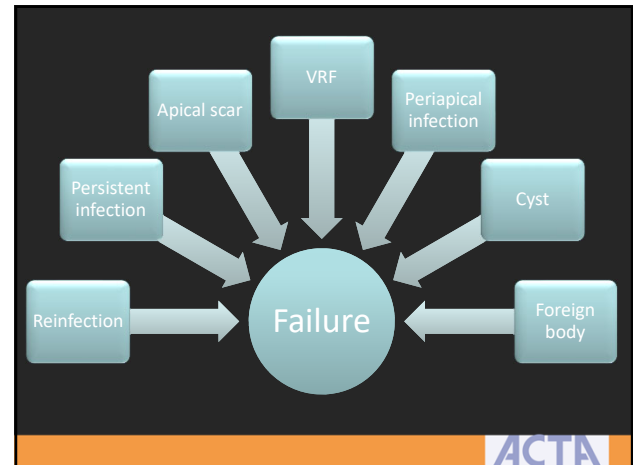
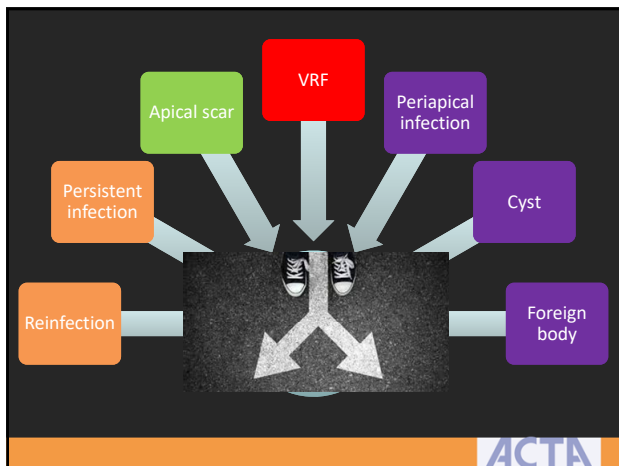


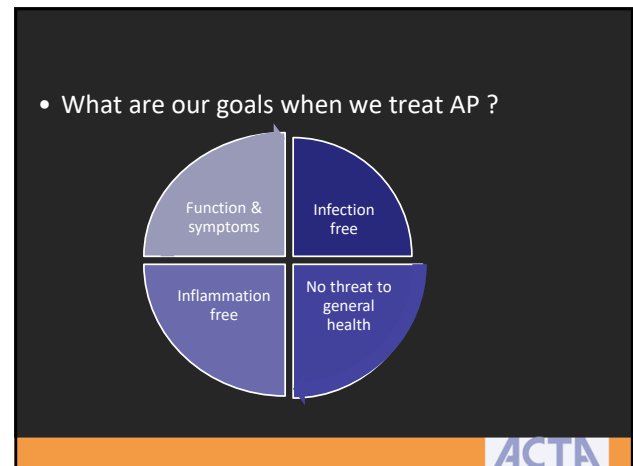
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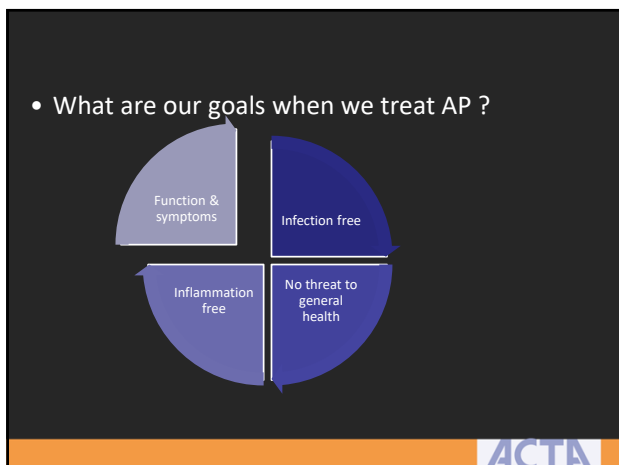
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3



4



5

Function & Symptoms

97% of 1.4 million teeth were functional 8 years following non-surgical root canal treatment

Salehrabi & Rotstein 2004 JOE

6

The success of endodontic therapy-healing and functionality.
Friedman S, Mor C.

