Alternative Surgical Treatments for Root Coverage. A review

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INTRODUCTION AND AIM

Gingival recession (GR) is a frequent mucogingival problem leading to functional and aesthetic features.

The indications for treating this gingival abnormality are mainly prevention of defect progression, dental sensitivity, and aesthetic requests.

Many of the surgical techniques for root coverage (RC) include the use of connective tissue graft (CTG) harvested from the palate. CTG is associated with second surgical site, limited amount of donor tissue and postoperative patient discomfort.

Various biomaterials have been investigated to overcome these limitations including among others Enamel Matrix Derivative (Emdogain - EMD), Accellular Dermal Matrix (ADM) and Xenogeneic Collagen Matrix (XCM).

The **aim** was to review the literature concerning the methods of surgical rehabilitation of single facial recessions of Miller class I and II without the use of a palatal graft.

RESEARCH AND CLINICAL DATA

EMD, ADM or XCM in conjunction with coronally advanced flap (CAF) were investigated as alternative approaches to graft-based surgical techniques for root coverage.

Recent clinical studies, Systematic reviews and Meta-analyses revealed the following results:

EMD-based procedures:

- CAF + EMD → 12%-15% more RC than CAF alone
- Less postoperative discomfort compared to CAF + CTG
- EMD not as effective as CTG
- EMD might improve PPD reduction and increase tissue thickness
- Improved wound healing

XCM-based procedures:

- CAF + XCM might produce equivalent amount of keratinised tissue (KT) compared to CAF + CTG
- XCM may improve CAF efficacy
- Increased patient-reported aesthetic satisfaction

ADM-based procedures:

- Great heterogeneity among the studies
- CAF + ADM led to inferior outcomes than CAF + CTG
- No additional benefit was observed when added to CAF

RCTs' outcomes of root-coverage procedures for recession treatment

Surgical procedure	Number of RCTs	Mean root coverage
CAF + SCTG	49	86.97 + 9.68 % (range: 64.5 to 99.3%)
CAF	24	75.20 + 14.37 % (range: 41.80 to 96.60%)
CAF + EMD	8	90.25 + 4.78 % (range: 80.0 to 95.10%)
CAF + ADM	13	79.36 + 14.02 % (range: 50.00 to 97.10%)

Chambrone & Pini Prato 2018

CONCLUSIONS

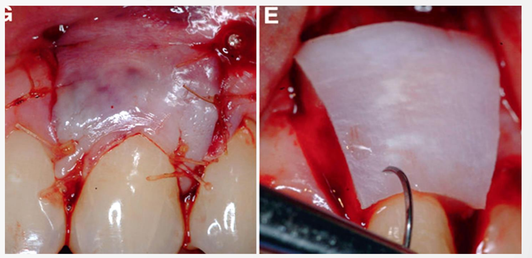
- ✓ The clinical goal of GR treatment is the complete root coverage.
- ✓ The 'gold standard' for GR treatment is the combination CAF + CTG
- ✓ All procedures lead to clinical attachment gain
- ✓ EMD and XCM might be useful biomaterials in periodontal plastic surgery
- ✓ XCM and ADM can modify gingival thin biotype to thick which is associated with less recession recurrence
- ✓ AMD/XCM/EMD-based procedures: more atraumatic and lower rates of morbidity and patient's discomfort compared to CTG
- ✓ Flap management and design determine the RC outcomes
- ✓ Smoking may significantly impair the treatment outcome
- ✓ Clinical studies are required to evaluate long-term stability of the different surgical procedures



Coronally advanced flap in combination with Enamel Matrix Dervative for root coverage. (Images from *Cairo 2017)*



Coronally advanced flap in combination with Xenogeneic Collagen Matrix for root coverage.(images from *McGuire & Scheyer 2010)*



Coronally advanced flap in combination with Accellular Dermal Matrix for root coverge. (Images from *Barros et al. 2015*)

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