

ACTA

department of Endodontology

Best article of 2011

Selection Criteria

- *Article written in English*
- *Published in 2011 in a peer reviewed journal.*
- *Original research (no review)*
- *No ACTA affiliated authors*

Selection of the best article 2011

Every month we organize a seminar of current literature. During this seminar we critically read and discuss the published papers of that month.

For the first time the group of post-graduate students in Endodontology have selected their favorite or most appreciated articles published in 2011.

The articles were selected by the post-graduate students in 2 stages.

First 19 articles were selected and discussed during a special seminar.

Finally a voting took place and a top 3 was chosen.



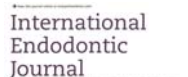
Foto: Hagay Shemesh and the post-graduate students 2011-2012

19 Selected articles in random order

1. Balkenhol et al- Failure of posts
(International Endodontic Journal, 44, 926-937, 2011)
2. Bauman et al. – MB canals on CBCT
(International Endodontic Journal, 44; issue 8; 2011; 752-758)
3. Chen et al. – Revascularization
(International Endodontic Journal, doi:10.1111/j.1365-2591.2011.01978.x)
4. Cotti et al- Endodontic infection and CVD
(Journal of Endodontics- Volume 37, Number 12, December 2011)
5. Durack et al. – CBCT for external resorption diagnosis
(International Endodontic Journal, 44, 136-147, 2011)
6. ElAyouti et al- **cuspal coverage**
(International Endodontic Journal, 44, 543-549, 2011)
7. ElAyouti et al. – dentine removal during apical enlargement
(Journal of Endodontics—Volume 37, Number 11, November 2011)
8. Lennon et al- 360 vs 180 degrees CBCT scans
(International Endodontic Journal, 44, 1118-1127, 2011)
9. Ma et al. – new model to investigate dentine disinfection
(Journal of Endodontics—Volume 37, Number 10, 1380-1385, October 2011)
10. Meder-Cowherd et al- Apical morphology
(Journal of Endodontics—Volume 37, Number 8, August 2011)



Figure: level of evidence



Volume 44 Number 12 December 2011

Selection continued

11. Ng et al- Outcome of non-surgical RCT
(*International Endodontic Journal*, 44, 610-625, 2011)
12. Paque et al- Reciprocating file
(*Journal of Endodontics*—Volume 37, Number 10, 1394-1397, October 2011)
13. Pannkuk – new technique for retreatment
(*Journal of Endodontics*—Volume 37, Number 3, 414-419, March 2011)
14. Peters & Paque – Preparation of max. molars with SAF
(*JOE* — Volume 37, Number 1, 53-57, January 2011)
15. Rechenberg et al- Reliability of bacterial leakage models
(*International Endodontic Journal*, 44, 827-835, 2011)
16. Reves-Carmona et al. – Host interactions with MTA en Calcium hydroxide.
(*JOE* — Volume 37, Number 9, 1325-1335, September 2011)
17. Schmoltdt et al- reinforcement of immature roots
(*JOE* — Volume 37, Number 10, 1390-1393, October 2011)
18. Seltzer et al- Long term prognosis of endo.treated teeth
(*Journal of Endodontics*—Volume 37, Number 1, January 2011)
19. Vozza et al- Endo vs. Implants
(*Clinical Implant Dentistry and Related Research* DOI 10.1111/j.1708-8208.2011.00397.x)

Potential systematic error in laboratory experiments on microbial leakage through filled root canals: an experimental study

D.-K. Rechenberg, T. Thurnheer & M. Zehnder



International Endodontic Journal, 44, 827-835, 2011

“Here we go again.....Tons of trees have been chopped down to print all these papers...”



Aim To assess the chamber was seeded with Enterococcus faecalis. An enterococci-selective broth was used in the two-chamber model designed to evaluate root fillings. **Methodology** Fifty-one intact human mandibular premolars with fully developed roots were used. They were left completely intact (n = 23), or were accessed, instrumented and either left open (n = 5) or root filled with gutta-percha and AH Plus (n = 23). All teeth were sealed between two chambers using sticky wax. The apical root aspects were left uncovered. The upper chamber was seeded with Enterococcus faecalis. An enterococci-selective broth was used in the two-chamber model designed to evaluate root fillings. Leakage was assessed for 120 days and compared using survival statistics (a < 0.05). Subsequently, roots were transsected, stained using a ‘live’ DNA stain (Syto59) and inspected using confocal laser scanning microscopy. An E. faecalis-specific RNA probe was used for fluorescence in situ hybridization (FISH). **Results** Leakage started to occur from day 56, with further occurrence essentially identical between root filled teeth and intact counterparts (P = 0.71). All the transverse sections showed fluorescence related to Syto59 between the cementum layer and the sticky wax. Fluorescence was also observed between the root filling and the tubular dentine, whilst it was absent at the interface between root filling and sclerotic dentine. Secondary dentinal tubules, i.e. lateral branches connecting the main counterparts, contained fluorescent material. FISH revealed that Syto59 exclusively stained E. faecalis. **Conclusions** The current experimental method proved to be unsuitable to compare root fillings. Histology revealed interesting observations regarding the relationship of dentine structure and bacterial leakage, which warrant further investigation.