Functionality = 86-92%

Friedman & Mor 2004 J Calif Dent Assoc

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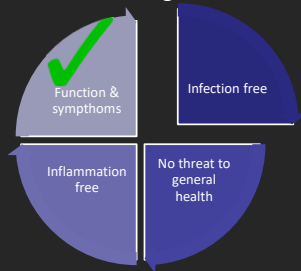
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- What are our goals when we treat AP ?



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9

Bacteria recovered from teeth with AP after antimicrobial endodontic treatment.

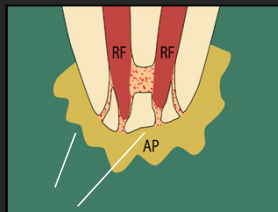
Once established, nonmutans streptococci, enterococci and lactobacilli appear to survive commonly following root-canal treatment of teeth with clinical and radiographical signs of AP.

Chavez de Pás et al. 2003 IEJ

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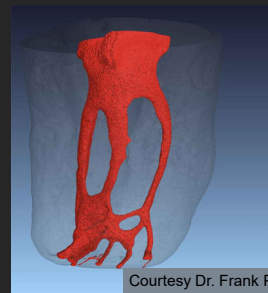
In 90% of the infected canals, bacterial biofilm remained in the apical 3 mm after root canal treatment.



Nair et al. 2005 OOOOE

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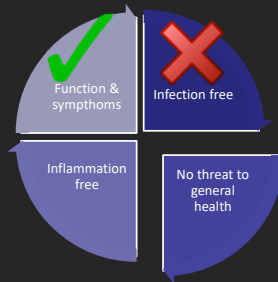
Courtesy Dr. Frank Paqué

Current procedures are not effective in eliminating root infection.

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- What are our goals when we treat AP ?



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Lesions of endodontic origin and risk of coronary heart disease.

“These findings are consistent with research that suggests relationships between chronic periodontal inflammation and the development of CHD, especially among younger men.”

Caplan et al. 2006 JDR

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Endodontic variables and coronary heart disease.

“ This cross-sectional study did not reveal a significant association between endodontically treated teeth and CHD nor between teeth with periapical disease and CHD.”

Frisk et al. 2003 ACTA odontol Scand

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The impact of Endodontic Infections on the pathogenesis of Cardiovascular disease : A systematic review with meta- analysis

“Whether the presence of a lesion of endodontic origin may or may not have some impact on cardiovascular disease, the level of evidence is low, and our confidence in the assessment is low”.

Aminoshariae et al. 2018 JOE

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Association Between Periodontal Disease and Erectile Dysfunction: A Systematic Review

It is emphasized that physicians should refer patients with ED to oral health care providers for a comprehensive oral evaluation and treatment.

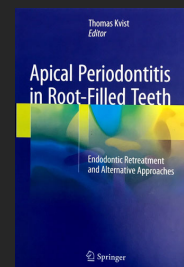
There are several confounders, such as age and the type of ED, that failed to be adjusted and that generate bias and affect the correlation between the incidence of ED and PD.

Kellesarian et al. 2016 Am J Mens Health

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- ‘ At present time the association between endodontic disease and different systemic conditions rests on shaky grounds.”

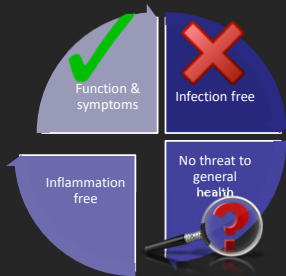


Frisk & Kvist 2019 AP in root-filled teeth

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- What are our goals when we treat AP ?



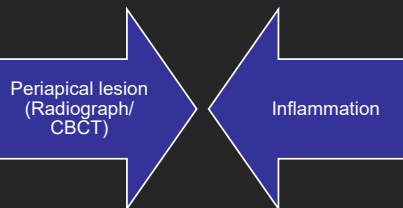
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Outcome is determined clinically (lack of signs & symptoms) and radiographically

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- What are our goals when we treat AP ?

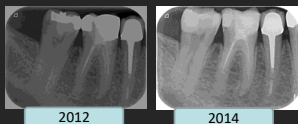


➤ Improve procedures

➤ Change goals ?

