Introduction
Perforations are significant iatrogenic complications of endodontic treatment and could lead to endodontic failure. Perforations may occur during preparation of access cavities, post space preparation or as a result of the extension of internal resorption into the periradicular tissues. Once a perforation has been diagnosed must be rendered to seal the perforation site effectively to minimize injury and prevent contamination of the surrounding periodontal tissues. Factors that influence the outcome of perforated teeth include size, time of repair, level and loc, restorative perforation, presence of periodontal disease and pre-endodontic pulp vitality status.

On the basis of the particular characteristics of perforations, repair can be managed by a surgical or nonsurgical approach by sealing perforations using different materials such as calcium hydroxide, glass ionomer cement and mineral trioxide aggregate (MTA). MTA has been regarded as an ideal material for perforation repair, retrograde filling, pulp capping and apexification. When used as a repair material for perforation, MTA has many favorable properties including a good sealing characteristic, biocompatibility, bactericidal effect, radiopacity, and ability to set up in the presence of blood. This paper reports a case of non-surgical repair of a mandibular pre-molar with perforation with MTA under operating microscope.

Case Report
A 43-year-old female patient was referred by her dentist with suspected coronary perforation held during the retreatment of the right second mandibular premolar. The medical history was non-contributory. After the administration of local anesthesia with 2% lidocaine with 1:100.000 epinephrine, access cavity was performed in high speed rotation with diamond burs, trying to reach the root canal. A rubber dam was placed and an intraoral periapical radiograph was taken with a #40 k file placed in the perforation, which aided in further localizing the site of the perforation, and it was confirmed that the defect was subcrestal (Figure 1A). Regarding the patient preference in saving the tooth via a non-surgical procedure, perforation repair with MTA under an Operating Microscope (OM) was chosen.

The access opening was carefully examined under an OM (16X Magnification). Distolateral root perforation was clearly visualized under the microscope. Hemorrhage was controlled with copious irrigation with 0.9% saline solution. Cotton pellet was placed in the orifice of perforation to avoid contamination during endodontic retreatment. After canal localization, working length was determined with Novapex (Fórum Technologies, Israel). The canal was cleaned and shaped using Profile files (Dentsply Maillefer, Ballaigues, Switzerland) in a crown-down technique and copious irrigation with 5.25% sodium hypochlorite. The root canal was then obturated with gutta-percha points and Endomethasone N (Septodont, Saint-Maur, France) using the lateral condensation technique.

After the canal obturation, the cotton pellet was removed from the perforation exposing this local (Figure 1B). The perforation was sealed with MTA under OM (Figure 1C).

Abstract
Perforations are significant iatrogenic complications of endodontic treatment lead to endodontic failure. Mineral trioxide aggregate (MTA) has been regarded as an ideal material for perforation repair, retrograde filling, pulp capping and apexification. This case report presents a perforation repair in a mandibular second pre-molar using MTA. The teeth were endodontically retreated and coronally restored with composite resin. The one year follow up with the absence of periradicular radiolucent lesions, pain, and swelling along with functional tooth stability shows good prognosis.

Key words: Root Perforations; MTA; Operating Microscope

Figure 1  (a) K File placed confirming the perforation localization, (b) Operating Microscope vision of the perforation, (c) MTA placed in the perforation with the aid of OM, Figure 2 and 3 Radiograph verifying MTA adaptability
Various materials such as calcium hydroxide, amalgam, resin or glass ionomer cements have been used for sealing perforations. These desirable properties of MTA make it a useful material in repairing the root perforation. MTA is a biocompatible material when used as an endodontic irritant. International Endodontic Journal. 2004;37(4):272-80.

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Address For correspondence

Eduardo José Souza-Junior DDS MS,
Department of Restorative Dentistry,
Dental Materials Area,
Piracicaba Dental School,
State University of Campinas,
São Paulo, Brazil
Email: edujcsj@gmail.com

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