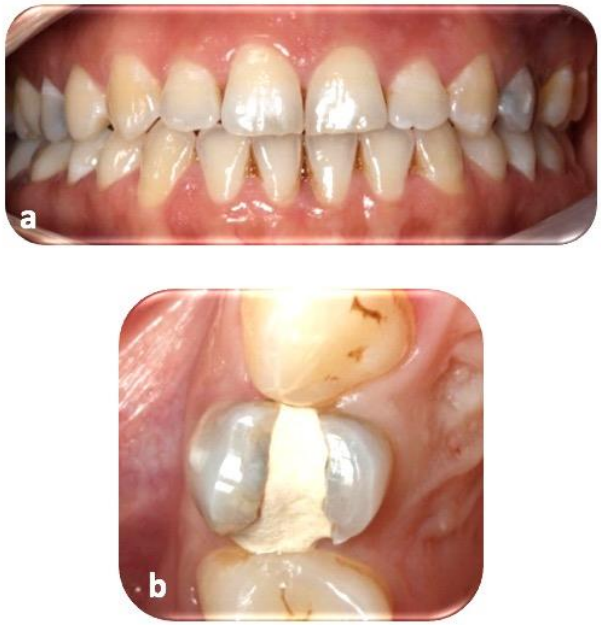


Figure 2 Clinical pre-operative photographs. (a) Labial view (b) Occlusal view tooth 24

Figure 3 Pre-operative PA radiograph of tooth 24

Treatment plan

Tooth 24

1. Perforation repair and root canal treatment
2. Composite restoration
3. Emax onlay
4. Clinical and radiographic review

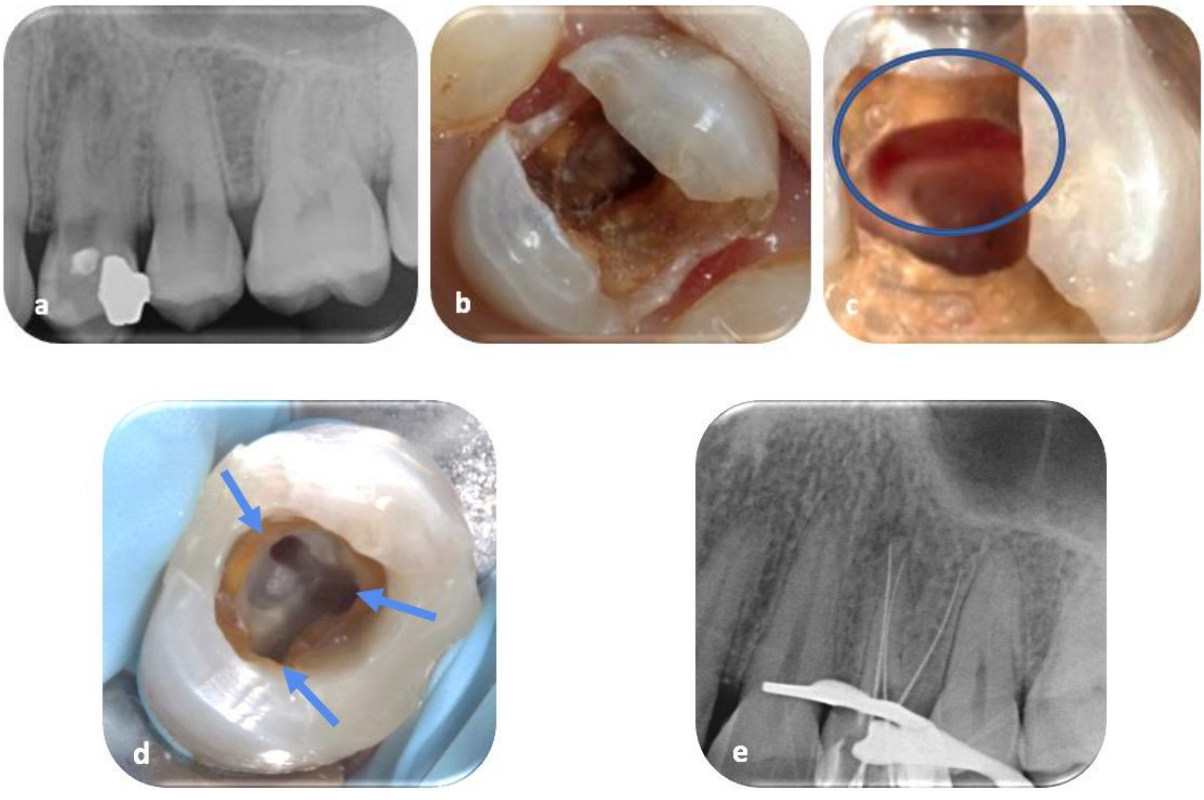
This case demonstrated the management of a three rooted maxillary premolar and perforation repair.

One of the predominant causes of endodontic failure is untreated canals that remain inadequately debrided and obturated. This particularly affects teeth with additional root canals (Pitt Ford 2004, Bander et al 2010). Maxillary premolars most commonly present

with two canals, however the incidence of three roots has been reported to range from 6-9.2% (Vertucci and Gegauff 1979; Mariusz et al 2005).

In this case, the additional root was visible on the radiograph and the canals identifiable with the use of an operating microscope.

The treatment was complicated by the presence of a perforation due to incorrect access. The perforation was reasonably small and within the cervical third of the root. It has been reported that perforations at crestal level are of questionable prognosis due to the proximity to the epithelial attachment and contamination to the oral environment (Tsesis and Fuss 2006). In such cases a material that is biocompatible, with a short setting time and good seal ability is ideal (Fuss and Trope 1996). MTA is commonly used as a perforation repair material, however, due to the location of the perforation and risk of dissolution, glass ionomer cement was used to repair the perforation (Regan et al 2005).



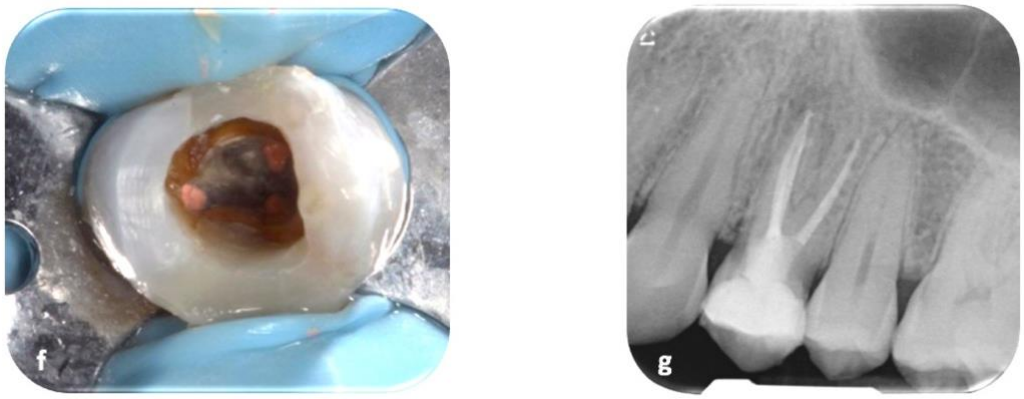


Figure 4 Photographs and PA radiographs of tooth 24 (a) Pre-operative (b) Photograph after removal of temporary filling (c) Perforation on mesial aspect (d) Photograph of access showing 3 separate canals (e) Working Length Radiograph (f) Photograph of obturated canals (g) Postoperative radiograph following placement of the composite core restoration.

Figure 6 Review of tooth 24 (a) Pre-operative radiograph (b) Postoperative radiograph (c) 1-year review, showing periapical radiolucency is less dense.