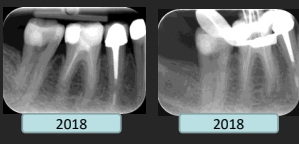
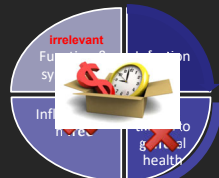
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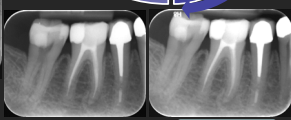
2012

2014



2018

2018



2019

Wesley The, endodontist

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2009

2012

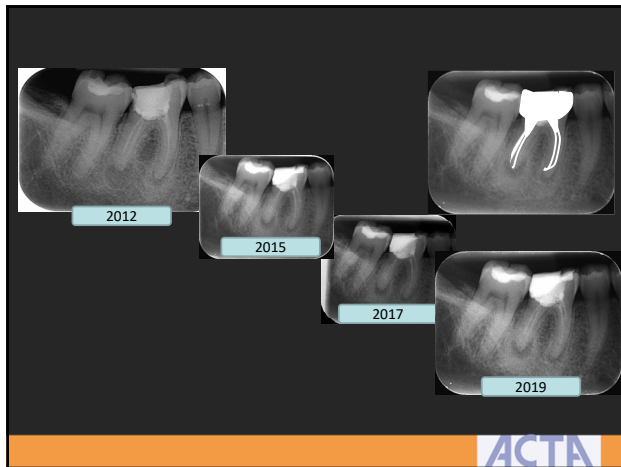
2015



2019

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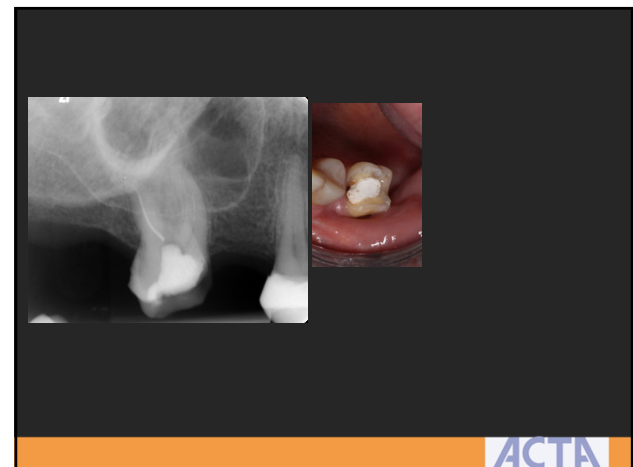
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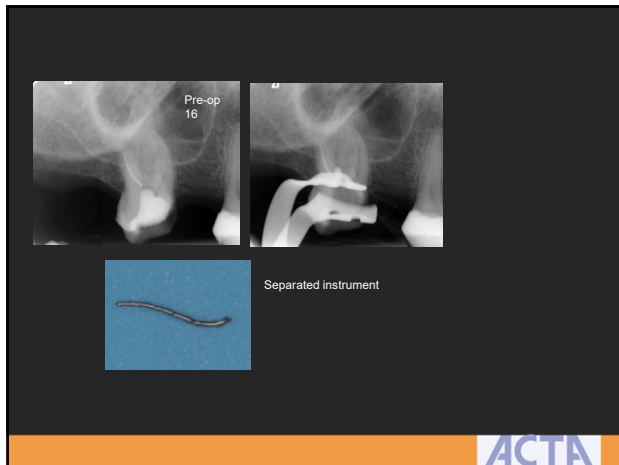
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Periapical periodontitis is an inflammation process that results from infection. Basically we want to get rid of the infection. **Take home message*

However, our ability to do so is limited. Financial factors could also play a role. So the possibility of not-treating a lesion is a relevant option, that we must present to the patient.

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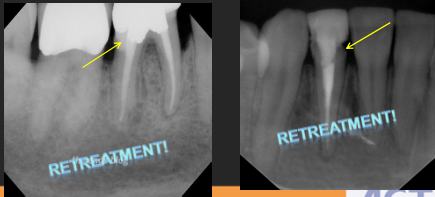
A new crown- a new endo ?

1. Retreatment
2. Surgery
3. Just a crown immediately

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What did we do in the past ?

Until 10 years ago, we based our decision mainly on
"leakage concepts"
If the coronal restoration was damaged → retreatment!



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Previous attempts for a guideline

- Paul Abbott Endodontic topics 2011
- Victoria Yu et al. J Dent Res 2014

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How to make the decision?

