

# A study of panoramic radiography in adult patients

Screening panoramic radiology of adults in general dental practice: radiological findings by V. E. Rushton, K. Horner and H. V. Worthington *Br Dent J* 2001; 190: 495-501

## Aim

To identify the radiological findings from routine screening panoramic radiographs taken of adult ( $\geq 18$  years) patients in general dental practice.

## Method

Forty-one general dental practitioners (GDPs) who routinely took panoramic radiographs of all new adult patients were recruited. In total, they submitted 1,818 panoramic radiographs of consecutive patients along with basic patient information, radiological reports and treatment plans. The radiographs were also reported by 'experts' (consensus of two dental radiologists). Radiological findings were recorded from the GDP assessments (dentist RY), the experts (expert RY), after exclusion of findings that would have been seen on posterior bitewing radiographs (MRY) and after exclusion of findings of no relevance to treatment (MRYT).

## Results

There was no significant difference in age profile between the study sample and Dental Practice Board population figures ( $P = 0.26$ ). No radiographs other than the panoramic radiograph had been taken for 57.1% of patients. For the GDP assessments, only 4.6% of patients had radiographs with no radiological findings, while for the experts this proportion was 3.1%. With the exception of the assessment of periodontal bone loss, the experts diagnosed significantly greater proportions of cases as having positive radiological findings. Agreement between dentist and expert assessments varied greatly. When findings from bitewing radiographs were excluded, no radiological findings were recorded on the radiographs of 17.2% of patients. When proposed treatment plans were taken into account, the majority

of patients' radiographs (56.3%) had no radiological findings of relevance to treatment.

## Conclusions

The choice of radiographic examination for the majority of patients in the study did not follow current guidelines. Dentists diagnosed fewer abnormalities than did experts. While many radiological findings are revealed by panoramic radiography, these may either duplicate information from bitewing radiographs or are often of no significance to treatment planning. This study did not provide evidence to support the practice of routine panoramic radiography of all new adult patients.

## In Brief

- This study in a general dental practice setting looked at the diagnostic yield from routine panoramic radiography of new adult patients
- Many of the dentists involved in the study did not follow current guidelines on the choice of radiographic examination for new patients
- Radiological abnormalities were identified on the overwhelming majority of radiographs, but many of these would have duplicated findings available on more accurate posterior bitewing radiographs
- When the treatment plans of the dentists were taken into account, the majority (56.3%) of radiographs made no contribution to patient management
- The routine use of panoramic radiography on new adult patients is not supported by the findings of this study

## Comment

This paper is the latest from Rushton and her colleagues exploring the use of panoramic radiography in general dental practice. They showed in a previous paper that 42% of GDPs practised routine panoramic screening of all new patients. This practice breaches a fundamental precept of the *Ionising Radiation (Medical Exposure) Regulations (2000)* which state that all radiographs must be justified so that they are of positive benefit to a patient's management or prognosis.

The present paper examines whether such screening radiography can in any way be justified in terms of the actual radiographic findings. The GDPs taking part in the study provided the basic clinical information with each radiograph together with a radiological report and treatment plan. The radiological findings were compared with those of two dental radiologists.

In order to assess the potential radiological findings the investigators first excluded those which would have been found on posterior bitewings, since these are by general agreement the radiograph of choice for the new patient, and then those of no relevance to treatment. In less than 5% of cases, there were no relevant radiological findings, rising to 17% if the findings from bitewing radiographs were excluded, and over 55% when the proposed treatment plans were taken into account.

These results confirm previous reports that the significant diagnostic yield from screening panoramic radiography is low but are novel in that they relate to a wider, general dental practice population. They also provide sound evidence to confirm current guidelines: there is no justification for the practice of routine panoramic screening of new dental patients. The next

stage in this study is to identify any possible clinical indicators and is, therefore, awaited with interest.

This paper raises one other issue of current concern. There was a wide disparity between the dentists and the radiologists in their radiological findings. IR(ME)R 2000 requires as part of optimisation that all radiographs must be reported. It is important to appreciate that observer variation is not the same as observer error. Written radiology reports are already part of some third party quality assurance programmes. They should be included in every practitioner's risk management strategy and integral to the undergraduate curriculum.

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