

The acquisition of a new truth is identical with the acquisition of a new sense,  
for with it you can conceive, perceive and recognize things  
that you could not recognize before you had that new truth,  
and with that new truth you can perceive things that people  
without that truth cannot perceive.

The acquisition of a new truth is identical with the acquisition of a new sense.  
Delivered before the St Louis Dental Society Nov 1916. By Weston Price

~ ~ ~

## 'Is Further Research Needed?'

### ***A response to:***

The Journal of the Australian Dental Association  
Endodontic Supplement'  
Vol 52 No 1 March 2007  
Robert Gammal BDS FACNEM(dent)  
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### **Note:**

All areas of **bold** and/or *italics* in the quoted sections are MY highlighting and do not appear in the original.

IN-dented paragraphs are direct quotes from this Australian Dental Association Endodontic Supplement and headed with '**ADAES**'.

'**Robert Gammal**' is heading my out-dented comments.

This Journal Supplement has the following editorial comment at its beginning;

### **ADAES Editors Note from the supplement:**

"... New directions in Endodontics are based on the principles of evidence based practice with particular emphasis on a risk/benefit approach. In this context, the Guest Editor, Professor Paul Abbott, has selected an impressive panel of experts to produce this series of review papers on key topics in Endodontics. A broad range of topics central to everyday clinical practice has been selected.

.... I hope that this impressive collection of papers will be kept as a handy reference in your surgery and I invite you to carefully read and put into practice the suggestions and recommendations provided in these papers.

Professor P Mark Bartold Editor  
Australian Dental Journal"

### ***Introduction:***

This document which represents the latest in scientific research about Root Canal Therapy, according to the Australian Dental Association, in many ways agrees with my own views. Perhaps not in its sentiment, but absolutely in its findings and conclusions. They also agree with the work of Dr Weston Price who published in 1920s. Both Dr Price and the Australian Dental Association state clearly that;

It is not possible to remove all of the dead tissue from even the main canal of the root, leaving large amounts of dead and necrotic tissue in the tooth. It is equally impossible to remove all dead tissue from the accessory canals and dentine tubules.

- It is not possible to sterilize a tooth.
- It is not possible to completely seal a tooth
- All toxins can escape from the tooth
- Toxins and bacteria from dead teeth can cause disease in other parts of the body and may have lethal effects.

Surprisingly there is minimal discussion in this supplement of any of the 'Root Filling' techniques. Less surprisingly there is only cursory mention of systemic consequences of retaining dead teeth in the body. Little attention is given to the toxicity of root filling cements and medications.

The only time medical history is mentioned is in relation to the projected outcome of the root treatment in terms of local healing and lack of pain. There is minimal discussion of the affects of Root Canal Therapy on systemic health.

Discussed clearly is the fact that placing antibiotics into a tooth will only serve to create antibiotic resistant micro-organisms inside the tooth.

The most telling section states that neither the practice of endodontics or of implant treatments scores very high, when subjected to principles of evidenced based dentistry.

In other words the Australian Dental Association and many of the head endodontists in Australia, admit that this treatment does not work very well!

## ***Focal Infections***

### **Robert Gammal**

The seriousness of dental infection is reflected in the first of the papers presented in this collection. They state clearly that infection from a tooth (not root treated), can affect other parts of the body. In medical language this is called ' Focal Infection'. The reality is that root treatment will NOT negate the possibility of focal infection.

### **ADAES**

The magnitude of pulp-related problems should not be underestimated,...

The most serious consequence of pulp disease is oral sepsis, which can be life threatening.<sup>1, 2</sup>

Walsh L. Serious complications of endodontic infections: some cautionary tales. Aust Dent J 1997;42:156-159.

Lejeune HB, Amedee RG. A review of odontogenic infections. J Louisiana St Med

Bacterial infection is the most frequent cause of pulp and periapical diseases.

Bacterial infections of the pulp space consist of mixed microbial and predominantly anaerobic flora.

As time progresses, necrotic pulp tissue will become infected by oral micro-organisms penetrating into the root canal system via caries, cracks or marginal break-down of restorations. The microbes will migrate apically through the tooth root and digest the pulp tissue which renders the tooth pulpless.

