation.

Received date: 08 February 2011

Accept date: 16 February 2011

Introduction

Temporomandibular joint (TMJ) dislocation is defined as an excessive forward movement of the condyle beyond the articular eminence with complete separation of the articular surfaces and fixation in that position.⁸ It is commonly associated with poor development of the articular fossa, laxity of the temporomandibular ligament or joint capsule and excessive activity of the lateral pterygoid and infrayoid muscles due to drug use or disease⁹.

Many pathogenetic factors have been described for chronic TMJ dislocation, such as

traumatic events, ligament and capsule degeneration, arthritic diseases, neuromuscular system diseases, systemic joint laxity, psychiatric disorders, and it has also been reported in mentally retarded patients.^{2,9} There are many methods for reducing anterior TMJ dislocations. The selection of the correct therapeutic approach is the subject of debate in the literature.¹⁰ Many conservative treatments have been described over the years for achieving pain relief, such as physiotherapeutic rehabilitation, cognitive-behavioral treatments, and intra-articular injections of sclerosing agents.¹¹ The Hippocratic method is the most frequently described and involves the practitioner standing in front of the patient and placing a gloved thumb on the posterior lower molars bilaterally with fingers wrapped laterally around the mandible. A constant inferior force is the applied and the mandible is eased back into the glenoid fossa posteriorly.¹⁰ The wrist pivot method involves the practitioner standing in front of the patient placing gloved thumbs at the apex of the mentum with

*Corresponding author:

Dr. Kamil Serkan AĞAÇAYAK
Dicle Üniversitesi Dis Hekimliği Fakültesi
Ağız Dis Cene Hast. ve Cerrahisi AD,
21280 Diyarbakır, Turkey

E-mail: serkanagacayak@gmail.com

fingers inside the mouth on the occlusive surface of the mandibular molars. A superior force is applied through the thumbs and inferior pressure with the fingers with a “pivoting” motion from the wrists until the reduction is achieved.⁸

The extra-oral method requires the practitioner to apply a posteroinferior force to the coronoid process with the thumbs. This has the advantage of reducing the risk of accidental human bite injury to the practitioner.⁸ The combined ipsilateral staggered technique involves the reduction of each TMJ separately.¹² The practitioner uses one thumb intraorally to exert inferior pressure to the occlusive surface of the lower molars while simultaneously applying further posteroinferior pressure to the ipsilateral coronoid process extraorally. The manoeuver is repeated on the contralateral side to complete the reduction.

All these approaches are useful for controlling pain and improving patients’ perception of the disorder. But they do not reduce recurrence rates.¹³ A number of surgical techniques have therefore been introduced as potentially definitive treatments by providing either a decrease in the articular eminence to ease reduction or an obstacle to condylar displacement.¹³ The latter techniques adopted bone grafts to increase height of the articular tubercle or used titanium anchors to avoid condylar displacement.¹³

The purpose of this study was to clinically evaluate conservative treatment for TMJ dislocations, independently of different etiologies. The aimed at assessing conservative techniques, given that these are the most frequently indicated for luxation of TMJ.

Case 1

A 19-year-old woman attended the Department of Maxillofacial Surgery, University of Dicle, Turkey, seeking treatment for a bilateral TMJ dislocation which occurred during dental treatment. She also had swallowing disturbance, excessive salivation, indistinct speech and a severe anterior open bite. Clinical examination revealed downward and forward displacement of the chin and hollowness on both sides anterior to the tragus. Panoramic radiographic examination showed anterior dislocation of both condyles in front of the articular eminences. This was confirmed by computed tomography.



Figure 1. Facial view of case-1 before treatment.

Manipulation was successful. To prevent postoperative relapse, a maxillomandibular fixation was applied for 10 days. The postoperative course was uneventful and no evidence of recurrence was noted. After 3 weeks of physical therapy, with a range of motion exercises, mouth opening improved to 30 mm. The patient could masticate and swallow. No relapse occurred over the following 14 months.



Figure 2. Facial view of case-1 after treatment.

Case 2

A 56-year-old male, with no past history of TMJ malfunction, was in intensive care for restrictive pulmonary syndrome. A patent airway was secured by inserting a laryngeal mask airway (LMA). This was achieved without difficulty. During the operation, the anesthesiologist incidentally noticed that the patient’s jaw had been deformed and was protruding anteroinferiorly. Based on previous experience, the anesthesiologist identified a preauricular depression and pathological prognathism of the lower jaw. The jaw did not

deviate laterally. Bilateroanterior TMJ dislocation was diagnosed. According to the patient and her family, she had not had TMJ dislocation before. Manual reduction (Hippocratic method) was successfully performed.



Figure 3. Facial view of case-2 before treatment.



Figure 4. Facial view of case-2 after treatment.

Discussion

Acute non-traumatic anterior TMJ dislocations are an uncommon phenomenon in the emergency department but require rapid diagnosis and treatment.⁸ Typical clinical features include prognathism, open mouth, tension and spasms of mastication muscles,

excessive salivation, difficulty in phonation and pain in the TMJ region, preauricular swelling and tenderness, with a palpable depression immediately posteriorly, corresponding to anterior condylar dislocation. Unilateral dislocations present with the jaw deviated away from the affected side.

In our study, we noted inability to close the mouth, difficulty in phonation and pain. There are three factors that predispose a patient to anterior dislocation: poor joint capsule integrity, weak articular eminence morphology, and muscle hypotonicity. Acute anterior dislocation of the TMJ as reported is secondary to laughing, taking a large bite, trauma, convulsions, yawning, and induction of anesthesia. In our cases, we observed weak articular eminence morphology and muscle hypotonicity.

Most anterior TMJ dislocations present spontaneously after the jaw is opened wide during yawning, coughing, vomiting, taking a large bite, convulsions, laughing, chewing, passionate kissing, LMA insertion or following facial trauma. The causes in our cases were LMA and dental treatment.

Many treatment modalities are considered in the resolution of pain and dysfunctions attendant upon recurrent TMJ luxation. In many cases, conservative methods promote some temporary relief of symptoms, and recurrence is common. Surgical interventions are normally more effective for definite treatment. Reliable comparisons of the reports on modalities of treatment are difficult to find because of uneven periods of postoperative follow-up and different definitions of success rates.

Following a scan of the different treatment modalities in the literature, we identified a rate of 95% of cases without recurrence both after eminectomy and use of metallic implant over the articular eminence. We determined absence of postoperative luxation with the Hippocratic method, even though the follow-up period had been variable.

Conclusion

Health care professionals who routinely examine, investigate and treat patients by the oral route must be aware of this uncommon but distressing complication so that prompt management and safe closed reduction can be facilitated. These cases highlight the importance

of displaying great care when investigating or treating elderly patients when any degree of mouth opening is required.

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