1. Complaints
2. Quality of the root canal filling
3. Quality of the coronal restoration
4. Presence of a periapical lesion

Decision tree

J Am Dent Assoc. 2011 Is endodontic re-treatment mandatory for every relatively old temporary restoration? – a review. Keinan D, Moshonov J, Smidt A.

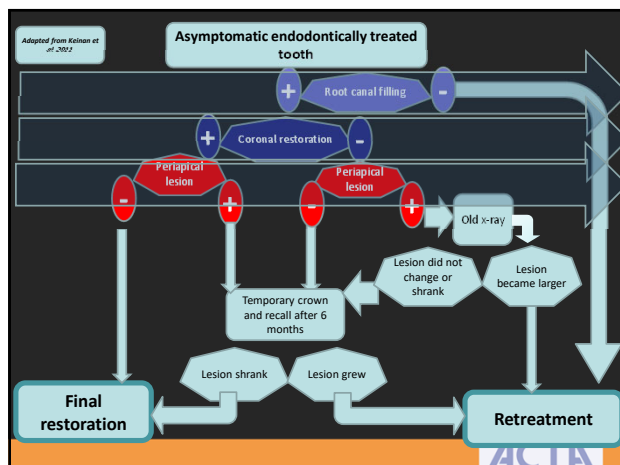
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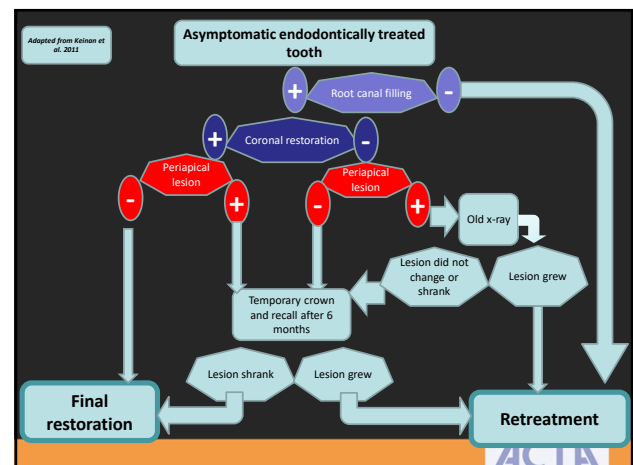
Decision tree

