



Exploring Advanced Micro-Endodontic Surgical Approaches: Guided Tissue Regeneration Technique with Conditioned Media from Wharton's Jelly – A Case Series

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Background

In recent years, there has been a paradigm shift in endodontic surgery modalities from the use of microscopes for minimally invasive procedures in combination with guided tissue regeneration (GTR) technique to ensure the healing process occurs. Micro-endosurgery not only focuses on the functional restoration of the tooth but also ensure the regeneration of bone, periodontal and cementum tissues using adjunct therapy in GTR technique. The enhancement of GTR technique in micro-endodontic surgery nowadays has led endodontist to use several types of biologic adjunct therapy materials to ensure and accelerate the regeneration process of peri radicular tissue. Previously, Conditioned Media Wharton Jelly (CMWJ) has been successfully proven as one of the effective adjunct therapy materials in the field of Orthopedics and Dermatology. In Dentistry, CMWJ in gel form was firstly introduced and used in micro-endodontic surgery. The main goal of using this CMWJ was to ensuring the regeneration process of peri radicular tissue after GTR technique procedure, not ended with only repair process.

Case report:

This case series will present two cases of micro-endosurgery using Conditioned Media Wharton Jelly (CMWJ) (UsePro®, Prostem Indonesia) as biologic adjunct therapy material:

- The first case**, a 27-year-old female, with large periapical lesion on her upper lateral right incisor (CBCT PAI index= 4E), had root canal treatment a year ago, but no healing occurred. Micro-endosurgery was performed using CMWJ combined with GTR technique procedure on tooth 12.
- The second case**, a 34-year-old female with a diagnosis of suspected periapical cyst with through-n-through lesion (CBCT PAI index= 5D) on her upper right anterior. These teeth has been undergoing endodontic treatment in the last 4 months, but the swelling in the palatal area still exists. Micro-endosurgery was performed using CMWJ combined with GTR technique procedure on 12 and 11 teeth.

Micro-endosurgery evaluation in both cases was done after 1, 3, 6, 9 up to 12 months.

1st Case:

BEFORE Treatment (A-B); 1-3 months after re-treatment (C-D), CBCT PAI: 4E (E). The lesion diameter was still 5.59 mm located on the periapical 12 tooth extended to buccal bone with buccal bone fenestration

Micro-endosurgery of apex resection and retro fill using bio ceramic cement (bio-C repair®, Angelus) was done on 12 tooth, then followed by GTR technique using bone graft (Bio-Oss®, Geistlich) in combination with CMWJ gel (USEPro®, Prostem Indonesia) and bovine membrane (OSSIX plus®, Dentsply Sirona) (F-K)

Micro-endosurgery evaluation on 12 tooth (L-P), no subjective complain, no tenderness on percussion and palpation. Complete healing was shown on 12 months evaluation. Significant peri radicular healing was presented by CBCT with only slight enlargement of periodontal ligament on periapical site of 12 tooth after 12 months of evaluation, “Complete healing-B” (Penn Criteria 3D) (P).

2nd Case:

Clinical and radiograph BEFORE treatment (A-B), CBCT PAI index: 5D (C-D). The lesion diameter was 16.82 mm located on the periapical 12 and 11 teeth, extended to 13 tooth, through and through bone destruction to palatal site.

Micro-endosurgery of apex resection was done with GTR on 11 and 12 teeth. Retro filling using bio ceramic cement (bio-C repair®, Angelus) in combination with bone graft (Bio-Oss®, Geistlich) and CMWJ gel (USE Pro®, Prostem Indonesia) and close with collagen membrane (OSSIX plus®, Dentsply sirona) (E-N). Biopsy result: periapical cyst (H).

Micro-endosurgery evaluation (O-T) on 11 and 12 teeth, no subjective complain, no tenderness on percussion and palpation. “Complete healing-B”(Penn Criteria 3D) was shown on 12 months evaluation (S)

Conclusion:

Both cases showed promising result of peri radicular tissue healing in 1, 3, 6, 9 up to 12 months.

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