A prospective study of the factors affecting outcomes of non-surgical root canal treatment: part 2: tooth survival

Y.-L. Ng, V. Mann & K. Gulabivala

International Endodontic Journal, 44, 610–625, 2011

eastman | CONTINUING PROFESSIONAL DEVELOPMENT



Aim To investigate the probability of and factors influencing tooth survival following primary (1° RCTx) or secondary (2° RCTx) root canal treatment.

Methodology This prospective study involved annual follow-up of 2 (100%) to 4 years (50%) of 1° RCTx (759 teeth, 572 patients) carried out by Endodontic postgraduate students and 2° RCTx (858 teeth, 642 patients) carried out by Endodontic postgraduate students.

Pre-, intra- and post-operative data were collected prospectively from consented patients. Information about extraction of the root filled tooth was sought from the patient, the referring dentist or derived from the patient's records and included

the timing and reasons for extraction. Tooth survival was estimated and prognostic factors were investigated using Cox regression. Clustering effects within patients were adjusted in all models using robust standard error.

Results The 4-year cumulative tooth survival following 1° RCTx [95.4% (93.6%, 96.8%)] or 2° RCTx [95.3% (93.6%, 96.5%)] was similar. Thirteen prognostic factors were identified. Significant patient factors included history of diabetes and systemic steroid therapy. Significant pre-operative factors included narrow but deep periodontal probing depth; pain; discharging sinus; and iatrogenic perforation (for 2° RCTx cases only). Signifi-

cant intra-operative factors included iatrogenic perforation; patency at apical terminus; and extrusion of root fillings. Significant post-operative restorative factors included presence of cast restoration versus temporary restoration; presence of cast post and core; proximal contacts with both mesial and distal adjacent teeth; and terminal location of the tooth. The presence of pre-operative pain had a profound effect on tooth loss within the first 22 months after treatment [hazard ratio (HR) = 3.1; P = 0.001] with a lesser effect beyond 22 months (HR = 2.4; P = 0.01). Patency at the apical terminus reduced tooth loss (HR = 0.3; P < 0.01) within the first

22 months after treatment but had no significant effect on tooth survival beyond 22 months. Extrusion of gutta-percha root filling did not have any effect on tooth survival (HR = 1.1; P = 0.2) within the first 22 months but significantly increased the hazard of tooth loss beyond 22 months (HR = 3.0; P = 0.003).

Conclusions

The 4-year tooth survival following primary or secondary root canal treatment was 95%, with thirteen prognostic factors common to both.

Influence of cusp coverage on the fracture

A. ElAyouti, M. I. Serry, J. Geis-Gerstorfer & C. Löst

International Endodontic Journal, 44, 543–549, 2011

Aim To assess the influence of cusp reduction and coverage with composite resin on the fracture resistance

of premolars with prepared access cavities.

Methodology

Endodontic access cavities were prepared in 60 premolar teeth that were divided into four test groups: R1, R2, R3 and NR (n = 15). In all test groups, MOD cavities were prepared and extended towards one of the cusps. The remaining cusp-wall thickness was: 1–1.5 mm in R1, 1.5–2 mm in R2 and 2–3 mm in

both R3 and NR groups. In addition, in group R1, R2 and R3 the same cusp was reduced in height to 3.5 mm. Cuspal coverage and MOD restorations were performed using composite resin.

Ten intact premolars served as positive controls and another ten MOD-prepared unrestored premolars as negative controls. Teeth were submitted to cyclic fatigue of 1.2 million cycles. A compressive load was applied 30° to the long axis of the teeth until fracture.

Fracture loads were recorded and the means and the Confidence Intervals were compared. **Results** The mean fracture resistance of each of the cusp-reduced groups R1, R2 and R3 (603, 712 and 697 N, respectively) was significantly higher than the non-reduced cusp group (305 N) and was comparable to the intact-premolar group (653 N).

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Conclusions Cusp reduction and coverage with composite resin significantly increased the fracture resistance of premolar teeth with MOD and endodontic access cavities.

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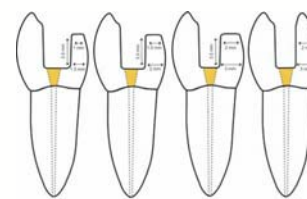


Figure 1 Preparation form with wall thickness and height in the four test

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ACTA

The post-graduate program of Endodontology is organized by the section of Endodontology chaired by professor Paul Wesselink.

The program director is dr. Hagay Shemesh and coordinated with support of endodontic specialists.

Our postgraduate students (TEO) are:

1st year: Annemarie Baaij, Carlos Portoles, Miguel Marques, Tjibbe Veenema en Wilhelm Zerbst

2nd year: Amir Feiz Barazandeh, Hesam Mirmohammadi, Karim Idzahi, Monica Sitarz en Selma Nieman

3rd year: Andries Schoemaker, Ellemieke Hin, Kathelijn Voet en Sander Loos



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Special edition best article of 2011



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