If the infection spreads from the maxillary teeth, it may cause purulent sinusitis, meningitis, brain abscess, orbital cellulitis and

cavernous sinus thrombosis, whereas infection from the mandibular teeth may cause Ludwig's angina, parapharyngeal abscess, mediastinitis, pericarditis, emphysema and jugular thrombophlebitis.

...because the tooth bridges between the bacteriologically sterile environment of the jawbone and the heavily contaminated environment of the mouth through an oral epithelial membrane, diseases in the pulp will invariably extend through the apical foramen into the surrounding bone causing further problems.

## ***Bacteria and Mechanics***

### **Robert Gammal**

One could imagine that these 'further problems' would be exacerbated if the bacteria are also antibiotic resistant. No further discussion of the magnitude of these further problems is offered.

The invasion of the tooth by bacteria is discussed. Clearly the removal of the dental pulp permits great influx of bacteria and allows for a progression of the bacteria throughout the dentinal tubules. Interestingly they also talk about the hydrostatic pressure within a tooth which is under the control of the autonomic nervous system and thus is affected by stress and diet. These studies were originally conducted by Dr Ralf Steinman and published in dental journals in the 1960's and 70's.

### **ADAES**

A recent study on the bacterial invasion into dentinal tubules of human teeth with or without viable pulp has shown that teeth with pulps are much more resistant to bacterial invasion into the dentinal tubules than are teeth with root canal fillings.<sup>4</sup> In the latter, bacteria are able to enter teeth and reach the root canal system in a relatively short period of time. Hence, the pulp plays an important role in this defense process. In teeth with pulps, the dentinal tubules are occupied by dentinal fluid and odontoblastic processes, which may behave collectively as a positively charged hydrogel.<sup>5,6</sup> The hydrogel is capable of arresting a great number of the bacteria that enter the pulp. The outward flow of the dentinal fluid is important in the pulp's defense against the entry of harmful substances because it affects the rate at which toxic substances from the mouth diffuse into the dentinal tubules.<sup>7,8</sup>

4 Nagaoka S, Miyazaki Y, Liu H, Iwamoto M, Kitano M, Kawagoe M. Bacterial invasion into dentinal tubules of human vital and nonvital teeth. J Endod 1995;21:70-73.

5 Linden LA, Kallskog O, Wolgast M. Human dentine as a hydrogel. Arch Oral Biol 1995;40:991-1004.

6 Vongsavan N, Matthews B. The permeability of cat dentine in vivo and in vitro. Arch Oral Biol 1991;36:641-646.

7 Matthews B, Vongsavan N. Interactions between neural and hydrodynamic mechanisms in dentine and pulp. Arch Oral Biol 1994;39 Suppl:S87-S95.

8 S. Vongsavan N, Matthews B. Fluid flow through cat dentine in vivo. Arch Oral Biol 1992;37:175-185.

...the tissue fluid volume in the pulp. remains constant. The relatively high pulp tissue pressure results in an outward flow of fluid in the dentinal tubules, which helps to dilute toxins and wash out bacteria.

### **Robert Gammal**

The root treated tooth which has had the pulp removed is more vulnerable to bacterial infection than a tooth with a healthy dental pulp.

### **ADAES**

.... teeth with pulps are much more resistant to bacterial invasion into the dentinal tubules than are teeth with root canal fillings. 4

### **Robert Gammal**

Another paper by the same authors gives a description of various stages of pulp disease. The diagnostic tools offered are still limited to the stimulation of pain – or not – in the tooth and radiographic evidence of bone loss in the periapical area. Effectively we are still only left with an on-off switch of pain perception, which they agree is very subjective. X-rays have been shown to be an unreliable diagnostic tool. No mention is made of more sophisticated techniques such as electrodermal screening for testing the viability of a tooth.

Medical history taking is mentioned as such but no details are presented in this paper

### ***Cleaning the Canal***

Another paper discusses the techniques used for cleaning root canals.

Great detail is given to the pros and cons of different techniques that are available and the need to do a thorough job so as to aid the elimination of bacteria. The bottom line is that the shape of the canal does little to improve the success of the treatment. The other reality is that it is impossible to completely clean the tooth!

