

Systematic Review TMJ Disorders

Stability of treatments for recurrent temporomandibular joint luxation: a systematic review

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Abstract. Temporomandibular joint luxation (TMJ) is the excessive anterior translation of the mandibular condyle out of its normal range of movement and away from the glenoid fossa. Once dislocation occurs, the abnormal condylar position generates reflex contractions of the masticatory muscles, which in turn hinder movement of the condyle back to its resting position. Frequent luxation episodes characterize a condition referred to as recurrent TMJ luxation. While there are several surgical and conservative therapeutic options available for recurrent TMJ luxation, a robust, evidence-based rationale for choosing one technique over another is missing. Thus, a systematic review based on the PRISMA statement was proposed in an attempt to determine which therapeutic option results in the longest time to relapse. There is no good quality evidence on which treatment options guarantee the long-term elimination of recurrent TMJ luxation. In cases of post-surgical relapse, eminectomy has often been used as a ‘rescue procedure’, which may mean that surgeons empirically consider this treatment to be the ‘gold standard’ for addressing recurrent TMJ luxation.

Key words: temporomandibular joint; temporomandibular joint disorders; articular hypermobility; dislocation; review.

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Temporomandibular joint (TMJ) luxation is the excessive anterior translation of the mandibular condyle out of its normal range of movement and away from the glenoid fossa. While anterior, posterior, cranial, and caudal positioning of the condyle are possible, clinical experience shows that anteriorly dislocated condyles are the most frequent. Once dislocation

occurs, the abnormal condylar position generates reflex contractions of the masticatory muscles, which in turn hinder movement of the condyle back to its resting position.^{1,2}

Treatments for TMJ luxation may be temporary or definitive. Manual repositioning of the condyle back into the glenoid fossa is mostly temporary if the

condition is recurrent. Definitive treatments can be further divided into conservative or surgical.³ Intermaxillary fixation (IMF), muscular exercises, the injection of sclerosing solutions and autologous blood into the TMJ, and the administration of botulinum toxin are some of the conservative treatments proposed, which unfortunately have significant failure rates.^{1,4} The

surgical management of recurrent TMJ luxation can either restrain mandibular movement (by creating an obstacle at the articular eminence) or clear the path of the condylar head by removing the eminence. Some of the techniques used to restrict mandibular movement include the oblique osteotomy of the zygomatic arch, also known as Dautrey's procedure,⁵ miniplating of the articular eminence,⁶ myotomy of the lateral pterygoids,⁷ intraoral lateral pterygoid muscle tendon scarification, and capsule plication.⁸ Alternatively, eminectomy is the reference procedure for the total release of condylar translation.²

Considering the many surgical and conservative therapeutic options available and contrasting this with the relative scarcity of an evidence-based rationale for the choice of one technique over another, the present systematic review was performed in an attempt to answer the following question: Among the treatments available for recurrent TMJ luxation, which therapeutic option results in the longest time to relapse?

Methods

This systematic review was performed from July to December 2014 and followed the recommendations given in the PRISMA Statement.⁹ First, an electronic search was conducted in the PubMed and Scopus databases to obtain articles related to prospective or retrospective cohort studies that included patients who underwent conservative or surgical treatment for recurrent TMJ luxation. The therapeutic options included eminectomy, miniplating of the articular eminence, zygomatic arch downfracture, glenotemporal osteotomy of the zygomatic arch, autologous blood injection, botulinum toxin injection, sclerosing solution injection, and myotomy of the lateral pterygoids.

Study identification

Key words and Boolean operators used were: #eminectomy, #miniplate eminoplasty, #Dautrey Procedure, #Glenotemporal Osteotomy, #Temporomandibular Joint AND Autologous Blood Injection, #Temporomandibular Joint AND Botulinum Toxin, #Recurrent Mandibular Dislocation AND Sclerosing Solutions, #Temporomandibular Joint AND Lateral Pterygoid Myotomy.