Asymptomatic
Apical Periodontitis

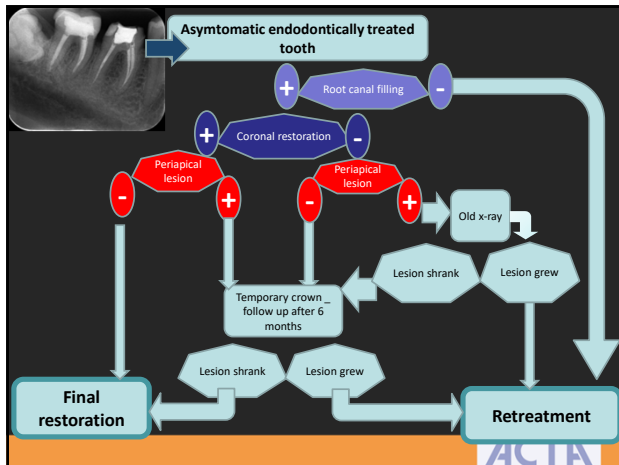
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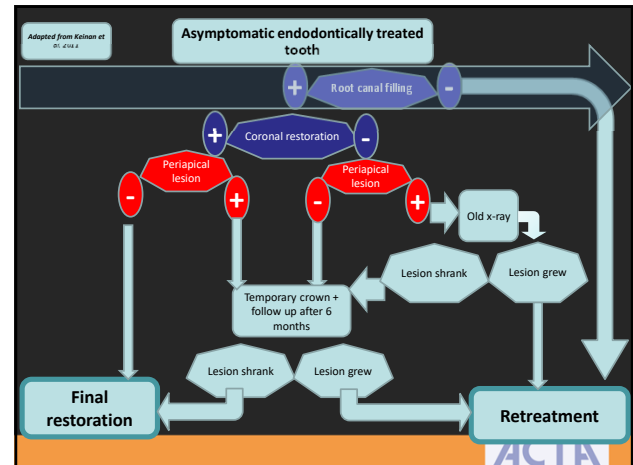
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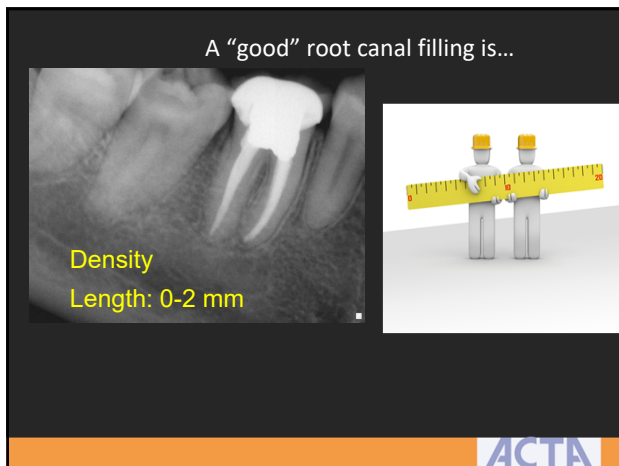
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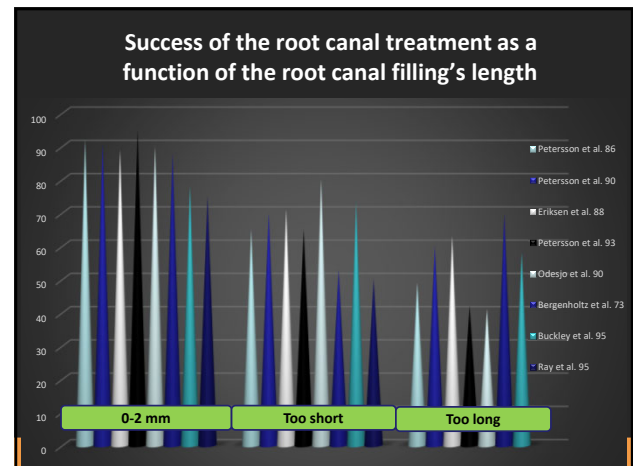
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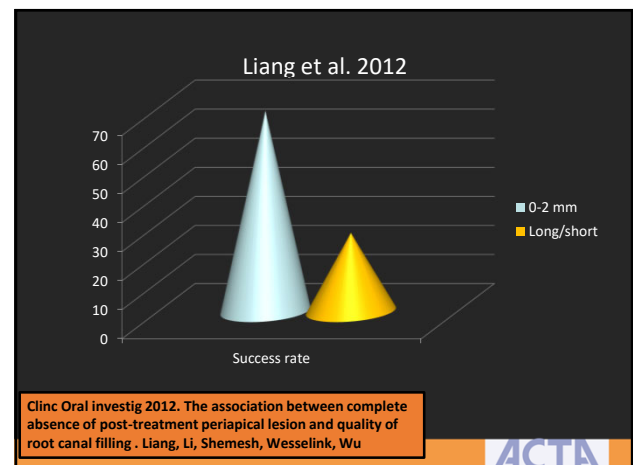
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Clinical outcome studies show a consistent preference for root canal fillings that are 0-2 mm from the radiographic apex

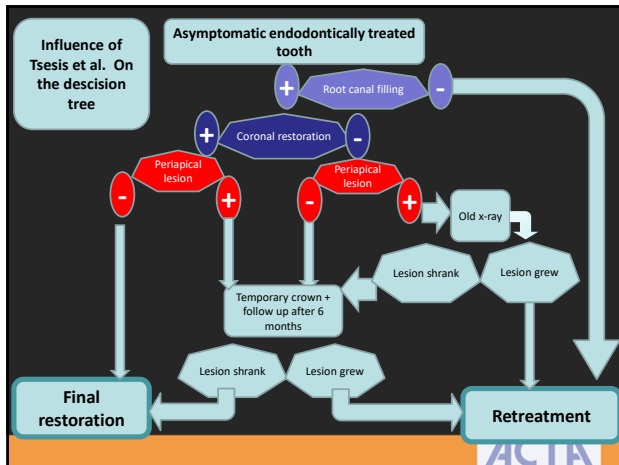
(Ng et al. 2008)