### **ADAES**

Despite the considerable shaping advantages offered by rotary NiTi instrumentation, there is very little direct evidence from clinical follow-up studies on the impact of improved canal shapes on healing outcomes.

### **Robert Gammal**

It is clear that no amount of mechanical cleaning will remove bacteria from the tooth. Scraping and medicating the inside of a tooth does not remove all the bacteria. The tooth is NOT sterile.

### **ADAES**

From a biological perspective, the goals of chemo-mechanical preparation are to eliminate micro-organisms from the root canal system, to remove pulp tissue that may support microbial growth, and to avoid forcing debris beyond the apical foramen which may sustain inflammation. 3

There was no significant difference between the two instrumentation techniques with 72 per cent of instrumented teeth still returning positive culture.

### **Robert Gammal**

Of equal interest is the fact that no matter how hard they tried with any of the available techniques to remove dead tissue from the main root canal, at least 35% of the dentine surfaces remained untouched, leaving large volumes of dead, gangrenous tissue in place which serves as a nutrient source for the bacteria remaining in the tooth. This paper looked only at the main root canal of the tooth. It does not discuss the fact that the dentinal tubules and accessory canals are completely ignored in the process of root canal preparation.

Thus the bulk of dead tissue is ignored and remains in the tooth. In fact it remains in the parts of the tooth that are also the most heavily infected with bacteria – the DENTINE TUBULES & ACCESSORY CANALS.

## **ADAES**

The technical goals of canal preparation are directed toward shaping the canal so as to achieve the biological objectives and to facilitate placement of a high quality root filling.

... all instrumentation techniques left 35 per cent or more of the canals dentine surface untouched, with very little difference found between the four instrument types.

These findings highlight the limited ability of endodontic instruments to clean the root canal...

## **Robert Gammal**

A lengthy discussion is presented about the procedure of extremely severe filing of the end of the root, creating a huge hole in the end of the root, as a way of eliminating most (not all) of the bacteria at the end of the root. The following rationale is given;

## **ADAES**

...the apical canal may harbour a critical amount of micro-organisms that would maintain periradicular inflammation...

Larger apical preparations will enhance removal of the more heavily infected inner dentine. It is known that irrigants exert a greater antimicrobial effect on superficial dentine than deep dentine.

(Vahdaty A et al Efficacy of chlorhexidine in disinfecting dentinal tubules in vitro. Endod Dent Traumatol 1993;9:243-248)

## **Robert Gammal**

This approach is condemned in a latter paper in the same journal.

"Most authors have found that there was no difference in healing when it came to apical enlargement."

## **ADAES**

Microbes grow as biofilms in the root canal system and may be located in areas that are inaccessible to instrumentation such as or accessory canals.

Thus, on the basis of currently available information there is insufficient scientific support for the idea that it is possible to eliminate infection by apical enlargement of the canal space.

Further instrumentation of an apically enlarged canal significantly increases both the risk of procedural errors (perforation, zipping, etc.) and heightens the risk of excessive apical root weakness or splitting.

Based on current knowledge, the answer to the question 'does increased apical enlargement predictably eliminate bacteria?' is no. To the question 'does apical enlargement provide better clinical results and with a suitable margin of safety?', the answer is no.

... the thin evidence for apical enlargement as a means of bacterial eradication, and the significantly increased risk of procedural errors, the disadvantages and risks of apical enlargement far out-weigh the perceived benefits. 5

### **Robert Gammal**

Another problem with all forms of mechanical debridement is that debris can be forced through the end of the root. This debris includes dead tissue and bacteria and their toxins, which will allow these bacteria and materials to spread throughout the rest of the body.

#### **ADAES**

During instrumentation, potentially infected dentine debris is produced which may accumulate within the apical canal or be extruded into the periapical tissues.

Extrusion of debris into the periapical tissues is undesirable and may play a role in flare-ups and in treatment failures.

