Canalis sinuosus mimicking a periapical inflammatory lesion

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A case is presented in which an anatomical feature, canalis sinuosus, manifested as a periapical radiolucency on an upper canine. This may have been interpreted as an inflammatory lesion and led to the patient receiving inappropriate treatment had a further radiograph not been taken. The incisive foramen and mental foramen are well known anatomical features which may mimic periapical inflammatory lesions but it is less common for a neurovascular canal to manifest as a periapical radiolucency on an upper canine.

There have been many reports of conditions which may mimic periapical inflammatory lesions such as carcinoma,[1,2] odontogenic cyst,[3] aberrant salivary gland tissue,[4] and periapical cemental dysplasia.[5] Film processing errors have also been reported to mimic the appearance of periapical infection[6] while normal anatomy such as the mental or incisive foramina are familiar as radiolucencies which may overlie teeth and cause diagnostic confusion. This case describes an unusual variation of normal anatomy manifesting as a periapical radiolucency on an upper canine.

In brief

- Canalis sinuosus is a poorly recognised neurovascular canal which carries the anterior superior alveolar nerve and vessels
- This normal anatomical feature may unusually manifest as a 'periapical inflammatory lesion' on an upper canine
- A second radiograph may be justified in such cases where the diagnosis is in doubt. However, careful examination of these radiographs shows a clear periodontal ligament space which in itself indicates that this is not a periapical inflammatory lesion
- This case emphasises the need for careful consideration of the causes of periapical radiolucency before making a diagnosis.

Case history

A 35-year-old man attended a general dental practice complaining of fractured posterior composite restorations. Paralleling technique periapical radiographs of the upper canine and premolar regions revealed well defined radiolucencies related to the root apices of the canines. The left side is shown (fig. 1). The upper left canine had no restorations, caries or discoloration. The upper right canine had a large mesial restoration but both gave a positive response to electric pulp testing. There was a history of trauma to the upper anterior teeth some 17 years previously. As the radiolucencies were not completely shown on these films it was felt justifiable to take further radiographs with vertically placed size 2 films. These showed the radiolucencies to be distinct channels with corticated borders typical of neurovascular canals. Careful examination of both sets of radiographs also showed a clear periodontal ligament space. The left side is shown (fig. 2).

Discussion

A similar appearance was described by Worth in 1963 as an 'aberrant vascular channel'.[7] However it was felt likely that this appearance represented an unusual course of the anterior superior dental nerve and vessels. *Grays anatomy* describes the canal carrying this nerve and accompanying vessels as the canalis sinuosus.[8] This name was first suggested by Jones in 1939 who described the anterior superior dental nerve and vessels as leaving the infra orbital nerve behind the infra orbital foramen and running laterally in a bony canal some 2 mm in diameter.[9] He recorded that the canal reaches the anterior margin of the orbit lateral to the infra orbital foramen before turning downward in the anterior wall of the antrum. Jones then describes the canal as turning medially, curving below the infra orbital foramen, reaching the lateral wall

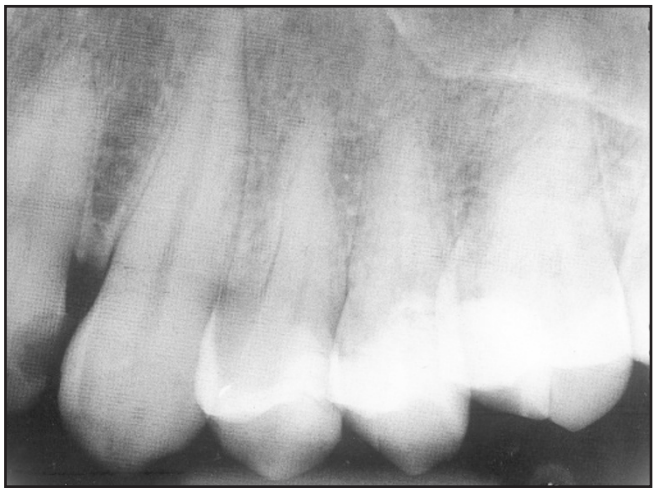

Fig. 1 First periapical radiograph showing a radiolucency at the apex of the upper left canine

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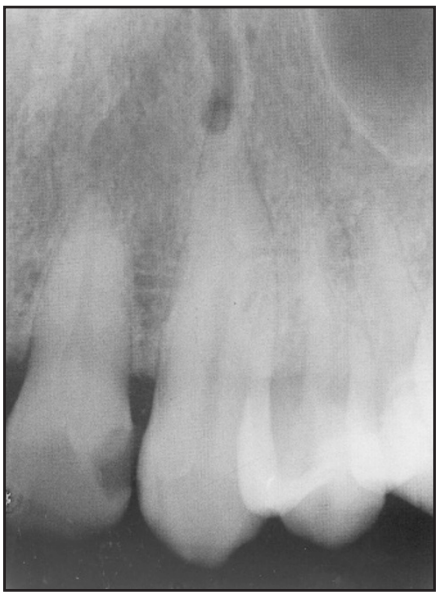

Fig. 2 A second vertically placed film showing the typical appearance of a neurovascular canal

of the nose and tunnelling downward around the nasal opening. It seems likely that the radiographic appearance shown in this case study represents the circumnarial part of the canal where Jones describes it passing between the medial aspect of the alveolus for the canine tooth and the nasal cavity.

Conclusion

This case emphasises the need for careful consideration of the causes of periapical radiolucency before making a diagnosis and identifies a poorly recognised anatomical feature which may cause diagnostic confusion. This appearance may have led to the patient receiving inappropriate treatment had a further radiograph not been taken. However, careful examination of these radiographs shows a clear periodontal ligament space which in itself indicates that this is not a periapical inflammatory lesion.

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