



Enhanced tmj arthrocentesis for disc displacement without reduction: efficacy of vacuum-assisted technique versus conventional approach

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Introduction

Temporomandibular joint (TMJ) disorders, such as disc displacement without reduction (DDWOR), pose significant clinical challenges due to the associated pain and functional limitations. Arthrocentesis is a minimally invasive technique employed to manage these conditions. This study aims to compare the effectiveness of two different techniques of double puncture arthrocentesis—with and without the addition of catheters and a vacuum pump—in managing TMJ DDWOR.

Objectives

The primary objective of this study was to evaluate and compare the clinical outcomes of TMJ arthrocentesis performed with the addition of catheters and a vacuum pump versus without any additional devices. This comparison aims to identify the technique that provides superior symptomatic relief and functional improvement.

Methods

A total of 48 patients diagnosed with DDWOR were randomly and blindly allocated into two treatment groups (N = 24 each). Group 1 underwent TMJ arthrocentesis with the addition of catheters and a vacuum pump to the second needle, while Group 2 received TMJ arthrocentesis without any additional devices. The variables recorded and compared between the groups included: patient's pain perception (measured using the visual analogue scale [VAS; 0–10]), maximal interincisal distance (MID; measured in millimeters), joint effusion (JE; noted as presence or absence), facial edema (FE; noted as presence or absence), and operation duration (OP; recorded in minutes).

Results

Patients in Group 1, who received TMJ arthrocentesis with the addition of catheters and a vacuum pump, presented significantly lower VAS scores ($p < 0.001$) and a reduced presence of FE ($p = 0.03$) in the postoperative period. Furthermore, these patients demonstrated an increase in MID values ($p = 0.026$) and a reduction in JE ($p = 0.022$) after 3 months. Additionally, the procedure in Group 1 was performed significantly faster ($p < 0.001$).

Conclusion

The results indicate that performing arthrocentesis with the addition of a vacuum pump enhances the efficiency of the procedure, yielding better outcomes in terms of pain reduction, facial swelling mitigation, improved mouth opening, and decreased joint effusion. This technique, therefore, offers a superior approach for managing TMJ DDWOR, improving both immediate and long-term patient outcomes.