(Yusuf H The significance of the presence of foreign material periapically as a cause of failure of root treatment. Oral Surg Oral Med Oral Pathol 1982;54:566-574)

### ***Bacterial Infections***

#### **Robert Gammal**

The paper by Sundqvist 5 agrees with the doctrine that the environment is responsible for the growth of the organisms within it. The environment inside a tooth is continually changing and this change is accompanied by changes in the types of micro-organisms which inhabit it.

#### **ADAES**

Bacteria are everywhere, but the environment selects

An anaerobic milieu, inter-actions between microbial factors and the availability of nutrition are principal factors that define the composition of the microbial flora.

### **Robert Gammal**

Sadly, this paper which is presented as the state of the art knowledge about the organisms residing in a dead tooth, does not mention pleomorphism, nor does it take into consideration the latest in microbiology regarding cell wall deficient forms, fungi and yeasts which are observable under dark field microscopy.

They do however mention that it is difficult if not impossible to rid the tooth of all bacteria. It is not possible for ANY medicaments to penetrate all areas of the dentine, with consequent increase in the numbers of the remaining organisms.

### **ADAES**

Thus, these species may have the capacity to shelter from the main root canal in web-like areas, canal ramifications or dentinal tubules where some level of protection or buffering of the antimicrobial agent is possible. Although most root canal bacteria are sensitive to the high pH of calcium hydroxide," several species involved in persistent infection are known to have a capacity to resist a high pH.

... many of the bacteria are protected in the irregularities and branches of the root canal system and in dentinal tubules. Only a few cells need to survive treatment so that when the canal is closed, the anaerobic milieu will be restored and the bacteria can re-multiply.

... bacteria cannot be completely eliminated after thorough instrumentation and irrigation regardless of the technique

### **Robert Gammal**

The various medicaments which are used in an attempt to sterilize the tooth are discussed at length. The pros and cons of most materials are clearly outlined. How each material works to kill the bacteria and even the toxicity of some of the materials is presented. After all of this there is acknowledgement that none of these materials are effective in killing all intracanal bacteria.

There is in fact NO known way of sterilizing a tooth aside from boiling it for 30 minutes or autoclaving. Patients are not being told that some of the materials used in this procedure may be carcinogenic, teratogenic, embryotoxic, allergenic and neurotoxic. Patients are not

informed that all medicaments and materials will pass out of the tooth and be transported throughout the body. Transport is via the blood, lymphatics and along nerve fibres. Informed consent to place these materials into the body is not sought.

For example, the MSDS for Pro Root MTA states;

"This product contains chemicals (trace metals) known to the state of California to cause cancer, birth defects or other reproductive harm."

I am sure that cancer patients would want to know this information. I am sure that people with undiagnosed cancers would want to know if they are being subjected to a known carcinogen. I would be pretty certain that most people who are healthy would like to be informed of the warnings that the manufacturer has placed on their own product.

The Dental Boards of the various states of Australia are the controlling bodies in matters of professional negligence and misconduct. They are responsible for protecting the wellbeing of the patients. Why is it that the dental boards do not require this information to be given to patients? How can a patient give informed consent, written or implied, if they are not given the information with which to make such a decision?

How many people would accept a treatment which starts off costing \$2000 - \$4000 to 'SAVE' a tooth if they knew that;

- It is impossible to sterilize the tooth – the basic tenet of Root Canal Therapy.
- It is impossible to remove all dead and gangrenous tissue from the tooth.
- The medications that will be used to try to sterilize and then fill the tooth may be carcinogenic and at best are cytotoxic, may have serious effects on reproduction and possibly cause liver damage.
- All of these toxins, including the carcinogenic compounds of dimethylsulphides, will disperse from the tooth to the rest of the body, creating or exacerbating allergic reactions and a great number of disease states as acknowledged by the American Dental Association in 1951 and also in the Journal of Clinical Periodontology in 1984.
- Officially, Root Canal Therapy has a very poor success rate.

Root Canal Therapy is a treatment which has been described by one of America's leading endodontists, Dr George Meinig as;

"...the story of how a "cast of millions" which become entrenched inside the structure of teeth and end up causing the largest number of diseases ever traced to a single source."

