

Endodontics

Editorial

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For many years endodontic dentistry has involve a series of basic rules. After pulp invasion and degradation by cariogenic bacteria, the first endodontic step include disinfection of the pulp located in the roots with sodium hypochloride or other alkaline agent. The root canal enlargement, using manual and/or the effectiveness of mechanical rotation of instrumental devices, followed this. They contribute to the shaping of the canals, and favor the filling of the pulp space with a zinc oxide/eugenol paste, and/or condensation in the main and accessory (secondary) canals with warm gutta-percha.

Recent development implies the possible regeneration of the radicular pulp. Residual stem cells may survive despite the dental pulp alteration or infection. Stem cells may migrate from the apical papilla. Altogether, they have the potential to regenerate the whole dental pulp, mostly when they are associated to engineered scaffolds. Induced pluripotent stem cells (iPSCs) may also contribute to pulp healing and regeneration.

Non-cariou, bacteria-free alterations (destruction) of the radicular pulp [1], such as abrasion, attrition, abfraction, erosion, and/or resorption seem to play role in these processes. A series of metalloproteinases play role in the pulp degradation. In the case of cariogenic decay, pulp degradation and infection is likely due to pulp invasion by mutans streptococci and lactobacillus. These bacteria produce mostly lactic, acetic, formic and propionic acids, contributing to the degradation and destruction of the pulp. Cycles of demineralization and remineralization continue in the mouth as

long as there are cariogenic bacteria, fermentable carbohydrates and salivary enzymes present in the dental pulp.

Human stem cells arise from the dental pulp (DPSC), from the apical papilla (SCAP), from exfoliated deciduous teeth (SHED), from the periodontal ligament and progenitors of the dental follicle. Positive markers (STRO-1, CD13, CD44, CD24, CD29, CD73, CD90, CD105, CD106, CD146, Oct4, Nanog and β 2 integrin) and negative markers (CD14, CD34, CD45 and HLA-DR) allow to identify stem cells, that display self-renewal and multipotency. They regenerate partially or in totality the dental pulp.

After the inactivation or the removal of bacteria (antibacterial activity) by chemical agents, and the controlled release of bioactive molecules, natural or synthetic polymers, hydrogels and bioceramics constitute scaffolds exhibiting appropriate physicochemical properties beneficial for pulp regeneration [2].

Altogether stem cells properties constitute potential substitutes to endodontic treatments despite they have been used for a long-lasting period but now they may be relegated to the past.

References

- [1]. Imfeld T. Dental erosion. Definition, classification and links. Eur J Oral Sci 1996 Apr;104(2):151-5. PubMed: 8804882.
- [2]. Galler KM, D'Souza RN, Hartgerink JD, Schmalz G. Scaffolds for dental pulp tissue engineering. Adv Dent Res 2011 Jul;23(3):333-9. PubMed: 21677088.

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