IEJ 2008. Outcome of primary root canal treatment: systematic review of the literature -- Part 2. Influence of clinical factors. Ng, Mann, Rahbaran, Lewsey, Gulabivala

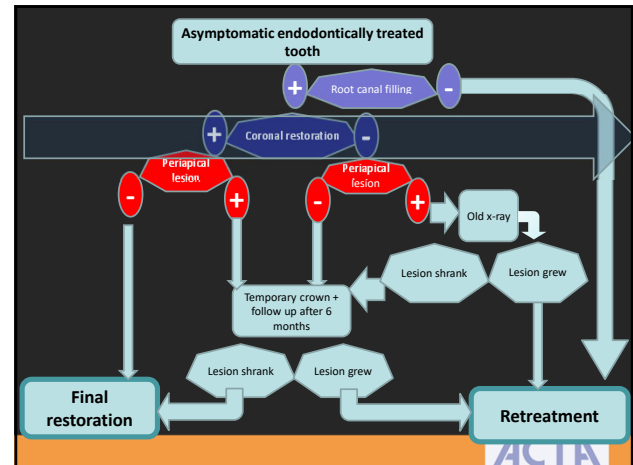
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• Leakage !

- In vitro leakage models :
All root canal fillings leak after a few months (Shemesh et al. 2006)

In other words: Leaking coronal restoration means that the whole root canal systems will be reinfected after a few months

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• Leakage ?

Int Endodo J 2003 Bacterial status in root-filled teeth exposed to the oral environment by loss of restoration and fracture or caries—a histobacteriological study of treated cases. Ricucci & Bergenholz

Int Endodo J 2008. Potential systematic error in laboratory experiments on microbial leakage through filled root canals: an experimental study. Rechenberg, Thurnheer, Zehnder

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Int Endodo J 2003 Bacterial status in root-filled teeth exposed to the oral environment by loss of restoration and fracture or caries—a histobacteriological study of treated cases. Ricucci & Bergenholz

TEETH WITH A LESION

Conclusion: Well-prepared and filled root canals resist bacterial penetration even upon frank and long-standing oral exposure by caries, fracture or loss of restoration.

Coronal 1/3 ALL TEETH INFECTED

Mid 1/3 2 INFECTED TEETH

Apical 1/3 NO

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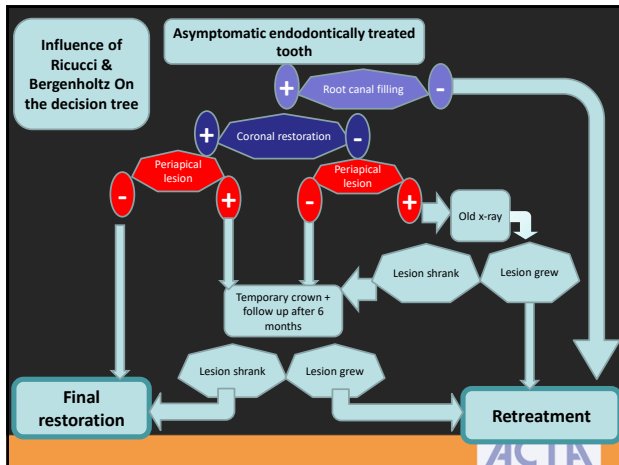
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Int Endodo J 2008. Potential systematic error in laboratory experiments on microbial leakage through filled root canals: an experimental study. Rechenberg, Thurnheer, Zehnder

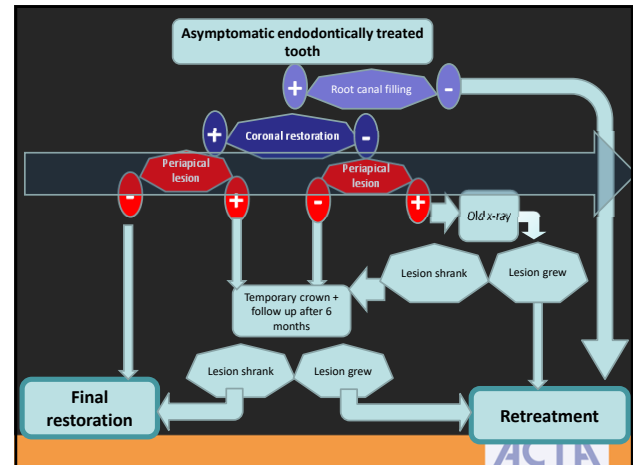
Conclusion: Bacterial leakage models are unsuitable for assessing leakage through root filled teeth.