Titles and abstracts identified were screened without time restrictions, resulting in a number of seemingly relevant studies for the systematic review. Subsequently,

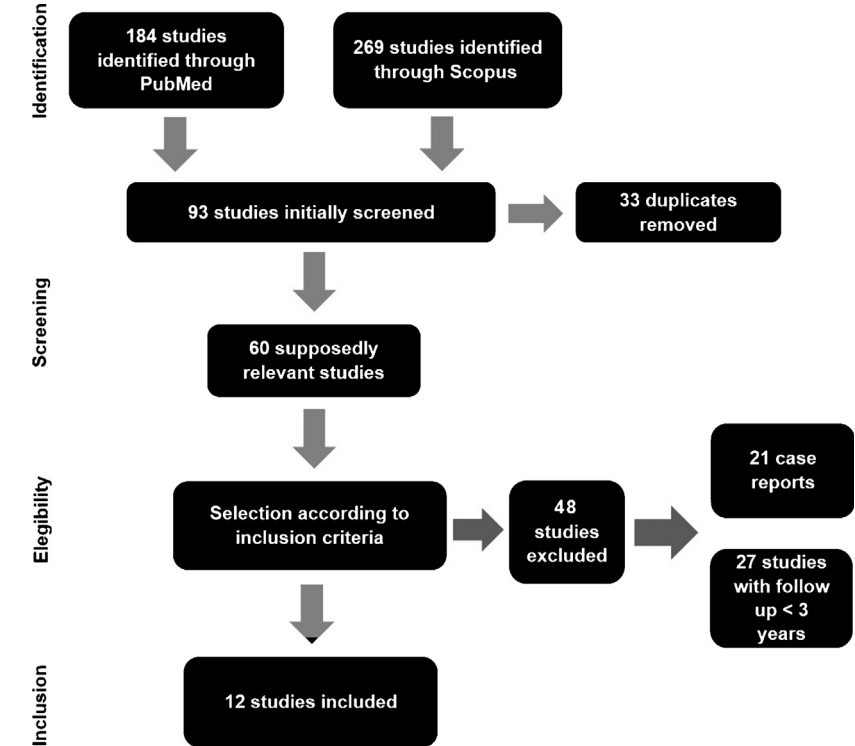


Fig. 1. Flow diagram of the study selection process for the systematic review based on the PRISMA statement.⁹

the full texts were retrieved, read, and checked against the following inclusion criteria: (1) the article, written in English, should represent a prospective or retrospective observational study that included patients suffering from recurrent TMJ luxation, either unilateral or bilateral; (2) the patient sample (total or partial) should have been followed up for at least 3 years postoperatively. A flow diagram of the study selection process is given in Fig. 1.

In addition, two independent reviewers (V.L.A. and N.S.V.) assessed the studies included through a list of questions based on the Critical Appraisal Skills Programme (CASP) for cohort studies.¹⁰ A third examiner (P.H.L.F.) resolved any inconsistencies between reviewers. The following questions were used to assess the quality of the studies included: Did the study address a clearly focused issue? Was the cohort or sample recruited in an acceptable way? Was the outcome accurately measured to minimize bias? Was the follow-up of subjects complete enough? How precise are the results?

Results

Description of the studies included

All studies included assessed the recurrence of TMJ luxation.^{11–22} Not all studies followed their entire cohort up to the third

postoperative year, therefore only those patients who were followed up for 3 years or more were considered in the analysis presented here. Since the statistical data presented in the studies varied and were mostly descriptive, it was decided not to perform a meta-analysis. Details of all the studies, including the authors, patient sample, type of intervention, and follow-up data, are presented in Table 1.

Quality of the studies included

All studies included focused on a specific issue, had recruited their cohorts in an acceptable manner, and had presented their results clearly. In all samples, there was at least one patient who was followed up for the period defined in the inclusion criteria. However, none of the studies was considered to be entirely free of bias.

Discussion

Consensus regarding the most effective treatment for recurrent TMJ luxation is yet to be reached. While several studies have addressed the issue, the majority have been case reports and literature reviews. Highly relevant studies such as randomized controlled trials were not identified and only a few prospective and retrospective cohort studies were available up to the end of this review.

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