

Platelet Rich Therapy for the Treatment of Osteonecrosis of the Jaw: An Assessment of 14 cases and Review of Technique

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1. Introduction

Medication related osteonecrosis of the jaw (MRONJ) is a debilitating condition characterized by exposure of non-healing necrotic bone lasting eight weeks or longer in the mandible or maxilla after medication use. Most commonly, MRONJ is a concern for patients receiving bisphosphonate therapy, most commonly for patients undergoing cancer treatment. The use of bisphosphonates in the treatment of osteoporosis has also been implied in the genesis of MRONJ, although at a lower rate [1].

Patients presenting with MRONJ are categorized based on clinic and radiographic presentation. OMJ staging ranges from 0 to III, with stage 0 including non-specific symptoms and radiographic findings with no intraoral exposed bone, stage 1 with asymptomatic exposed bone, stage 2 with exposed bone with overlying infection, and stage 3 with exposed bone, infection, and pathological fracture of sinus tract [2]. Wound healing is a complex and dynamic process that involves multiple stages, including inflammation, proliferation, and maturation. In the MRONJ patient wound healing is critical for primary closure of the exposed site. Platelet Rich Therapy (PRT), which includes platelet rich plasma and platelet rich fibrin, is a promising treatment option for MRONJ that has gained increasing attention in recent years. In the treatment of MRONJ, PRT involves the application of platelet-rich plasma (PRP), which contains high levels of growth factors, to the affected area in order to promote tissue regeneration and repair. Although randomized control trials analyzing the use of PRP alone have not

been studied, their use in conjunction with debridement and antibiotics has had promising results [3].

The purpose of this study was to evaluate the effectiveness of PRP in the treatment of medication-related osteonecrosis of the jaw. We present an assessment of 14 patients who underwent debridement with placement of PRP for the treatment to MRONJ of the mandible. A review of surgical technique of PRP placement in MRONJ patients is included.

2. Methods

A retrospective review of 14 patients who underwent debridement with placement of PRP in the treatment of ONJ were included in this study. All 14 patients presented with MRONJ of the mandible and were classified as stage II. The patients' wounds were treated with debridement, PRP, antibiotics. Initial empiric antibiotics therapy was initiated prior to surgery, and tailored as indicated after cultures of the site were obtained. The healing process was monitored using clinical evaluations. The patients were evaluated at regular intervals for up to 12 weeks after the treatment.

3. Results

All 14 patients demonstrated improvement in their wounds after the PRP treatment. All surgical sites remained closed after the use of PRP at 2 weeks postoperative follow-up.

The results of the study indicate that PRP is associated with improvement in clinical symptoms, specifically, improved wound healing and tissue regeneration at the site of exposed bone.

3.1. Description of Surgical Technique

Generally speaking, the process of PRP for oral surgery begins with collection of the patient's blood through established IV access. Typically 20 to 60 mL of blood is collected depending on the size of the surgical defect. The blood is then processed in a centrifuge to separate the red blood cells from the other components of the blood. The plasma and platelets are then extracted and processed through a variety of methods depending on procedure and provider preference. These methods include the addition of thrombin, calcium chloride, and bone allograft to create PRP of desired texture and consistency.

The indicated oral surgical procedure is completed along with the debridement of any necrotic bone that is visualized. Hand instruments and burs are used to remove necrosis to the level of vital bleeding bone (Figure 1). Any infectious process is cleared and copious amounts of irrigation is used to clean the site. The formulated PRP concentrate is then applied (Figure 2) and secured to the surgical site with adequate closure (Figure 3) to enhance the healing process.



Figure 1:



Figure 2:



Figure 3:

4. Conclusion

The results of this study suggest that the use of PRP is a safe and effective treatment option for MRONJ. Although the level of evidence is limited due to its use of concomitant antibiotics and debridement, the positive results seen in this study suggest that PRP may contribute to an effective way to promote tissue regeneration and repair in patients with MRONJ, likely due to facilitation of surgical site closure. Further well-designed studies, including randomized controlled trials, are needed to confirm the benefits of PRP for the treatment of MRONJ.

PRP remains a promising treatment option for MRONJ that has the potential to improve clinical symptoms, promote tissue regeneration and repair, and reduce bone loss.

Further research is needed to confirm these findings and determine the optimal process and administration of PRP for the treatment of MRONJ.

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