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• How reliable are x-rays in detecting periapical lesions?

International Endodontic Journal
doi:10.1111/iej.1365-2791.200901001

REVIEW
Limitations of previously published systematic reviews evaluating the outcome of endodontic treatment

M-K. Wu, H. Shemesh & P. R. Wesseling
Department of Endodontology, Academic Centre of Dentistry Amsterdam (ACTA), University of Amsterdam and VU University, Amsterdam, The Netherlands

"The outcomes of root canal treatment should be re-evaluated in long-term longitudinal studies using CBCT and stricter evaluation criteria."

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Should we treat all periapical lesions?

1. General health?
2. "the accidental finding"
3. Dynamics of the healing process

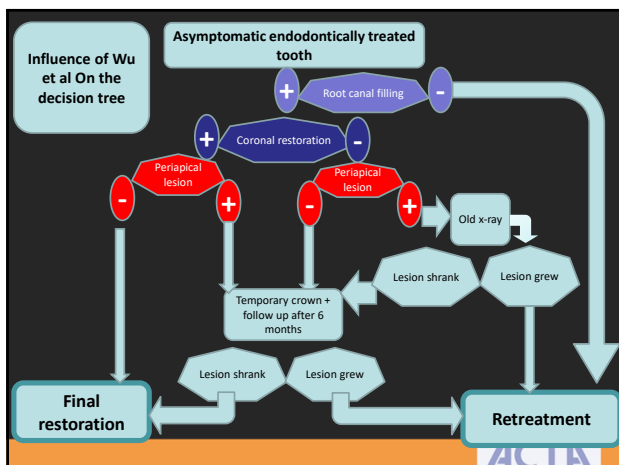
Int J Cardiol. 2011 Can a chronic dental infection be considered a cause of cardiovascular disease? A review of the literature. Cotti E et al.

J Endod. 2011 Association of endodontic infection with detection of an initial lesion to the cardiovascular system. Cotti E et al.

Apical periodontitis as an accidental finding Wesseling P.R 2010

Int Endod J. 2008 Outcome of secondary root canal treatment: a systematic review of the literature. Ng YL et al.

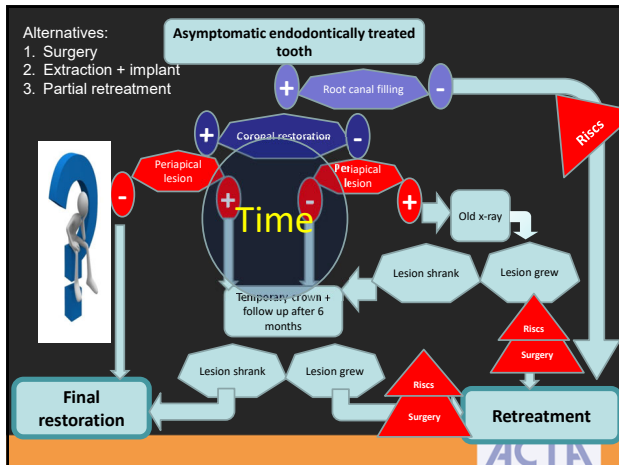
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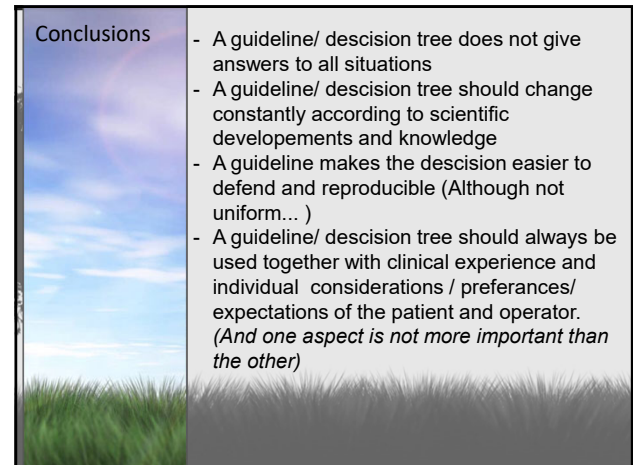
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