

Effectiveness of PRP As A Pain Management Method in Temporomandibular Joint Osteoarthritis; A Case Report

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(Submitted: 01 February 2022 – Revised version received: 19 March 2022 – Accepted: 03 April 2022 – Published online: 26 June 2022)

Abstract

Objective: The objective of this case report study was to use a relatively new chronic pain management method for temporomandibular joint (TMJ) disorder by using intra-articular injections of platelet rich plasma (PRP) to patient with long standing problem.

Methods: Patient's own blood drawn, mixed with anticoagulant, centrifuged twice for preparation of PRP, then 0.5 ml of prepared PRP injected intra-articular in TMJ for both right and left side, three sessions of PRP injection done with spacing of 4 weeks in between and patient follow up done for 24 months after last session.

Results: The patient was completely symptoms free even after 24 months since last PRP injection session.

Conclusion: Intra articular injection of PRP seems to be a safe, effective and cheap pain management method for chronic pain resulting from TMJ disorder.

Keywords: Pain management, temporomandibular joint, injections, intra-articular, platelet-rich plasma

Introduction

Temporomandibular joint (TMJ) problems are very common, their prevalence is about 52%.¹ About 15% of the worldwide population suffers from osteoarthritis (OA).² The prevalence and symptom rates of TMJ OA are similar to generalized OA. TMJ OA affects around 8–16% of the population.³ TMJ disorder in women are about twice more prevalent than in men and about 80% of patients who seeking help for TMJ problems are women.⁴

The most common symptoms in TMJ disorders are: pain, malocclusion, limited range of joint movement, joint clicking and clenching. The biggest issue of these symptoms is that they are so obvious and disabling during important basic oral activities like eating and speaking, so the quality of life of affected patients is significantly impacted. No doubt that pain is the major symptom and the first reason making patients attending pain clinics seeking for help.⁵ Osteoarthritis-like degenerative joint disease belonging to TMJD is a destruction of bone and cartilage with a consecutive inflammation which enhances tissue destruction.² Bony changes of TMJ OA will appear as osteophyte formation, flattening, erosion and sclerosis. Damage of the TMJ condyle may lead to malocclusion and skeletal muscles deformity in the face which may resulting in retrognathism with anterior opening bite and asymmetry of the patient face.⁶

The most important issue in TMJ OA is that the limited ability of TMJ for self-healing, it is considered as one of the most challenging joint disease and until this time there is no full agreement on management method can achieve good level of relief. In general the goal of treatment for OA is pain free life for the patients accompanied by good quality of life which may be affected by diseased joints. In TMJ OA therapeutics aims are: preventing more damage of joint cartilage, encourage remodeling of bone, pain management and reestablish TMJ functions.⁷

One of the most focusing points of research in last ten years is platelet rich plasma (PRP). PRP therapy now days

one of the warmest regenerative medicine issues, especially in family medicine, sport medicine and orthopedics practices as it is an effective, safe and cheap biological treatment option of ligament and cartilage injuries and pathologies needing accelerated regenerative treatment method. PRP is rich with growth factors, which are vital in tissue repairing mechanisms aimed to stimulate repair and replacement of damaged cartilage. More than 1500 growth factors are found in PRP stimulating cartilage matrix synthesis and counteract the effects of catabolism of cytokines such as interleukin-1 and tumor necrosis factor- α .⁸

This case report study describes the efficacy of using of intra articular injection of PRP for TMJ OA as a pain management method.

Case Presentation

A 51 house wife female presented in September 2019 to the 2nd. author clinic in Kirkuk, Iraq complaining from 10 years history of bilateral TMJ pain associated with painful clicking, tender jaw, difficulty in mouth full opening, pain on eating, headache, toothache, neck ache and even earache as a result of teeth extraction not replaced with prosthetic resulting in TMJ OA with all the above signs and symptoms. Patient reported that symptoms started in 2008 which is about one year after teeth extraction without prosthetic replacement, symptoms began as TMJ pain with headache and clicking first in right side and then in left side, she went to dentist and he told her that she have to put prosthetic teeth in addition to many exercises for strengthening of facial muscles, also her dentist prescribed for her non steroidal anti-inflammatory medicines with muscle relaxants, symptoms relived partially and temporarily and then returned, so the patient started the pathway of relapse and remission and during this period she was using hot packs with muscle relaxants on need to relief pain. On examination of the patient, the findings were as follows: malocclusion, limited range of motion, joint clicking and

clenching, these findings were often so painful during basic oral activities (eating and speaking).

An autologous platelet rich plasma prepared from the patient's own blood which drawn from patient vein with 50 ml syringe. Nine ml from drawn blood placed in aseptic tube with 1 ml 3.8% sodium citrate as an anticoagulant. The tube then centrifuged at 1500 rpm for 10 min separating the sample into three parts, the upper part made of plasma, the middle part (buffy coat) made of white blood cells while the lower part made of red blood corpuscles. The upper two thirds of plasma were then discarded while the lower third was transferred to another aseptic tube centrifuged again for 15 min at 3000 rpm, the upper half of the sample was discarded while the lower half would form the PRP. Under highly aseptic condition, 0.5 ml of prepared PRP injected intra-articular in TMJ for both right and left side. Three sessions of PRP injection done with spacing of 4 weeks in between, patient follow up done for 24 months after last session, the patient was completely symptoms free.

Discussion

60–70% of adults have TMJ complaints. The cost for diagnosis and treatment is about 4 billion dollars per year in United States. According to American national institute of health (NIH) 20 million person had a problem in their TMJ in 2006.

The aim of tissue engineering is to improve the treatment outcome of patients complaining from TMJ problems by providing an alternative management method to the difficult and costly way of total replacement of TMJ.⁹

Even though PRP developed in the early 1970s, PRP not widely used in tissue regeneration until late 1990s.¹⁰

Many research proved that PRP contain huge number of growth factors like platelet derived growth factor, transforming growth factor, vascular endothelial growth factor, insulin like growth factor, fibroblast growth factor and epidermal growth factor and many hundreds of other growth factors.¹¹

Using TMJ intra articular injection of PRP now is commonly used in maxillofacial practice for treatment of different malfunctioning TMJ conditions.¹² Several studies have reported satisfactory outcomes in using TMJ intra-articular PRP injection like Hegab et al. 2015, Pihut et al. 2014, Kiliç et al. 2015 and Yang et al. 2017.^{10,13-15}

For TMJ disorders the available treatment options either carry the risk of medications long use side effects (steroids and non-steroidal anti-inflammatory drugs) or carry the risk of failure as in reconstructive surgery. In this case report study we tried a relatively new chronic pain management method (at least for TMJ disorders in Iraq) by using PRP intra-articular injection, the clinical outcome was so encouraging even after 24 months from the last PRP injection session.

In conclusion, intra articular injection of PRP seems to be a safe, effective and cheap pain management method for chronic pain resulting from TMJ disorder.

Conflict of Interests

None declared.

Funding

The authors received no funding for this study. ■

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