In 1920 Dr Price wrote;

"The entire problem of whether or not infected pulpless teeth should be extracted or may be treated, should perhaps be settled right on this fundamental premise; for if this cannot be done there is no basis for argument."

Thus it is clear that nothing has really changed in over 100 of endodontic practice.

### ***Material Effects***

From the paper 'Treatment Planning the endodontic case' by T. Yeng, HH Messer, P. Parashos, we find in the conclusion;

'The dentist must determine whether the needs are best served by providing endodontic treatment or advising extraction. ... The overall treatment planning in endodontics should be in agreement with the overall dental management of the patient.'

In other words the whole decision about what to do with your tooth should be decided by the dentist - the patient, presumably, has little say in this. Unfortunately no consideration is given to the systemic health of the patient when making decisions about whether to root treat a tooth.

### **ADAES**

Many medicaments have been used in an attempt to achieve the above aims but no single preparation has been found to be predictable or effective.

Current medicaments used in association with instrumentation and irrigation are unlikely to predictably achieve a bacteria-free root canal system.

"It has been estimated that as much as 50% of the canal wall may remain un-instrumented during preparation. The remaining necrotic tissue remnants may provide a source of nutrition for any surviving bacteria. , In addition bacteria are likely to remain in dentinal tubules after instrumentation. ...

The long standing popular notion of entombment and perishing of intraradicular microbes following treatment lacks scientific validity. , "

### **Some relevant quotes;**

#### **ADAES**

...Thus, in view of its limited action on faecalis and Canadida, calcium hydroxide cannot be considered as a panacea for all cases of infected root canals.

...Ledermix and Septomixine: Neither of these can be considered as suitable for use against the commonly reported endodontic bacteria because of their inappropriate spectra of activity.

...The antibacterial action of phenolic materials may not persist for prolonged periods of time. Hence some bacteria may survive and have the opportunity to multiply and persist in the root canal system . CMCP can diffuse beyond the apical foramen...

...the authors cautioned against using Cresophene due to its known cytotoxic and possible carcinogenic, mutagenic and teratogenic properties.

...CMCP is the most toxic and irritating phenolic antiseptic agent followed by Cresatin, formocresol, and camphorated phenol (CP)

...Nair et al. found that even after instrumentation, irrigation and obturation in a one-visit treatment, microbes existed as biofilms in untouched locations in the main canal, isthmuses and accessory canals in 14 of the 16 root-treated teeth examined. Bacterial biofilms are reported to be the most common cause of persistent inflammation and apical periodontitis is considered to be the result of an intraradicular biofilm-induced chronic disease.

... chemical changes to the environment in the biofilm where the lack of oxygen inhibits some antibiotics and accumulated acidic waste leads to a difference in pH which has an antagonizing effect on the antibiotic, depletion of nutrients or accumulation of waste products can result in bacteria entering a non-growing state which protects bacteria from the antibiotics, as well as the dose and frequency of exposure to the antimicrobial agent,'

...It is estimated that bacteria grown in a biofilm have a 1000-1500 times greater resistance to antibiotics than planktonically-grown bacteria.

...With regard to -- host defenses, bacteria in biofilms are less easily phagocytosed and less susceptible to complement than their planktonic counterparts!

...E. faecalis has been shown to form biofilms in the root canals of human teeth, with or without intracanal medicaments, after only two days with depths of 2um for 86-day biofilms and 28-30um for 160-day biofilms. Root canals inoculated with E. faecalis for 86 days resulted in the bacteria becoming embedded in branching filamentous material which represented an extracellular polysaccharide produced by bacteria. Biofilms maintained for 160 days had a highly organized structure consisting of mushroom-shaped clumps of bacteria with vacant areas which were thought to contain water channels for the delivery of nutrients and to remove waste from the biofilm bacteria.

## ***Antibiotic Resistance***

### **Robert Gammal**

Bacterial resistance to all medicaments is of major concern. It appears that the bacteria are quite able to form resistance to ALL the materials used in endodontics. This of course creates a serious risk for the patient as they multiply and escape into the rest of the body. Root Canal Therapy is thus a cause of antibiotic resistant bacteria in the human body. This is even more important as the risk of focal infection from antibiotic resistant organisms is high. As the number of root therapies increases, so to will the increase in bacteria which are resistant to antibiotics.

