EJMO

DOI: 10.14744/ejmo.2020.36888
EJMO 2020;4(1):102–103

Letter to the Editor

Platelet Rich Plasma Enhances Myringoplaey Success

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Abstract

Because there is still a considerable failure rate after myringoplasty, methods to enhance success of myringoplasty were recently investigated. Autologous platelet rich plasma (PRP) contains a growth factors cocktail. Using PRP as enhancing material during myringoplasty of different perforation sizes was reviewed and it was found that PRP is ideal as enhancing material during myringoplasty because it is safe, autologous, easily prepared, effective and of low cost.

Keywords: Myringoplasty, perforation, PRP, success, tympanic membrane

Cite This Article: *El-Anwar MW. Platelet Rich Plasma Enhances Myringoplaey Success. EJMO 2020;4(1):102–103.*

Tympanic membrane (TM) perforation represents a common otologic problem.[1] Succeeded myringoplasty prevents recurrent middle ear infections and allows patients to resume his full activities that were controlled by water precautions. In addition, myringoplasty can avoid chronic otorrhea, hearing loss and/or cholesteatoma developmen. However, failure rate after myringoplasty could reach 22% [2] and up to 65% in children.[3] Therefore, methods to enhance success of myringoplasty were recently investigated.

Autologous platelet rich plasma (PRP) is a volume of autologous plasma with high platelets concentration above their reference value (150.000: 440.000/uL).

PRP contain high concentration of growth factors (GFs) that enhance healing process such as platelet derived GF, transforming GF, insulin-like GF, epidermal GF, epithelial cell GF, vascular endothelial GF, basic fibroblast GF and connective tissue GF. Thus PRP is considered as a growth factors cocktail and PRP represents an easy, simple and non-invasive way to get a high concentrate of autologous growth factors.[4, 5]

According to cycles (spin) of centrifugation for PRP preparation, two PRP types exist; single spin method (forms PRP with high platelet and WBCs) and double spin method (forms PRP with high platelet and low WBCs).

The objective of the work is to review using PRP as enhancing material during myringoplasty for different TM perforation sizes.

Methods

The published papers of the authors that studied the use of PRP as enhancing materials for myringoplasty were revised in current work.

Results

The first PRP clinical medical use was in the mid-1980s by Ferrari et al.[4] in open-heart surgery. Since then, PRP it has been widely and effectively utilized.[5–8]

Erkilet et al.[6] reported that PRP could effective accelerate healing of traumatic TM perforation in Rats. Then, the first human PRP assisted myringoplasty was successfully performed by El-Anwar et al.[7] with perfect healing results in large TM perforation either in children or adults had pa-

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Submitted Date: September 09, 2020 **Accepted Date:** December 05, 2020 **Available Online Date:** March 12, 2020

tients large TM pathological perforation caused by chronic suppurative otitis media.

El-Anwar et al.[7] inserted the operatively prepared PRP in the external auditory canal (instead of gelfoam) after perichondria graft adjustment and re-draping of tympanomeatal flap in its site. Statistically significant protection against post-operative infection ($p<0.0001$) was achieved supporting the bacteriocidal role of the used single spin PRP.

In a later study, El-Anwar et al.[8] used PRP hour glass graft as a sole graft for small TM perforation repair as office based myringoplasty under topical anesthesia. Transcanal insertion of dumbbell shaped PRP was performed with equal portions lying medial and lateral to the trimmed TM perforation. Another PRP piece was inserted in the external auditory canal. Successful repair was obtained in 84%.

For medium sized TM perforations, myringoplasty using fat and PRP was effectively performed.[9] Under local anesthesia, hourglass fat graft was permeatally inserted in the TM perforation then PRP was introduced into the external auditory meatus lateral to the fat graft and TM remnant achieving significantly higher success rate (85.7%) than fat graft alone (60%).[9]

Discussion

PRP can enhance healing after myringoplaty in all sizes of the TM perforations, small, medium or large. Moreover it could act as grafting material for small perforation less that 2 mm and enhance results of fat graft for medium sized perforation.

There are many benefits of PRP as enhancing material during myringoplasty. PRP acts as vehicle for multiple growth factors GFs, facilitates more rapid healing, aids the initial stability of graft (by its cohesive and adhesive nature), reduces operative and post-operative bleeding, promotes faster vascularization of healing tissue and prevents sagging of posterior canal wall. There is also no need for inner pack insertion avoiding its complication such as hypersensitivity, canal granulation & stenosis, infection, trauma and disturbing the graft on removal.

Because PRP is autologous, there is no possibility of infectious disease transmission.

PRP is easily generated in the surgical room without any additives (like anticoagulants) so it is safe. So, used PRP is safe simple, rapid, and nearly costless. With PRP assist myringoplasty, no previously reported infection, hearing impairment, tinnitus, vertigo, bleeding, taste disturbance or hyperkeratosis.[7–9] In addition, the presence of white blood cells in high concentrations in PRP significantly diminishes infection.

However, it should be insure that PRP should be avoided in septicemia, recent fever or illness, thrombocytopenia (<105 000/ul), anemia (<10 g/dl), history of active tumors, history of use of corticosteroids within 2 weeks, and history of use of NSAIDs within 2 days.

Conclusion

Thus, PRP is ideal as enhancing material during myringoplasty because it is safe, autologous, easily prepared, effective and of low cost.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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