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Management of TMJ hypermobility using Prolotherapy: A Case Report.

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Abstract

The present case report highlights the efficacy of dextrose prolotherapy for TMJ hypermobility. Each injection comprised of 10% dextrose/mepivacaine solution 3 ml. There was evident improvement in severity of pain on movement, maximal interincisal opening, clicking, and frequency of locking were measured before treatment, at 3 months and 1 year interval. Dextrose prolotherapy provided significant and sustained reduction of pain and recovery of constitutional symptoms associated with symptomatic hypermobility of the TMJ without changing either the position of the condyle or the morphology of the bony components of the joint.

Introduction

Prolotherapy, as defined by *Webster's Third New International Dictionary*, is "the rehabilitation of an incompetent structure, such as a ligament or tendon, by the induced proliferation of cells." "Prolo" comes from the word proliferate. Prolotherapy injections proliferate or stimulate the growth of new, normal ligament and tendon tissue. [(1,2)] The Hemwall-Hackett technique of dextrose prolotherapy to the temporomandibular joint involves injections into the joint and the fibro-osseous junction of the ligament and capsular attachments on the zygomatic arch, as well as the mandibular neck and condyle. The structural goal of Hemwall-Hackett dextrose prolotherapy is to improve the stability of the TMJ by enhancing the capsular and ligament strength. [(3)]

TMJ prolotherapy can be advantageous to patients with a temporomandibular disorder (TMD) that is refractory to or has shown only limited success with medicine, dietary restrictions, and home care. Finally, prolotherapy can be used in conjunction with other procedures, such as oral appliance wear, to speed and enhance recovery. [4]

In human studies on prolotherapy, biopsies performed after the completion of treatment showed statistically significant increases in collagen fibre and ligament diameter of up to 60%. [5]

Dextrose is most commonly used in a concentration of 12.5% as an osmotic agent, prepared by

diluting one part of 50% dextrose in 1% methyl paraben (preservative) with two parts of 1% free lidocaine and one part of bacteriostatic water. Sodium morrhuate serves as the inflammatory mimetic attracting the inflammatory cells at the site of injection. Phenol and pumice flour serve as the physical and chemical irritants, respectively, attracting the macrophages and granulocytes by either foreign body reaction or cell wall damage or alteration. [6,7,8]

The present case report involved the use of Dextrose Prolotherapy to conservatively manage the patient suffering from TMJ hypermobility and reduced mouth opening.

Case Report

A 35-year old female patient came to Department of Oral & Maxillo-facial Surgery with the chief complain of clicking and repeated painful subluxation of her TMJ. Medical history was non-contributory. The diagnosis of TMJ hypermobility was based on the patient's history and the clinical recognition of an excessive abnormal excursion of the condyle that slides over the articular eminence, catches briefly anterior to the eminence, and then returns to the fossa by self-reduction or medical assistance.

The entire procedure of prolotherapy was explained to the patient and she agreed for the treatment. A written consent was obtained from the patient.

Solution Used: 10% dextrose/mepivacaine solution 3 ml.

Prolotherapy protocol

The skin surface of the preauricular area was disinfected with Betadine surgical scrub solution (Purdue Product). The anatomic landmarks were located by asking the patient to open widely to allow drawing of the articular fossa and then to close lightly on the posterior teeth to draw the condyle within the glenoid fossa.

- In the superior capsular attachment on the lateral margin of the glenoid fossa, 0.8 mL of the solution was slowly injected (Figure a).
- In the inferior capsular attachment on the condylar neck, 0.8 mL of the coded solution was

injected (Figure c). The needle was then directed superficial to the TMJ capsule, and 0.4 mL of the solution was deposited. The superior joint space was approached with the needle directed superiorly and anteriorly toward the apex of the fossa, where contact was made with the periosteum. A spacer measuring about 1 cm was placed between the anterior teeth to allow access to the superior joint space, as well as to stabilize and fix the condylar position on the operated side during injection. One millilitre of the coded solution was slowly injected into the superior joint space (Figure b).

Postoperatively, the patients were asked to reduce or stop other pain medications and therapies that they were using as much as the pain would allow. They were also instructed to ingest only a soft diet for 2 weeks to decrease the effort of the TMJ. The procedure was repeated monthly for 2 months for a total of 3 injections. The use of new oral devices and occlusal adjustments was avoided for a period of 12 months.

TMJ pain as expressed by a verbal scale noting no, mild, moderate, or severe pain on palpation; maximal mouth opening (MMO) as measured by the distance in centimeters between the incisal edges of the upper and lower incisors; clicking sound; and frequency of luxations (number of locking episodes per month) were assessed at each injection appointment just before the injection procedure and 3 months after the last injection

The patient exhibited significant decrease in pain intensity on the right and left sides through all periods. The mean frequency of luxations significantly decreased at the 12th postoperative

week. There was considerable improvement in mouth opening and clicking sounds were eliminated by the end of 12 weeks. The associated symptoms (headache, otalgia, and tinnitus) were dramatically improved after the first session of injections.at 1-year follow-up there was significant and sustained reduction of pain and recovery of constitutional symptoms associated with symptomatic hypermobility of the TMJ without changing either the position of the condyle or the morphology of the bony components of the joint.

Discussion

Clinical improvement of patients with TMJ pain and dysfunction was achieved after TMJ prolotherapy with 12.5%, 15%, and 25% dextrose injections. [6,9,10] This treatment provides long term benefits to the patient rather than being just a palliative therapy. It reduces the need for prolonged narcotics and surgical management. [8,10] The future trends involve the use of chemotactic factors and polypeptide growth factors and direct recruitment of fibroblasts directly to an injured ligament and perhaps avoid the discomfort of an inflammatory response. [11]

Conclusion

The results confirm that prolotherapy is a treatment that should be highly considered for people suffering with unresolved temporomandibular joint pain and dysfunction.

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Legends figure