

# Endodontic Spotlight

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## Introduction

Welcome to Endodontic Spotlight, a quarterly newsletter that highlights some of the more interesting literature in the field of endodontics. I will summarize recently published and classical literature, as well as highlight various interesting topics in endodontics. Although the articles will primarily be drawn from the Journal of Endodontics, I might also include research from other endodontic journals, such as Dental Traumatology or the International Endodontic Journal. This publication is primarily designed for the general dentist with minimal to no research background who does not read these journals. If you have any questions or comments about these topics or endodontics in general, please feel free to contact me. I hope you find this interesting and useful for your practice.

## **Cehreli ZC, Isbiteren B, Sara S, Erbas G. Regenerative endodontic treatment (revascularization) of immature necrotic molars medicated with calcium hydroxide: a case series. J Endod 2011;37:1327-30.**

This is another case series (n=6) showing that revascularization can be successful. However, this report is unique in that it used molars, some of the teeth were instrumented, and calcium hydroxide was used instead of triantibiotic paste. Most of the previously reports had been done in single canal teeth (usually maxillary incisors or mandibular bicuspid) and avoided any instrumentation. Perhaps more significantly, calcium hydroxide was used which prevents the problems associated with triantibiotic paste (including staining and not being readily available in most clinics). That being said, this is still just a case series. *SUMMARY: Revascularization has been shown to be successful in molar following instrumentation and using calcium hydroxide instead of triantibiotic paste.*

## Spotlight on Revascularization

Revascularization is very new technique that attempts to regenerate pulpal tissue in an immature necrotic tooth. By regenerating pulpal tissue, the root can continue to develop and allow for the deposition of additional hard tissue to hopefully reduce the chance of a future root fracture. If successful, it provides a better result than simply performing apexification, which does not allow continued root growth. However, at this time good outcome studies have not been published, so the success rate is completely unknown. The standard protocol involves disinfecting the tooth with irrigation but without filing, placing a triantibiotic paste of ciprofloxacin, metronidazol and minocycline for 3-4 weeks, inducing bleeding and clot formation in the canal and chamber, placing MTA over the clot and allowing it to set with a wet cotton pellet and temporary, followed by placing a permanent restoration 1-2 weeks later. However, as the Cehreli article shows, there are many variations in the technique. The major advantage of this technique is that it allows for pulp vitality and continued root formation. The major disadvantages include unpredictable results, multiple appointments required, and staining from the minocycline (thus requiring additional appointments to bleach tooth). You will probably hear more about this technique in the coming years.

**Poorni S, Kumar RA, Shankar P, Indira R, Ramachandran S. Anesthetic efficacy of four percent articaine for pulpal anesthesia by using inferior alveolar nerve block and buccal infiltration techniques in patients with irreversible pulpitis: a prospective randomized double-blind clinical trial. J Endod 2011;37:1603-7.**

The authors compared anesthetic efficacy using a very well designed prospective double blinded randomized controlled trial. Three different techniques were used to anesthetize a mandibular molar with irreversible pulpitis – inferior alveolar nerve block (IANB) with 4% articaine, buccal infiltration with 4% articaine, or IANB with 2% lidocaine. No significant differences were found. However, only 65-75% of patients had successful anesthesia (defined as no or mild pain during access and pulp extirpation), demonstrating the difficulty anesthetizing a hot tooth. This study provides further evidence that buccal infiltration with articaine can be as effective as an IANB, and that an IANB with 2% lidocaine is as effective as one with 4% articaine (without the increased risk of paresthesia). *SUMMARY: There is no difference in effectiveness between IANB with 4% articaine, IANB with 2% lidocaine, or buccal infiltration with 4% articaine.*

**Kakehashi S, Stanley HR, Fitzgerald RJ. The effect of surgical exposure of dental pulps in germ-free and conventional laboratory rats. Oral Surg Oral Med Oral Pathol 1965;20:340-9.**

This is perhaps the most important article in the classical endodontic literature. Although it may seem obvious today, this landmark study from 1965 demonstrated the important role that bacteria play in endodontic disease. The authors created pulp exposures in the molars of normal and germ-free rats, and then analyzed the teeth histologically after a few weeks. In the normal animals with bacteria, all had complete pulp necrosis, inflammation and abscess formation. In contrast, in the animals without bacteria, vital tissue and dentinal bridging was present and abscesses were not found. *SUMMARY: Bacteria play a critical role in endodontic disease.*

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