CASE REPORT

Utilising previous radiographs: the principle of dose optimisation

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Objective: In dentistry, imaging is the most frequently used diagnostic tool. As a result, a steady increase in the use of imaging modalities are leading to an increase in healthcare cost and in patients’ radiation exposure.

Results: 67-year-old patient attended for a surgical removal of lower left third molar. A sectioned panoramic radiograph showed an incidental finding of a well-defined, unilocular radiolucency apical to the lower left second and third molars. This was partially superimposed over the outline of the ID canal. A Stafne’s bone cavity was considered as the most likely diagnosis. Further imaging was considered due to location not being fully below the ID canal as usually described in the literature. Reviewing previous imaging on PACS revealed the patient has had a CT angiogram of the head and neck 5 years prior. This showed a lingual bone defect of the surface of the mandible in the region of interest. The extension of the submandibular gland into the defect confirmed the likely nature of Stafne’s bone cavity.

Conclusion: This case highlights the essential role of reviewing (if in the same practice) or requesting (from a different practice) previous images. The international Commission for Radiological Protection regularly publishes data relating to the principles of dose reduction; Justification, Optimisation and Limitation. All examinations have to be justified to ensure the benefit to the patient outweigh the risk and radiation should be kept as low as reasonably achievable.

SUMMARY

In dentistry, imaging is the most frequently used diagnostic tool. The easy access to medical and dental imaging has made us clinicians more accepting to requesting radiographic examinations. This has been coupled with recent advances in medical imaging technology including software reconstruction and detector resolution. As a result, a steady increase in the use of imaging modalities are leading to an increase in healthcare cost and patients’ radiation exposure.1

CLINICAL PRESENTATION

We present a case where the use of previous imaging has aided the diagnosis and prevented unnecessary exposure to the patient.

A 67-year-old patient attended for a surgical removal of lower left third molar. A sectioned panoramic radiograph (Figure 1) showed an incidental finding of a well-defined, unilocular radiolucency measuring 10 × 7 mm apical to the lower left second and third molars. This was partially superimposed over the outline of the ID canal.

Differential diagnosis

A Stafne’s bone cavity (SBC) was considered the most likely diagnosis.2 For further investigation, a 6 × 6 cm FOV (field of view) CBCT (cone beam computed tomography) was considered due to location not being fully below the ID canal as usually described in the literature.

Investigations/imaging findings

A radiologist opinion was sought. Reviewing previous imaging on PACS (Picture Archive and Communication System) revealed the patient has had a CT angiogram of the head and neck 5 years prior (Figure 2). As a result, no further imaging was needed and therefore the patient was saved from extra radiation of about 15–20 microsievert. This showed a lingual bone defect of the surface of the mandible in the region of interest. The extension of
the submandibular gland into the defect confirmed the likely nature of SBC.3,4

OUTCOME AND DISCUSSION
SBC is a benign condition also known as lingual mandibular bone defect (LMBD), idiopathic bone cavity, static bone defect or ectopic salivary gland. It describes a cavity on the lingual surface of the mandible often filled with normal salivary gland tissue, but occasionally they contain skeletal muscle, fibrous connective tissue, adipose tissue, lymphatic tissue and blood vessels.5,6

TREATMENT
No further investigation and treatment were required.

LEARNING POINTS
Previous imaging has rendered the need for any new imaging unnecessary. This case highlights

- The essential role of reviewing (if in the same practice) or requesting (from a different practice) previous images.
- PACS is widely used in any Hospital in developed countries and therefore previously performed imaging procedures are easily accessible.
- The International Commission for Radiological Protection regularly publishes data relating to the principles of dose reduction; Justification, Optimization and Limitation.
- All examinations have to be justified to ensure the benefit to the patient outweigh the risk and should be optimised to secure radiation exposures are kept as low as reasonably achievable.7
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