

REFERENCE LIST

1ry: 'virgin' endodontics

- Ø Bacteria (2-12 spp.)
Fabricius L. *et al.* 1982. Scand. J.D.R. 90
- Ø Gram +ve. facultative anaerobes, proteolytic bacteria
Sundqvist G. *et al.* 1994. O.O.O.E. 78
- Ø Interactions
Sundqvist G. 1992. O. Micro. & Imm. 7
- Ø Nutrients

85-96% success rates (- AP)

- Molven O. & Halse A. 1988. IEJ. 21
Friedman S. *et al.* 1995. JOE. 21
Sjogren U. *et al.* 1990. JOE. 16

74-94% success rates (+ AP)

- Friedman S. *et al.* 2003. JOE. 29
Orstavik D. 1996. IEJ. 29
Sjogren U. *et al.* 1997. IEJ. 30
Reit C. 1987. Endo. Dent. Trauma. 3
Bystrom A. *et al.* 1987. Endo. Dent. Trauma. 3

Coronal seal

- Ray HA. & Trope M. 1995. IEJ. 28
Saunders WP. & Saunders EM. 1994. Endo. Dent. Trauma. 10

Apical seal

- Shilder H. 1974. Dent. Clin. N. Amer. 18
Allison CA. *et al.* 1979. JOE. 5

Enterococcus Faecalis

- Single entity survival (*Quorum sensing*)
Molander *et al.* 1998. IEJ. 31; Rôças IN. *et al.* 2004. JOE. 5
- Survival up to pH 11.1 & NaOCl
Evans M *et al.* 2002. IEJ: 2002. 35; Radcliffe CE. *et al.* 2004. IEJ. 7
Spratt DA. *et al.* 2001. IEJ. 34
- Tubular penetration and adherence
Love *et al.* 2001. IEJ. 34 (cf. *s. mutans*, *s.gordonii*)
Orstavik D. & Haapasolo M. 1990. Endo. & Dent. Trauma. 6

- Host evasiveness: lytic enzymes, Ita.
- Asymptomatic persistent infections
Rôças IN. *et al.* 2004. JOE. 5

Upper 6's: beware...MB2 out is there...!!!

- Ø 95% have 2 MB canal orifices
 - Ø 71% have 2 separate foramina
- Kulild JC. & Peters DD. 1990: JOE. 16

Lower 4's:

- Ø 25% have 2 canals
- Vertucci FJ. 1978. JADA. 97

Pulp space or system

80-100,000 Strep. Sp. per mm²!!

West JD. & Roane JB. 1998. Pathways of the Pulp (Mosby Inc.):p210

MTA: Physical properties

Torabinejad M. *et al.* 1995. JOE. 21

- ü MTA is very alkaline (pH is 12.5 when set)
- ü In water forms a colloidal gel that sets in \approx 3 hours
- ü An insoluble amorphous structure: CaO & PO₄
- ü Best seal against bacterial leakage/endotoxin
 - ü cf. amalgam, IRM & sEBA
Torabinejad M. *et al.* 1993. JOE. 19
 - ü cf. sEBA, amalgam, GI cement
Tang HM. *et al.* 2002. JOE. 28
 - ü cf. sEBA, amalgam, GI cement
Wu M-K. *et al.* 1998. JOE. 24

MTA: Biological properties

- ü Implantation into tissues causes least inflammation
- ü Direct bone apposition will occur to the material
- ü Inductive effect on cementoblasts, fibroblasts, & osteoblasts

Koh *et al.*, 1998. JOE

Torabinejad *et al.* 1999. JOE. 25

Mitchell PJ. *et al.* 1999. Biomaterials

Regan JD. *et al.* 2002. IEJ. 35

Apical Surgery: indications

- ü Exploration

- ü Anatomical problems
- ü Diagnostic
- ü Treatment
 - ü Refractory cases: resection and 'retro'-preparation
 - ü Extraradicular infection (apical biofilm)
Noiri Y. *et al.* 2002. JOE. 28 (n=9/11)
 - ü Repair
- ü (Biopsy)

Flap Design

- Ø Mucogingival flaps
 - Ø Submarginal semilunar
 - Ø Submarginal rectangular (*Luebke-Ochsenbein*)
Leubke RG. 1974. Dent. Clin. N. Amer. 18

Base of Papilla incision

Velvart P. 2002. IEJ. 35

Velvart P. 2003. IEJ. 36

Apicectomy (after Bhanderi)

What are we trying to achieve??

- Ø ACCESS the apical tissues
- Ø ASSESS the apical tissues
- Ø RESECT the apical 3mm of root canal anatomy
- Ø CURETTAGE of any apical lesion (->biopsy?)
- Ø PREPARE CANAL ANATOMY by a further 3mm
- Ø SEAL the endodontium

The root canal system...the 'apex'

1: 1.30 mm

2: 4.31 mm

3: 2.10 mm

4s & 5s: 2.00 mm

6s: 3.80-1.25 mm

7s: 2.80-2.36 mm

Guttierez JH. & Aguayo P. 1995. OS OM OP OR E. 79

"To re-treat or not to re-treat...?"

- Ø Signs or Symptoms?
- Ø Risk : Benefit
 - Ø Disassembly?

- Ø Armamentarium & magnification?
- Ø Skill?
- Ø Patient viewpoint
- Ø Ethical & moral viewpoint

Reit C. & Kvist T. 1998. IEJ. 31

- Ø Re-treat vs. surgery?

Pagonis TC. *et al.* 2000. JOE. 26 (GDPs vs. EPGs)

Kvist T. & Reit C. 1999. JOE. 25

s=45, ns=47, 4 years. NO stat. difference in success rates
between either procedure. Surgery heals more quickly.

Success rates:

Treatment	Success rate
RCT <i>de novo</i> (previous research in texts) Saunders W. & Saunders E. 1997. BDJ	85-98% 58% had lesions, 59% "inadequate"
Re-RCT with apical pathology Farzaneh M. <i>et al.</i> 2003. JOE. 29	56-74% n=103/395: 97% - 78% (perfs. 89% - 42%)
Gorni FGM. & Gagliani MM. 2004. JOE. 30	RCMR, n=250: 92% - 84% RCMA, n=202: 84% - 40%

Surgical Treatment (Microscope)	Success rate
(range quoted from previous research)	50-85%
Microscopic apicoectomies Chong BS. <i>et al.</i> 2003. IEJ. 36 (MTA)	n=122, 1 year: 84% n=108, 2 years: 92%
Von Arx T. <i>et al.</i> 2001. IEJ. 34 (sEBA)	n=39 molar roots, 1 year: 96%
Maddalone M & Gagliani M. 2003. IEJ. 36	n=120, 2 years: 92.5%
Rubinstein RA. & Kim S. 2002. JOE: 28	n=59, 5-7 years: 91.5%
Zuolo ML. <i>et al.</i> 2000. IEJ. 33 (IRM)	n=109, 4 years: 91.2%
Rud J. <i>et al.</i> 2001. IEJ. 34 (composite)	n=834, 12.5 years: 92%