



Editorial

Platelet-rich plasma in ENT practice – A regenerative revolution in progress

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In the ever-evolving landscape of Otorhinolaryngology, the emphasis has progressively shifted from conventional surgical intervention toward biologically driven and minimally invasive regenerative therapies. Platelet-rich plasma (PRP) therapy has garnered significant attention among these emerging modalities. What was once a novel concept borrowed from Orthopedics and Dermatology is now finding increasing relevance across subspecialties of ENT. This editorial explores PRP's current state, applications, challenges, and prospects in ENT practice.

1. Understanding PRP: Biology and Preparation

Platelet-rich plasma is an autologous biological product derived from the patient's blood. It is obtained by centrifuging whole blood to concentrate platelets in a small volume of plasma. These platelets are a reservoir of numerous growth factors—such as platelet-derived growth factor (PDGF), vascular endothelial growth factor (VEGF), transforming growth factor-beta (TGF-β), and epidermal growth factor (EGF)—that play crucial roles in wound healing, angiogenesis, cell proliferation, and tissue regeneration.¹

2. Clinical Applications in ENT

3.1. Laryngology

PRP has demonstrated considerable promise in the treatment of vocal fold pathology, especially in patients with vocal fold scarring, sulcus vocalis, and atrophy. These conditions traditionally posed therapeutic challenges due to the poor

regenerative capacity of the vocal fold lamina propria. Autologous PRP injections into the vocal folds aim to restore vibratory function by promoting extracellular matrix remodeling and tissue repair.²

Recent clinical studies have reported improvements in vocal parameters such as jitter, shimmer, maximum phonation time, and voice handicap index scores. Importantly, because PRP is autologous, it carries minimal risk of allergic reactions or foreign body responses, making it a biocompatible and safe therapeutic option.

3.2. Otology

The role of PRP in otologic conditions is under active investigation. In tympanoplasty and myringoplasty procedures, PRP has been used as an adjunct to graft material to enhance uptake, epithelialization, and overall success rates.³ The theory is that growth factors accelerate angiogenesis and fibroblast proliferation, thereby supporting graft integration.

In the management of idiopathic sudden sensorineural hearing loss (ISSNHL), PRP has emerged as a potential adjunctive therapy to corticosteroids. Intratympanic PRP injections may enhance inner ear perfusion and reduce oxidative damage to cochlear hair cells, although high-quality randomized controlled trials are still needed.

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3. Rhinology

PRP's application in rhinology has primarily centered on improving wound healing and reducing postoperative complications after endoscopic sinus surgery and septoplasty. When used intraoperatively or postoperatively, PRP may reduce mucosal edema, crusting, and synechiae formation.⁴ In nasal valve surgery or turbinate reduction, PRP may promote mucosal regeneration and reduce downtime.

Additionally, in aesthetic and functional rhinoplasty, PRP is used to expedite healing, improve skin quality, and reduce postoperative inflammation. The growing field of "liquid rhinoplasty" has also seen the incorporation of PRP to enhance skin texture and support cartilage integrity post-procedure.

4. Facial Plastic and Reconstructive Surgery

In facial plastic surgery, PRP is widely utilized in combination with fat grafting to improve graft survival, vascularization, and aesthetic outcomes. PRP's regenerative properties can also aid in scar modulation and pigmentation reduction following ablative procedures like laser resurfacing and dermabrasion.

In oncologic head and neck surgery, particularly in patients undergoing flap reconstruction, PRP may improve tissue viability, reduce infection rates, and enhance wound healing. Its ability to stimulate angiogenesis is particularly valuable in previously irradiated fields where healing is often compromised.

5. Sleep Surgery and Other Uses

Although evidence is still limited, PRP has been explored in sleep-related surgeries, such as uvulopalatopharyngoplasty (UPPP), to improve wound healing and reduce postoperative discomfort. Additionally, its potential utility in treating chronic tonsillitis and eustachian tube dysfunction is being investigated in preliminary trials.

6. Advantages of PRP in ENT Practice

1. Autologous and biocompatible: Being derived from the patient's own blood, PRP reduces risks of immunogenicity and disease transmission.
2. Minimally invasive: PRP injections can be performed in outpatient settings under local anesthesia, reducing the need for hospital stays.
3. Regenerative potential: Its capacity to stimulate tissue repair rather than merely substitute damaged tissues offers a more natural healing pathway.
4. Versatility: PRP is applicable across a spectrum of ENT subspecialties, making it a highly adaptable tool in modern practice.

7. Challenges and Limitations

Despite the enthusiasm surrounding PRP, several hurdles hinder its widespread adoption:

1. Lack of standardization: No consensus exists on optimal platelet concentration, activation method, or dosage for different indications.
2. Variable efficacy: Due to differences in PRP preparation and delivery, clinical outcomes vary widely across studies.
3. Cost and accessibility: Commercial PRP preparation kits can be expensive and require specific equipment and training, limiting their use in resource-limited settings.
4. Limited high-quality evidence: While numerous case series and small trials exist, large-scale, randomized, double-blind controlled trials are scarce, making it difficult to formulate evidence-based guidelines.

8. Future Directions

The future of PRP in ENT lies in deeper scientific understanding, technological refinement, and rigorous clinical validation. Researchers are investigating "next-generation" PRP products, including platelet-rich fibrin (PRF) and bioengineered platelet-derived products with enhanced regenerative potential. Moreover, combining PRP with other biologics like stem cells or hyaluronic acid may synergistically improve outcomes.

Artificial intelligence and imaging tools may soon assist in quantifying tissue healing post-PRP treatment, bringing objective metrics to an area currently dominated by subjective assessments.

9. Conclusion

Platelet-Rich Plasma represents a promising frontier in Otorhinolaryngology, aligning well with the contemporary emphasis on personalized, regenerative medicine.

As the body of evidence grows and protocols become standardized, PRP may well become a mainstay in the regenerative armamentarium of ENT surgeons.

10. Conflict of Interest

None.

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