A 28-year-old male patient presented to our practice with an asymptomatic clinical picture of chromatic alteration of tooth #11 (Fig. 1). He had a history of dental trauma during childhood. Clinical and radiographic examination found traces of pulp necrosis (Fig. 2), for which he was referred for endodontic treatment.

After the initial consultation with the patient, anaesthesia was given, followed by establishment of absolute isolation. Subsequently, coronary access was achieved and the presence of pulp necrosis confirmed. A crown-down disinfecting instrumentation was performed using 2.5% sodium hypochlorite as irrigation agent and odontometry by radiographic method (Fig. 3), owing to not being able to use a foramen locator under these anatomical conditions, as its accuracy may have been influenced.

A manual preparation technique (step-back) was performed, using third-generation K-Files (Dentsply Maillefer) and 2.5% sodium hypochlorite as irrigation
agent for the purpose of widening the entire root canal system. At each instrument encounter, passive ultrasonic irrigation was performed with flat inserts (Fig. 4) in order to enhance the cleaning effect. Complementing the intra-channel decontamination process, two biweekly exchanges of UltraCal calcium hydroxide (Ultradent) were performed (Fig. 5), also with the purpose of analysing quality of cleaning through the radiopacity of the filling observed radiographically (Fig. 6).

After the removal of the intra-canal medication and drying, the apical plug was prepared with MTA REPAIR HP (Angelus; Fig. 7) and inserted through the direct technique using previously measured endodontic condensers (Fig. 8). The aim was to fill and subsequently seal the apical 4 mm (Fig. 9). After 24 h, a root canal filling was performed with Tagger’s hybrid thermomechanical technique using an MTA-based sealer (MTA-FILLAPEX, Angelus). Radiographically, ideal sealing of the entire root canal area was observed (Fig. 10). The patient showed no postoperative complications. A follow-up examination was conducted after six months, which revealed new bone formation in the apical region (Fig. 11).

**Fig. 6:** Radiographic appearance of the root canal filling with calcium hydroxide.
**Fig. 7:** Presentation of MTA REPAIR HP.
**Fig. 8:** Direct condensation of MTA REPAIR HP.
**Fig. 9:** Radiographic image of the apical plug.
**Fig. 10:** Final radiograph.
**Fig. 11:** Follow-up after six months.

**contact**

Dr Fábio Duarte da Costa Aznar works in applied dental sciences at the University of São Paulo in Brazil. He also coordinates a specialisation course in endodontics offered at various Brazilian universities.

Aznar can be contacted at fabio@aznar.com.br.