

Root canal treatment outcomes not affected by increasing age of patient

Abstracted from

Shakiba B, Hamedy R, Pak JG, Barbizam JV, Ogawa R, White SN.

Influence of increased patient age on longitudinal outcomes of root canal treatment: a systematic review. *Gerodontology* 2017; **34**: 101–109.

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Question: Is non surgical root canal therapy (NSRCT) more likely to fail in older patients?

Data sources Medline, Cochrane CENTRAL databases; most recent two years of seven journals: (*Acta Odontologica Scandinavica*; *Community Dentistry and Oral Epidemiology*; *Gerodontology*; *International Endodontic Journal*; *Journal of Endodontics*; *Journal of Oral Rehabilitation*; and *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*).

Study selection Tooth-based longitudinal prospective and retrospective studies, published in English from January 1950 to August 2013, assessing outcomes of NSRCT in adults with permanent teeth.

Data extraction and synthesis Studies were independently selected and reviewed by two reviewers. Standardised items were extracted and compiled into a table of evidence. Study quality was assessed by the Wong Scale-Revised and those that scored less than 18 were excluded. Due to the high heterogeneity in reporting, meta-analysis was not conducted. All of the success criteria were implicitly based upon the presence or absence of apical pathology, and each individual study made internal comparisons of success using the same criteria.

Results Of the twenty four studies selected, involving more than 17,430 teeth, nine were prospective and fifteen were retrospective studies. The overall mean study quality rating was 23(SD = 3) on the 27-point Wong Scale-Revised. Since the majority of the papers did not report raw numbers, and due to the heterogeneity in reporting, meta-analysis was not performed. In summary, eight prospective and fourteen retrospective studies reported no difference in outcomes, principally success which was defined by the absence of apical disease, with age. One prospective and one retrospective study reported an improvement in success with increasing age.

Conclusions The moderate evidence indicated that increased patient age does not decrease the success of NSRCT.

Commentary

Historically there have been unfavourable attitudes and beliefs among dentists, patients and care-givers concerning successful outcomes and cost-effectiveness in providing complex dental procedures like NSRCT for elders. Epidemiological data indicate that elders have a much higher prevalence of NSRCT, and proportionally more untreated apical pathology than other adults. Critical

examination of available evidence will help to assist patients, care-givers, dental professionals and third-party payers in making decisions about the efficacy of NSRCT in elders, leading to a better overall health promotion for the elders, as this population has already experienced loss of more teeth due to extractions.

Included studies came from a wide range of countries, but mostly from very high human development indices: Brazil, Finland, Germany, Italy, Japan, Norway, S. Africa, Sweden, Switzerland, UK and USA. All studies were longitudinal, with sample sizes ranging from 50 to 2,921 teeth. The follow up time was from six to 360 months.

The authors acknowledged that all studies included were observational in nature and some used techniques that are no longer considered current. There existed a high heterogeneity due to differences in reporting units (patients, teeth, roots or canals), outcome criteria, treatment methods, provider experience, duration of follow-up, year of publication, sample selection, geographical location, sample size, different age groupings and analytical methods. According to the WHO, the definition of older adults in the developed countries are those 65 or older, whereas in developing countries, this age is 60 and older.

A previous systematic review on the outcomes of NSRCT in older adults conducted by Ng *et al.*¹ (from 1961–2002) reviewed thirteen longitudinal studies, and performed a meta-analysis by pooling success outcome data into three age groups: up to 25, 25–50 and above 50. It found no significant difference in the odds of success.

The current review identified reporting bias against negative results while conducting electronic data search, and by hand searching incorporated additional papers that included survival data and older subjects up to 87 years old. It also added studies published after 2002. Although this current review still did not address the psychosocial aspects of NSRCT, it shows that NSRCT outcomes for elders are at least as favourable as for other adults. The importance and efficacy of NSRCT as part of overall dental care for the elders should be promoted.

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1. Ng YL, Mann V, Rahbaran S, Lewesey J, Gulabivala K, Outcome of primary root canal treatment: systematic review of the literature -- Part 2. Influence of clinical factors. *Int Endod J* 2008; **41**: 6–31.