Tips on radiology for those challenging moments

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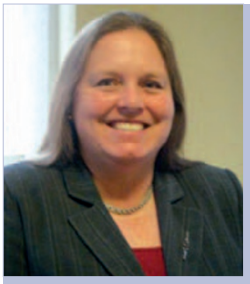
We must be able to think 'outside the box' when taking radiographs for patients with challenging needs. The aim of this article and associated presentation at the 2013 British Dental Conference & Exhibition is to give an overview of methods to achieve radiographs for patients with special or additional care needs.

We are all taught as undergraduates that history taking, listening and examination are essential to obtaining a diagnosis and formulating a treatment plan for a patient. Supplementing this information are special tests, which include the taking of appropriate radiographs where indicated. I am sure that most of us would assume that this is a routine procedure which, as patients ourselves, we would expect to have carried out as part of our normal care at the dentist. Of course following Ionising Radiation (Medical Exposure) Regulations with adherence to the 'as low as reasonably practicable' (ALARP) principle, is the gold standard for radiography. For example, a bitewing radiograph with the use of rectangular collimation, although not always entirely comfortable, would be entirely acceptable and achievable. However for some patients, the above is not routinely available, possible or indeed achievable. In these cases a little bit of lateral thinking, imagination and occasionally a hint of abracadabra is needed.



Gillian Greenwood qualified at the London Hospital in 1985 and went on to work there as a house officer in restorative dentistry. This was followed by resident, SHO, and registrar posts in OMFS. Gill also spent two years as a full time GDP. Since then she has followed her dual and converging interests of special care dentistry and oral surgery and is a registered specialist in both areas. In 2004 she joined the East Yorkshire and Hull salaried dental services and was appointed as consultant in special care dentistry at City Health Care Partnership Hull in 2010. Gill has been recently elected Chair of the BDA's Community Dental Service Group Management Committee.

People with special care needs do have a wide range of needs that require us, as dentists, with appropriate justification to move away from the gold standard if the taking of a radiograph is in the best interest of a patient and will alter either their care pathway or treatment plan. In 2003 the Joint Advisory Committee Of Special Care Dentistry, defined special care dentistry as the 'provision of oral care for people with physical, sensory, intellectual, mental, medicinal, emotional or social needs or more often a combination of these'. Statistically one in four adults will have disability of some form touching their lives.

Intra-oral radiographs

For people with reduced concentration span, a tremor or limb spasm (for example people with a learning impairment, cerebral palsy, Parkinson's, Huntingdon's chorea or multiple sclerosis) using circular collimation may allow for this slight movement and result in an acceptable radiograph. This is preferable to retaking an unacceptable radiograph where rectangular collimation is used.

The use of occlusal radiographs or large periapical radiographs, with circular collimation using the old bisecting angle technique, may often achieve a radiograph that can help with a diagnosis and treatment planning for anterior teeth. Whereas a long cone periapical radiograph, using the paralleling technique, with rectangular collimation may just not be achievable for patients with special care needs.

Turning the anterior corner under of a bitewing radiograph may help to prevent injury to the floor of the mouth

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and subsequent haematoma formation in those patients with an increased bleeding tendency, for example patients with haemophilia, Von Willebrand disease, those with alcoholic liver disease or on anticoagulants.

Adjuncts to successful radiography

My favourite hot tip is one that an oncology patient gave me. They suggested the use of a bit of salt on the tongue to reduce the gag reflex sufficiently long enough to achieve an intra-oral radiograph or indeed some treatment.

The use of a vacuum pillow

The stabilisation of a patients head and neck using vacuum pillows can really help where there is neck instability or a tremor. Often when patients are trying their best to stay still, there tremors become more profound. If they can relax against a firm personally shaped pillow, the tremor often reduces significantly (Fig. 1).

Use of models

Showing people where a bitewing sits in the mouth using a set of dental models often prevents patients trying to bite onto the film rather than the holder, or the defensive tongue!