### **ADAES**

Despite this, sub-optimal biocide concentrations may result in the emergence of non-susceptible organisms which could also be resistant to antibiotics.

Bacterial resistance to tetracycline usually results in cross resistance to other tetracyclines and this was observed by Bystrom et al. where the strains resistant to tetracycline were also resistant to doxycycline. Gulabivala reported that Enterococcus, Staphylococcus and Lactobacillus species

contributed to the majority of strains that were resistant and they also had the highest degree of multiple antibiotic resistance.

Sub-lethal concentrations of antibiotics (tetracycline and chloramphenicol) can act as inducers of multi-drug resistance. It is possible that during root canal therapy, only sub-lethal doses may be in contact with the infecting organisms, particularly in the narrow and more inaccessible parts of the canals.

### **Robert Gammal**

E. Faecalis

The presence of E. Faecalis is another concern and serves as an example of the inability to eradicate the organisms from the tooth.

### **ADAES**

E. faecalis has many remarkable and distinct features which make it an exceptional survivor. It can:

- live and persist in the poor nutrient environment of endodontically-treated teeth.
- survive in the presence of several medications, sodium hypochlorite, clindamycin and the most popular medication, Ca(OH)<sub>2</sub>, form biofilms in medicated canals,
- invade and metabolize fluids within the dentinal tubules and adhere to collagen in the presence of human serum, convert into a viable but non-cultivable state
- endure prolonged periods of starvation and utilize tissue fluid (human serum) that flow from the periodontal ligament and bathe alveolar bone, to recover
- establish mono-infections in medicated root acquire gene-encoding antibiotic resistance combined with natural resistance to various antimicrobials agents, and survive in extreme environments with low pH, high salinity, and high temperatures.
- E faecalis can participate in plasmid mediated horizontal transfer of virulence determinants. It has the ability to acquire plasmid-encoded resistance genes from other bacteria which results in intra-species propagation of resistance. Resistance is a major issue with this bacterial species

### **Robert Gammal**

The knowledge that mechanical preparation does not remove all bacteria from the tooth has necessitated the use of irrigants and other

medicaments to try to sterilize the tooth. The authors of this paper clearly state that this is an unachievable goal;

### **ADAES**

While measures such as increased apical enlargement or a more effective antimicrobial irrigation regimen may enhance the reduction of the microbial load, predictable eradication of bacteria from the root canal still remains an elusive goal.

Further clinical research is needed to strive for complete disinfection of the root canal system in apical periodontitis.

- Calcium hydroxide may not be the most ideal medicament for all cases with infected root canal systems with or without apical periodontitis and in previously root-filled teeth.
- Antibiotics may not be ideal as the active component for intracanal medicaments.
- Corticosteroid/antibiotic pastes are best suited in situations where pain control is required.
- The use of a combination of calcium hydroxide and Ledermix pastes needs further investigation.

### **Robert Gammal**

Dentists do NOT routinely do pathology testing to find out what bugs inhabit the tooth, No testing is done to find out if the tooth is sterile or infected. Anaerobic testing for all root therapies is simply not practical, not financially viable and not available. There is NO testing done. The decision that the tooth is ready to be filled is not a scientific one. At some stage in the process the dentist makes the decision to fill the tooth without having any clear knowledge about the state of infection of the tooth. Neither x-ray nor clinical observation demonstrates the state of infection of a tooth. At best it is a massive guess but in reality it is a completely arbitrary decision by the dentist.

The Dentine is an important and neglected route for toxins to escape from the tooth. What is the point of trying to seal the root canal if the toxins are going to leak out the side of the root to the rest of the body? This is in fact the main way that toxins escape from the tooth. The length, breadth and surface of the root of the tooth is the major source of leakage from a dead tooth, and this is acknowledged by the Australian Dental Association;

## **ADAES**

"the two therapeutic components of Ledermix Paste, (i.e., triamcinolone and demeclocycline) are capable of diffusing through dentine tubules and cementum to reach the periodontal and periapical tissues. Abbott et al showed that the dentinal tubules were the major supply route to the periradicular tissue, while the apical foramen was not as significant a supply route"

## **Robert Gammal**

Dispersal throughout the body is relatively easy for the micro-organisms and their toxins and also for the 'therapeutic' carcinogenic agents that dentistry places in the tooth. Transport to the rest of the body is via the blood and also along nerve fibres.

