

By Izumi Kikuchi DDS, Reiko Wadachi DDS, PhD, Takatomo Yoshioka DDS, PhD, Takashi Okiji DDS, PhD\*, Chihiro Kobayashi DDS, PhD, and Hideaki Suda DDS, PhD.

Tokyo Medical and Dental University, \*Niigata University Dental Hospital, Japan.

Address for correspondence: Dr Izumi Kikuchi, Pulp Biology and Endodontics, Department of Restorative Sciences, Graduate School, Tokyo Medical and Dental University 5-45, Yushima 1-chome Bunkyo-ku, Tokyo 113-8549, Japan.

Email: i.kikuchi.endo@tmd.ac.jp

# An Experimental Study On The Vasoconstriction Effect Of Calcium Hydroxide Using Rat Mesentery

## Abstract

Calcium hydroxide has been used for eliminating persistent intracanal exudation. In order to address the mechanism behind this action, we investigated whether calcium hydroxide solutions cause the constriction of microvessels in the mesenteric microcirculation bed of rats. The exteriorised mesentery from anaesthetised rats was spread in a chamber, and arterioles, venules and capillaries were viewed under a digital microscope. Various concentrations of calcium hydroxide solutions were applied for 10 sec, and the diameter of the microvessels was recorded. In arterioles, calcium hydroxide solutions caused rapid and transient constriction. A statistically significant difference versus original diameter was detected 1 min after the application of  $4.0 \times 10^{-3}$  mol/l and  $1.0 \times 10^{-2}$  mol/l solutions ( $p < 0.05$ , one-way analysis of variance and Tukey-Kramer test). No statistically significant constriction occurred in capillaries and venules. It was concluded that the arteriolar constriction might be an explanation for the exudation-controlling effect of intracanal calcium hydroxide dressings.

**By Dr Tom Berekally, BDS (Adel), MDS, FRACDS, Dental School, Faculty of Health Sciences, The University of Adelaide.**

**Address for correspondence: Dr T. Berekally, Dental School, Faculty of Health Sciences, The University of Adelaide, Frome Road, Adelaide, SA, 5000.**

**Email: [tom.berekally@adelaide.edu.au](mailto:tom.berekally@adelaide.edu.au)**

# **Contemporary Perspectives On Post-Core Systems**

## **Abstract**

The challenge of restoring endodontically-treated teeth has spawned a considerable diversity in foundation restorations and a plethora of publications in the dental literature. Moreover, it seems that an inverse relationship has developed between the escalating complexity in selecting a post-core system and the volume of reliable scientific data upon which clinicians base their treatment decisions. In the quest to restore aesthetics, function, and reduce the risk of treatment failure there is now a much greater emphasis on the preservation of sound tooth structure, tooth isolation for intracanal procedures, sealing the root canal and adapting the advantages and limitations of dental materials to the presenting clinical situation. The relatively recent introduction of metal-free posts into mainstream prosthodontics has added an aesthetic dimension to treatment planning. New adhesive systems and resin-based luting agents have the potential to create a genuine adhesive continuum between the tooth and post-core complex. While these developments may have significant ramifications with respect to treatment prognosis, the long-term clinical performance of contemporary post-core systems is unclear.

By Shohreh Ravanshad DMD, MSD and Nemat Ghoreeshi DMD, School of Dental Medicine, Shiraz University of Medical Sciences, Shiraz, Iran.

Address for correspondence: Dr Shohreh Ravanshad, Department of Endodontics, School of Dental Medicine, Shiraz University, Shiraz, 71345-1836, Iran.

