

Vocal Fold Wound Healing after Injection of Platelet-Rich Plasma in a Rabbit Model

Sang Hyuk Lee, Seon Uk Lee, Hyun Sub Lee, Sung Min Jin

Departments of Otorhinolaryngology-Head and Neck Surgery, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

Objective

The aim of this study was to investigate the morphological and histological properties of injured rabbit vocal folds following injection of platelet-rich plasma (PRP).

Methods

Blood samples were collected from each nine New Zealand rabbit. Blood samples were centrifuged, separated a portion, and PRP was isolated through again centrifuge of separated portion. Eighteen vocal folds from 12 rabbits were injured bilaterally using a CO₂ laser (15W, 1 sec ; NIIC R204, Tokyo, Japan), and injected with either PRP (right vocal fold) or normal saline (left vocal fold). Every 4 weeks for the 12 weeks after injection, an endoscopic examination was performed to assess the morphology of the vocal folds. Twelve weeks later the animals were euthanized and the tissues were stained us-

ing hematoxylin-eosin (H & E) for assessing inflammatory reaction and inflammatory cell infiltration, and Masson's trichrome (MT) for assessing collagen deposition.

Results

In morphological analyses, there was less granulation tissue in the PRP-injected right vocal folds compared to left vocal folds. Histological examination revealed much inflammation on H&E stain and much collagen deposition on MT stain in left vocal folds, whereas the right vocal folds exhibited a little inflammation and collagen deposition ($p < 0.05$).

Conclusion

Injection of injured rabbit vocal folds with PRP led to improved wound healing and fewer signs of scarring as demonstrated by a decreased inflammation and collagen deposition in the treated folds compared with the untreated folds.