

# S-shaped root— risks of a master challenge in endodontology

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Fig. 1\_Diagnostic radiograph of tooth 45 and tooth 44.

Fig. 2\_Radiograph with masterpoint in tooth 45 and Hedstrom file in tooth 44.



An 81-year-old female patient came with typical pulpitic pain in the right side lower mandible.

The sensitivity testing showed a prolonged positive result in tooth 45 and no result in tooth 44. The percussion testing showed contrary results; no result in tooth 45 and a slight positive result in tooth 44. A radiograph showed an apical lesion of endodontic origin in tooth 44 and no diagnostic findings in tooth 45.

Although the endodontic lesion in tooth 44 must have been present for several months due to its di-

mension, the cause of her acute pain was tooth 45. Furthermore, the radiograph showed an s-shaped root morphology in tooth 44 that made endodontic treatment not just difficult, but a real master challenge.

The pulp chamber of both teeth were opened after anaesthesia and the diagnosis of irreversible pulpitis in tooth 45 and infected necrosis in tooth 44 was confirmed by intracoronary inspection. While prolonged intracanal bleeding could be observed in tooth 45, there was upwelling pus in tooth 44.

Fig. 3\_Radiograph with masterpoint in tooth 44.

Fig. 4\_Radiograph of canal obturation in tooth 45 and tooth 44.





Fig. 5



Fig. 6

**Fig. 5\_** Pulp opening and canal access.

**Fig. 6\_** Coronal closure with composite material.

After irrigation with 3% natriumhypochloride solution, the apex locator showed 21 mm working length in tooth 45. The cleaning and shaping of the root canal of tooth 45 was completed in the first appointment. A combination of tetracycline and cortisone was brought into the root canal reaching its depth. In tooth 44, probing was performed with a Hedström file (ISO 08/02) to drain the pus. The second stage of treating tooth 44 also included probing and irrigation, as well as the exploration of the working length with an apex locator 21 mm in length.

After manual cleaning and shaping with Hedström files, subsequent irrigation followed by reciprocating preparation, a radiograph was taken to confirm the length of the root canal. In the third endodontic approach, the working length was reconfirmed and both root canals were obturated with gutta percha in a combination of cold and warm obturation. As it can be seen, one major risk in s-shaped roots is the straightening of the curvature wherefore the preparation of the root canal should not exceed ISO 25 to prevent accidental weakening or strip perforation of the inner bend.


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| _author  | roots |
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