Email: Dentendo@sums.ac.ir

# ***An In Vitro* Study Of Coronal Microleakage In Endodontically-Treated Teeth Restored With Posts**

## **Abstract**

Coronal microleakage has received considerable attention as a factor related to failure of endodontic treatment and much emphasis is placed on the quality of the final restoration. Posts are frequently used for the retention of coronal restorations. These can be custom-made or prefabricated. Many authors have examined coronal microleakage with respect to gutta-percha root fillings and plastic coronal restorations, but few have investigated the coronal seal afforded by various post systems. The seal provided by a cemented post depends on the seal of the cement used. The purpose of this study was to compare coronal microleakage around cast and prefabricated posts using a dye-penetration method. Sixty extracted single-rooted human teeth were chemomechanically prepared. The root canals were filled with gutta-percha and sealer and they were then prepared for standard posts. Six groups, each of 10 teeth, were restored with either cast post or prefabricated post. The posts were cemented with either glass ionomer cement (GIC), Variolink II or Durelon. The teeth were thermocycled and placed in Indian ink for one week. They were then demineralised and rendered transparent. Linear coronal dye penetration around the post was measured and compared. The least dye-penetration was observed in roots restored with a cast post and Variolink II. Dentatus posts demonstrated the most microleakage. It appears that the dentine-bonding cements have less microleakage than the traditional, non-dentine-bonding cements and adaptation of the post with the canal may be more important than the cement used.

By Dr F. Elizabeth Martin, BDS (Hons), MDS, PhD, FRACDS, Faculty of Dentistry, University of Sydney, Australia.

Address for correspondence: Dr F. Elizabeth Martin, Faculty of Dentistry, University of Sydney, Westmead Centre for Oral Health, Westmead Hospital, PO Box 533, Wentworthville, NSW, 2145, Australia.

Email: femartin@dentistry.usyd.edu.au

# Carious Pulpitis: Microbiological And Histopathological Considerations

## Abstract

Dental caries is the result of microbial activities that induce the progressive localised destruction of teeth. Without treatment, this eventually results in infection of the dental pulp and surrounding periapical tissues. Although the bacteria responsible for caries initiation and early caries progression have been extensively studied, the microbiology of dentine caries reportedly shows considerable diversity and the associated microflora has not yet been fully identified. A search of the literature shows that few studies have analysed the microbiology of deep caries or examined the relationship between this microflora and the histopathology of chronic pulpitis in symptomatic teeth.

The majority of the studies investigating the microbiology of carious dentine have used traditional culture methodology that has been reported to be fraught with difficulties and to underestimate the microbial populations. However, recent work using new technology in the form of Polymerase Chain Reaction (PCR) has shown potential by enhancing the identification and quantification of bacteria from complex environments. Application of this technology to carious dentine has identified an environment dominated by anaerobic organisms and containing significant numbers of Gram-negative bacteria that have been strongly implicated in endodontic infections subsequent to carious pulpitis.

Examination of the histopathology of pulp sections from teeth extracted as a result of carious pulpitis showed pulpal reactions ranging from minimal inflammation to marked inflammatory infiltration of the pulp tissue. Of interest, were hard and soft tissue pathologic changes noted in the pulp tissues resulting from the combined effects of the carious microorganisms and the host tissue response.

Improved knowledge of the microbial species associated with pulpitis could create the potential for development of diagnostic tools and restorative materials with appropriate antimicrobial properties.

By **S. O'Leary** BPhy (Hons), MPhy (Manip Therapy), **D. Falla** BPhy (Hons), **G. Jull** MPhy, Grad Dip Manip Therapy, PhD, FACP

Department of Physiotherapy, School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, QLD, Australia.

Address for correspondence: **Shaun P. O'Leary**, Physiotherapy Department, School of Health and Rehabilitation Sciences, The University of Queensland, St Lucia, Queensland, 4072.

Email: [s.oleary@shrs.uq.edu.au](mailto:s.oleary@shrs.uq.edu.au)

# **Recent Advances In Therapeutic Exercise For The Neck: Implications For Patients With Head And Neck Pain**

## **Abstract**

There have been recent advances in the rehabilitation of the muscles that control the head and neck. These advances are based on evidence of specific neck muscle dysfunction in individuals with persistent head and neck pain. Traditional rehabilitation strategies have focused predominantly on muscle strength and endurance under high loads. New evidence suggests that in people with neck pain there are underlying neuromuscular problems that may require more immediate attention and may not be adequately addressed by simple strength and high-load endurance retraining. Evidence of altered coordination between the deep and superficial neck muscles, greater neck muscle fatigue under sustained low loads, and deficits in kinaesthetic sense have been identified in symptomatic individuals. There is evidence to indicate that addressing these muscle control problems, with specific gentle exercise strategies, results in a reduction in neck pain and associated symptoms.