Summary of: Apical periodontitis and the technical quality of root canal treatment in an adult sub-population in London

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FULL PAPER DETAILS

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Aim To assess the prevalence of apical periodontitis (AP) and the technical quality of root canal treatment in an adult sub-population in London. **Methodology** Panoramic radiographs of 136 patients who attended a dental hospital were collected. The periapical health of teeth present was assessed radiographically and the presence or absence of AP noted. The technical quality of the root canal treatment was scored as adequate or inadequate, based on the European Society of Endodontology (2006) guidelines. **Results** A total of 3,396 teeth were assessed; AP was detected in 4.1% of the teeth. Forty-nine percent of patients had at least one tooth with radiographic evidence of AP. The percentage of root filled teeth with AP was 38.3%. AP was significantly more frequently found in root treated, compared with non-root treated, teeth ($p < 0.001$). In 44.3% of the cases, the technical quality of the root canal filling was inadequate. AP was detected in 14% of adequately, compared with 68.6% of inadequately, root filled teeth. There is a significant negative correlation between the technical quality of root canal treatment and the presence of AP ($p < 0.001$). **Conclusions** There was a high prevalence of AP and poor technical quality root canal treatment; a strong association between AP and root filled teeth, and between the periapical health and the technical quality of the root canal treatment. The results are consistent with previous studies using similar methodology and re-confirmed that high technical quality root canal treatment is crucial to ensure a favourable treatment outcome.

EDITOR'S SUMMARY

Well, at least we're all agreed on this then. Or are we? It seems that although this work is based on a subset of a population as yet to find its place in the literature in all other respects the results are consistent with previously published studies in the same field in a variety of locations and patients.

Beginning with that which we can agree on it seems that the standards of endodontic treatment in general dental practice leave something to be desired. Although this study does not quantify the consequences of this deficit other than in terms of radiologically detectable apical periodontitis, there are doubtlessly human sequelae such as pain, retreatment, inconvenience and recrimination, to name but a few.

What is baffling is that there seems to me to be a great deal of 'noise', in the distraction sense, around this matter which no one has quite been able to

unravel. Yet why is that so difficult? The main issues seem to be the teaching of endodontics, the ability to apply that teaching in general dental practice as a whole but in particular within what is defined as the financial constraints of the NHS system.

While there might be a lot of metaphorical noise there is also an echoing void of spooky silence. The GDC oversees the undergraduate curriculum; isn't it their role to address this? The Department of Health/NHS/taxpayer are footing an estimated minimum of £20m per annum. Why do they not react? What are the collective views of the patients? No one coordinates this.

I suspect it is rather like the situation at the AGM of any society, group or committee with which any of us have ever been or still are involved. As soon as there is a call for anyone to do a job there is much shuffling of bottoms, avoidance of eye contact and staring at feet.

Perhaps we need a root canal 'Tzar' to sit down and bang a few heads together. Actually and metaphorically would this do any less harm than the disappointing results of endodontics as it is evidently being currently executed?

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 216 issue 10.

Stephen Hancocks

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IN BRIEF

- Reports a high prevalence of apical periodontitis and poor technical quality root canal treatment (RCT) in an adult sub-population in London.
- Highlights a statistically significant negative correlation between the technical quality of RCT and the presence of apical periodontitis.
- Suggests endodontic training, and current NHS policies, may require review to maximise the effectiveness of RCT.

COMMENTARY

The authors of this well presented paper carefully examined all the panoramic radiographs taken over a four-week period in their dental hospital, looking for evidence of any periradicular radiolucency. Although the authors do not discuss the reasons for exposing these radiographs, it is most probable that they were taken as part of routine examinations and not specifically for the diagnosis of pain or endodontic lesions. The reported results conform to those found in many similar studies carried out in other centres, both in the UK and abroad. Forty-four percent of root filled teeth were found to have inadequate root canal obturation and over two thirds of these were associated with periradicular radiolucency. Of course, it is impossible to know whether or not these teeth had any associated symptoms, or whether these lesions were increasing or healing. What is clear is that the root canal treatments had not been carried out in accord with accepted clinical guidelines and this inadequate treatment, simply extrapolating the figures in the paper, had cost the NHS some £20,000,000.

The final paragraph of the paper poses some possible solutions, one being that oral care be divided into two separate parts: 'routine care' and 'advanced/high-skill treatments'. These latter, they propose, would only be provided by specialists or general dental practitioners with advanced knowledge and training. They observe, however, that there would be significant financial considerations and potential difficulties for some patients to obtain treatment.

The paper poses two important considerations for general practitioners. The more obvious is that, once again, a significant proportion of root canal

treatments provided in general dental practice appeared to be at best inadequate, and at worst failing. The second is the authors' report that a recent survey of newly qualified dentists found 66% felt themselves to be poorly prepared to carry out root canal treatment, with 3% feeling 'very poorly' prepared. As a profession surely we must demand to know why this is. Indeed, we should also demand to know why root canal treatment is widely found to be difficult to perform to an acceptable standard. I am always told that such research, asking university teachers and general practitioners these questions, would be too difficult and I have to confess that I did not do this in my practising life-time. I wish I had grasped the nettle and I urge the profession to direct their attention to this, perhaps, dare I say, in preference to yet more surveys telling us how poor our results are.

Peter Carrotte
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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

Longitudinal studies undertaken in controlled environments, such as in university hospitals or specialist clinics, have reported high success rates in establishing periapical health following root canal treatment. Unfortunately, this is not reflected in cross-sectional studies of the general population, which showed high rates of root filled teeth with concomitant apical periodontitis. Treatment failures invariably drain valuable and limited financial resources from public health services such as the NHS in the UK. As far as we are aware, no data have been published previously on the prevalence of apical periodontitis and the quality of root canal treatment in London. The aims of this study were to assess the periapical health status and the technical quality of root canal treatment in an adult sub-population in London and to compare the results with other studies using similar methodology.

2. What would you like to do next in this area to follow on from this work?

It would be interesting to conduct a similar study on a different sub-population: for example, patients attending a dental hospital outside London or those receiving private treatment. A relevant aspect to consider for future studies is the advent of newer three-dimensional imaging techniques, such as cone beam computed tomography (CBCT), and the impact on the evaluation of root canal treatment outcome. A high percentage of cases considered as being healthy when assessed using conventional radiography may reveal the presence of apical periodontitis when CBCT is used. It would be interesting to repeat the study in a similar sub-population but using CBCT, when it becomes more commonly available, compared with conventional radiography.