Extra-oral radiographs

There are many situations where a rotational tomogram (RT) is not possible yet an extra-oral view is absolutely necessary. There is a rather old-fashioned, but useful, technique called the oblique lateral radiograph (OL) that I was taught as an undergraduate by Rita Mason of The Royal London Hospital. I always recall Professor Seward insisting that we called it this rather than lateral oblique as it was a lateral radiograph taken obliquely.

This view does take practise and a bit of 'eyeballing', especially when used under IV sedation or general anaesthesia. However, it shows, when taken well,

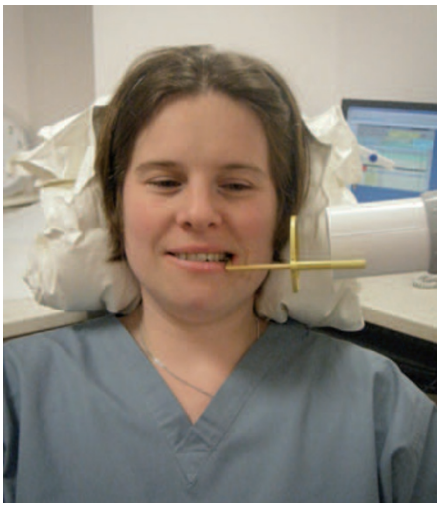

Fig. 1 Head and neck stabilisation using a vacuum pillow

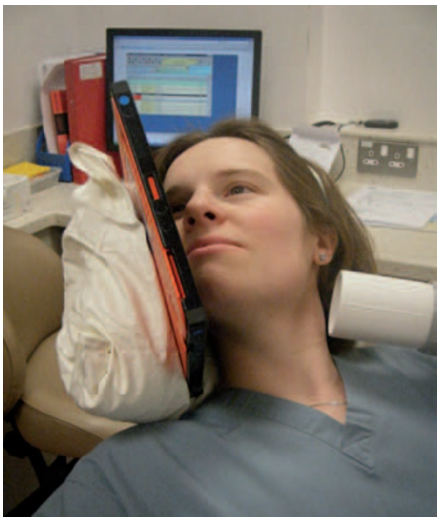

Fig. 2 Oblique lateral using a vacuum pillow

most of half a mandible and a good proportion of half the maxilla (Fig. 2). The view can be used of course for third molars, periapical pathology, bone levels, caries assessment, bony pathology and unerupted teeth without the problems of the focal trough that occurs with RTs.

Examples of situations where the oblique lateral view is useful are as follows:

- Reduced cooperation for a RT
- Reduced understanding/concentration span for a RT
- Increased gag reflex
- Anatomy, for example, reduced distance between shoulders and mandible
- Claustrophobia
- Tremors, limb spasms or involuntary body movements
- Fixed neck flexion, for example, ankylosing spondylitis
- Reduced mouth opening, for example trismus, trauma, burns, submucous fibrosis
- Severe oral or dental phobia
- Under IV sedation or general anaesthesia

Case history

A patient of mine recently attended for their yearly examination and treatment under IV sedation. Medically the patient has severe cerebral palsy, severe learning impairment, severe epilepsy needing a vagal nerve stimulator (VNS) and antiepileptic medication. They have a severe kyphoscoliosis and only very limited forms of communication.

Oral pain can be indicated by this patient by increased saliva, an increase in bruxist activity or by the refusal of food, which can mean the need for a PEG (percutaneous endoscopic gastrostomy). All of the above had been witnessed recently by the parents.

Once under sedation, examination showed slight mobility of a sound lower third molar. An oblique lateral radiograph was taken using vacuum pillows as a support for the film cassette. This suggested a multilocular lesion associated with the tooth. The patient has now been referred to the local oral maxilla-facial department for further care. Our concerns of course are that the differential diagnosis may include a keratocyst, ameloblastoma, myxoma or a malignancy.

Gillian Greenwood will be speaking on this subject on Thursday 25 April at the 2013 British Dental Conference & Exhibition held at ExCeL London. Register online: www.bda.org/conference