Treatment plan

Tooth 46

1. Gingivectomy using electrosurgery on mesio-lingual aspect
2. Remove existing coronal restorations and assess restorability
3. Removal of fractured instrument
4. Root canal retreatment
5. Composite restoration
6. Clinical and radiographic review

This case demonstrates the removal of a fractured instrument and root canal retreatment of tooth 46.

The incidence of file fracture ranges between 0.4 and 5% (Pettiette et al. 2002; Al-Fourzan et al. 2003) and presents as a barrier to mechanical and chemical debridement. The endodontic prognosis after instrument fracture is affected by the stage and extent of canal preparation and disinfection at the time of separation.

In this case, a stainless steel hand file had been fractured early on in the instrumentation procedure, leaving infected tissue beyond the remaining canal. This would significantly affect the prognosis of the tooth unless the instrument was removed or bypassed.

Successful removal of instruments is dependent on the position of the file within the canal, visibility, length and type of files fractured (Shen et al 2004, Parashos & Messer

2006). Studies have also shown that instruments fractured in the mesial canals of lower molars are associated with lower incidence of fractured instrument removal (Hulsmann and Schinkel 1999). In this instance, the file was accessible and visible with the use of a microscope and successfully removed with the use of ultrasonic vibration.

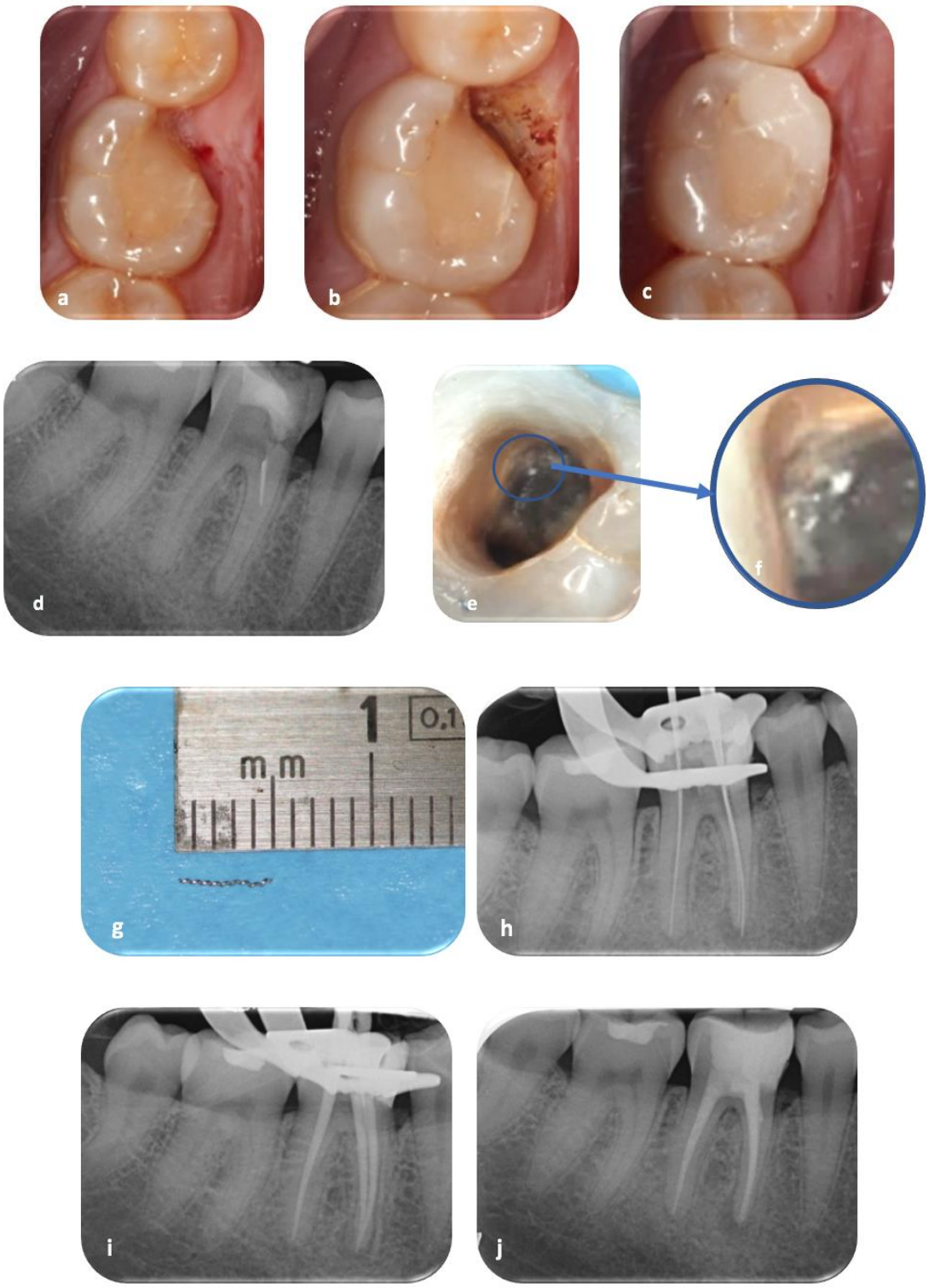

Figure 4 Photographs and PA radiographs of tooth 46 (a) Pre-operative (b) Post electrosurgery (c) Composite

build up (d) Pre operative PA radiograph (e) Fractured instrument in mesio lingual canal (f) Close up of fractured instrument in ML canal (g) Removed fractured instrument (h) Working Length PA radiograph (i) Master cone PA radiograph (j) Postoperative radiograph.

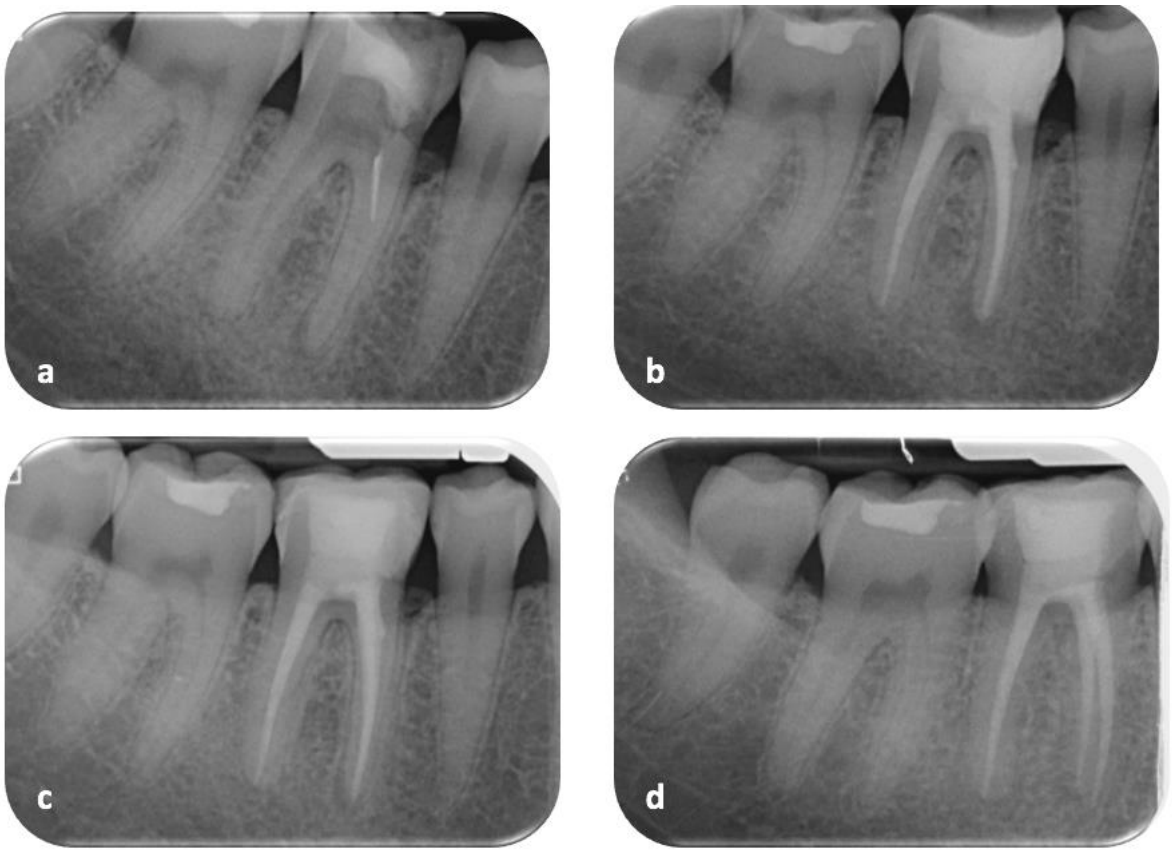

Figure 6 Review of tooth 36 (a) Pre-operative radiograph (b) Postoperative radiograph (c) 1-year review, showing periapical radiolucency is less dense (d) 2-year review, showing further reduction in the density and size of the periapical radiolucency