## ***Root Therapy or Titanium implants***

This journal also discusses the dilemma of whether to do a root filling in a tooth or to extract it and then place a titanium implant. Most studies of success of implant techniques are based on a five year survival of the implant. (Failure is measured mechanically if the implant breaks or becomes loose, and if there is recurrent infection around the implant.) Is it coincidental that cancer treatments have the same time frame for defining success or failure?

Implant failure was defined as removed or lost implants.

## **ADAES**

Implant complications may be broadly divided into two categories: biological and technical (mechanical). Biological complications refer to disturbances in the function of the tissues supporting the implant. These include implant loss, which can be distinguished into early and late losses. Early failures (pre-osseointegration) are associated with surgical or postoperative complications. Late failures (post-osseointegration) can occur after the restorative phase and has been attributed to peri-implantitis (marginal and retrograde) and biomechanical overloading. Biological complications also include reactions in the peri-implant hard and soft tissues, which may require adequate clinical and radiographic examination methods for detection.

## **Robert Gammal**

All assessment of success or failure is limited to local tissue reactions and mechanics. Nowhere in the paper is there a mention that titanium

spreads throughout the body nor that it is capable of initiating severe autoimmune responses as demonstrated by MELISA testing.

If you are considering an implant it is critical to read the information at [www.melisa.org](http://www.melisa.org)

I complement them that a much overlooked effect of implants is mentioned here. This effect may have severe consequences for the entire cranio-sacral system and of course the consequent disease and pain states associated with this.

### **ADAES**

Implants lack a periodontal ligament and therefore the ability to buffer or dampen the forces of occlusal trauma. Dental implants also lack the periodontal mechano-receptors of the natural tooth that signal information about tooth loads (proprioception).

Patients who lack information from periodontal receptors show an impaired fine motor control of the mandible. It is a bit like hitting your head on a brick wall and wondering why it is so hard.

### ***Evidence Based Dentistry***

The opening editorial for this journal supplement states;

### **ADAES**

"New directions in Endodontics are based on the principles of evidence based practice with particular emphasis on a risk/benefit approach."

This forms the fundamental basis for the validity of these treatments.

At the same time they quote from the Journal of Evidence Based Dentistry, that good scientific support for these treatments is lacking!

### **ADAES**

White et. al., in a recent evidence-based review of the outcomes of both treatment modalities, noted that if evidence-based principles are applied to the data available for both treatment modalities, few implant or endodontic outcome studies can be classified as being high in the evidence hierarchy.

## **Robert Gammal**

In 'other words' the Australian Dental Association and one of Australia's leading endodontists, are stating that the principles underlying the procedure of endodontics to 'save' a tooth, are not supported by the scientific literature.

The polar opposition of these two statements in the one journal is incredible.

Perhaps flicking a coin would be more reliable than the current outdated teachings? How long must we continue to do procedures which do not work? The promotion of unachievable goals is justified by the concept that 'further research is needed'.

In fact, of the 11 papers presented in this special supplement on endodontics, 5 of them conclude that further research is needed. They include the following titles;

1. The endodontic management of traumatized permanent anterior teeth.
2. Interim temporary restorations of teeth during endodontic treatment.
3. Implant or the natural tooth – a contemporary treatment planning dilemma.
4. The use of calcium hydroxide, antibiotics and biocides as antimicrobial medicaments in endodontics.
5. The principles of techniques for cleaning root canals.

### ***Further research is always needed.***

How many people must suffer until the research is done?

How many times do we need to reinvent the wheel before accepting that the research has been done nearly 100 years ago?

How many people are the unwitting guinea pigs  
in the gigantic experiment called

'Further Research Is Needed'?

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Implant or the natural tooth - a contemporary treatment planning dilemma? V John,\* S Chen,\* P Parashos\*

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