

Serious infection after dental treatment

GORDIAN FULDE MB BS, FRACS, FRCS(Ed), FRCS/RCP(A&E)Ed, FACEM

Infections of odontogenic origin are not uncommon and may present as emergencies.

Working in an inner city emergency department, away from your suburban general practice, you enjoy the different spectrum of disease presentation that comes with groups such as tourists and business travellers.

One morning you attended a 39-year-old man who had been given a middle level triage score of 3 (to be seen within 30 minutes). The triage nurse had noted the presenting problems as: Dental surgery two weeks ago; now possible infection; right periorbital pressure, worse with coughing, and fevers. The observations showed the patient was afebrile, with a pulse of 90 beats per minute and blood pressure, 140/90 mmHg. The patient had rated his pain as severe, 9 out of 10. It was also noted that the patient had no past health problems and was currently on amoxicillin. The nurses had given him, with permission, two tablets of paracetamol 500 mg plus codeine 30 mg (Panadeine Forte) to relieve the extreme pain. The medications had started to take effect when you saw the patient 30 minutes later.

History and examination

The patient, a Dutch corporate accountant on a business trip to Australia, had had a right upper first premolar (tooth 14; see the box on this page) extracted in the Netherlands. The tooth apparently had been badly infected and had required a root canal treatment for drainage. He had been placed on amoxicillin and cleared to fly to Australia. He had noticed pain on his arrival three days ago and, since then, increasing pain and pressure behind the right eye with increasing photophobia and reported several episodes of ipsilateral epistaxis. The patient was feverish with chills, and was concerned whether he would be well enough to fly home in two days.

Examination revealed no abnormality of visual acuity, eye movements or peripheral field testing. However, the patient was extremely tender over the upper and medial side of his right eye without obvious signs of inflammation. Oral examination revealed nothing specific. The only abnormal test thus far was a mildly raised white cell count of $12.5 \times 10^9/L$ (normal range, 4 to $10 \times 10^9/L$).

Clinical diagnosis and further investigations

Your clinical impression was of maxillary/frontal sinusitis post-extraction, but orbital cellulitis (with its potentially direct connection to the brain and CSF) needed to be excluded.

One advantage of working in a hospital emergency department is that there is easy and quick access to diagnostic testing. The report of a CT scan of the sinuses (sinus x-rays are rarely done now) stated: 'There is blockage of both anterior and posterior drainage pathways of the right paranasal sinuses. There is a fluid level in the right sphenoid sinus with opacification of sphenoid recess. There is opacification of the right frontal, ethmoid and maxillary sinuses with widening of the frontonasal

Dentition notation

The international numbering system of teeth (Fédération Dentaire Internationale) should be used in written or verbal communication concerning teeth. This system provides a two-digit code to indicate each tooth. In the adult dentition, the maxillary right quadrant is designated quadrant 1; the maxillary left, quadrant 2; the mandibular left, quadrant 3; and the mandibular right, quadrant 4. The individual teeth are numbered from the central incisor (1) outwards to the third molar (8). In the deciduous dentition, the numbering is similar except that the quadrants are designated 5, 6, 7 and 8, and there are only five teeth in each quadrant.

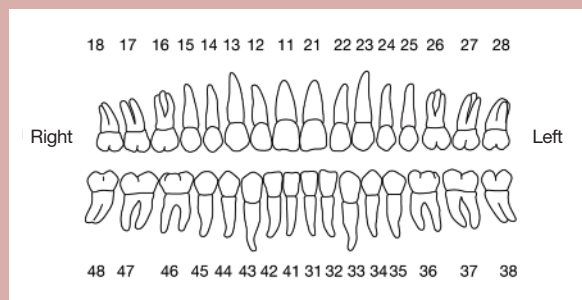


Figure. The international numbering system for adult dentition.

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Professor Fulde is Director, Emergency Department, St Vincent's Hospital; Associate Professor in Emergency Medicine at the University of New South Wales, Sydney, NSW.



Figure. CT scan showing right-sided sinusitis and no evidence of orbital cellulitis.

recess and maxillary ostium. There also appears to be a right-sided concha bullosa. Mucosal polyp is noted in the right frontal sinus. There is pressure thinning of the nasal conchae. The optic nerves, internal carotid arteries are seen in the expected positions. The cribriform plate is not low lying. Conclusion: Features are consistent with an extensive right-sided sinusitis (including right concha bullitis). A polyp adjacent to or involving the right osteomeatal unit is not excluded.' (See the Figure.)

The ENT registrar and his consultant agreed with your assessment of maxillary/frontal sinusitis. The registrar, using portable fibre optic equipment, found pus from the middle meatus as well as evidence of nasal polyps on the right side. A meatal swab was taken for culture and sensitivity testing.

Treatment

The patient was started on intravenous ceftriaxone 1 g, flucloxacillin 1 g, metronidazole 500 mg and dexamethasone 8 mg, and also oxymetazoline nasal spray 0.5 mg/mL. Much to his concern, he was told that if his condition had not improved markedly within 24 to 48 hours he would need surgical drainage and would have to postpone his return flight. He was kept in the 24-hour short stay ward attached to the emergency department where he improved enough by the next day to be later discharged to his hotel with ENT follow up.

The microbiology results of the meatal swab showed a staphylococcal isolate that was penicillin resistant, methicillin and flucloxacillin sensitive, cephalosporin sensitive and erythromycin sensitive. No anaerobes were isolated.

Conclusion

This case is a reminder that infections of odontogenic origin are not uncommon, particularly sinusitis as a complication of tooth extraction. Teeth with roots in the floor of the maxillary sinus may cause sinusitis, especially after root canal treatment. The anterior teeth (with their roots not in the maxillary sinus floor) are the teeth usually associated with facial swelling and sinusitis that can progress to orbital cellulitis. A sinus CT scan will exclude orbital cellulitis and should be requested if there is concern about a complication.

The microbiology results in this case raise again the issue of increasing drug resistance of staphylococci and streptococci.

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DECLARATION OF INTEREST: None.