Does Cone Beam Computed Tomography reporting different endodontic treatment outcomes compared to Periapical Radiographs?

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Clinical Question

In adult patients who have undergone endodontic treatment, what is the root canal survival rate when the root anatomy was assessed using CBCT compared to periapical radiographs, when followed-up over 6 months?

Methods

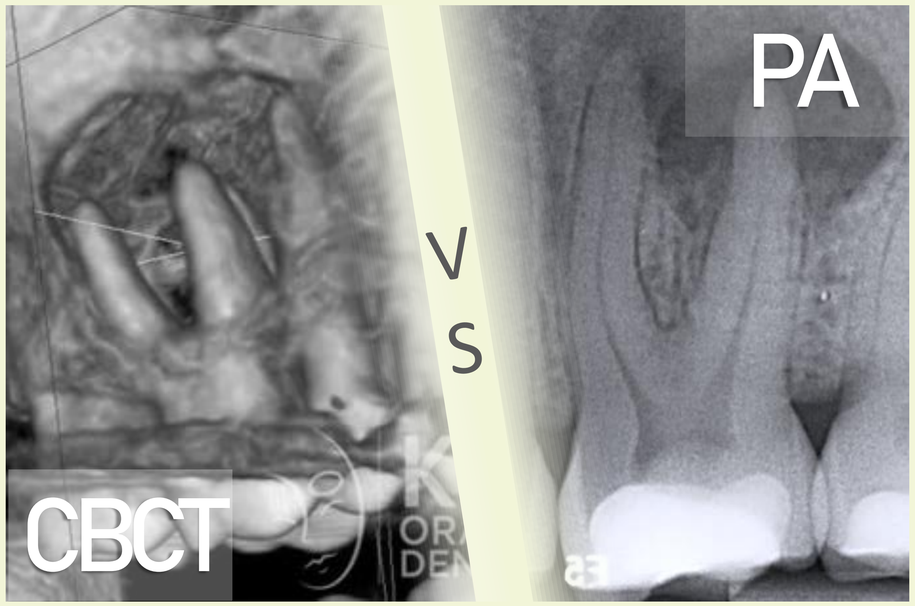
A total of 23 evidence sources were found in Ovid Medline using Mesh terms and key words.

Selected Studies

After careful review of best the evidence available one retrospective cohort study (Fernandez et al. 2017, 10 years follow up) and one experimental non-randomized study (Al-Nuami et al., 2017, 1 year follow up) were selected.

Clinical Bottom Line

"**A limited evidence suggesting that CBCT scans report lower tooth survival rate after endodontic treatment compared to the periapical radiographs.**"



Applicability

Results of both studies are statistically significant, clinically meaningful (threshold 10%) for Fernández et al. Clinical decisiveness can not be assessed for both studies as 95% CIs of survival rates differences were not reported .

Results

Al-Nuami et al., 2017:

Tooth survival rate PAs: 88%; CBCTs: 82%.
Difference, tooth survival rate = 6% ($p<0.035$)

Fernandez et al. 2017:

Tooth survival rate
PAs: 88.6% (95% CI, 84%–93.8%)
CBCTs: 69.7% (95% CI, 62.3%–77.8%).
Difference, tooth survival rate = 18.9% ($p<0.05$)

Evidence Quality

Strengths

- Al-Nuaimi et al 2017: decent follow-up period (1year), included posterior teeth, good reliability of measurements.
- Fernadez et al 2017: cohort study design, trained and blinded examiners, good reliabilivy of the measurements, 10-year follow-up, Kaplan-Meier method of survival analysis

Weaknesses

- Non-randomized experimental or retrospective study design
- Selection, measurement, attrition, and the outcome reporting bias
- The **generalizability** of the results is limited by the different countries of origin, university settings, different severity of the conditions and different follow ups.

References

Al-Nuaimi et al. 2017. A prospective study assessing the effect of coronal tooth structure loss on the outcome of root canal treatment. International Endodontic Journal. 2017; 50:1143-57
Fernandez R et al. 2017. Survival of endodontically treated roots/teeth based on periapical health and retention: A 10-year retrospective cohort study. J Endod 2017; 43:2001-08.

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