

ORAL SEPSIS AND FOCAL INFECTION

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INTRODUCTION

Based chiefly on clinical evidence there has been a belief in the past amongst the medical and dental practitioners that the presence of bad teeth in the mouth can be a cause of some systemic diseases of unknown aetiology. Examples of systemic conditions in the above category include rheumatoid arthritis, some diseases of the eye, few cardiac conditions and some diseases of the gastro intestinal region. It was felt that a circumscribed area infected with micro organisms like the dento alveolar or periapical abscess which may or may not give rise to clinical manifestation can initiate another infection in a distant organ through the blood stream or the lymph channels. Based on this 'focal infection theory', all pulpless or non vital teeth were extracted hoping that the disease and symptoms will abate. But it was observed that the systemic disease continued in many cases after removal of the infected teeth. The aim of this article is to emphasize the current concept which advocates the belief that with increasing knowledge, the number of conditions considered to be due to focal infection is decreasing. On the other hand based on general principles, it is essential that all forms of sepsis in the body including oral sepsis should be eliminated.

DENTAL PROCEDURES AND BACTERAEMIA

It was Okell and Elliott³ who demonstrated first that seventy five per cent of patients with gingivitis had positive blood cultures after extraction of teeth compared to thirty five per cent of patients with healthy gingivae. It is known that a large bacterial flora is present in the oral cavity and various dental procedures like extraction, scaling and endodontic treatment⁴ cause bacteraemia. (Fig. 1). Under normal

Single Tooth Extraction	soon after	51.5 per cent
	10 minutes later	24.2 per cent
Light Scaling	soon after	30.0 per cent
	10 minutes later	5.0 per cent
Root Canal Reaming beyond Apex	soon after	25.0 per cent
	10 minutes later	none

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Figure 1. Dental Procedures and Bacteraemia.

circumstances the bacteraemia arising from dental procedures do not bring about any harmful effects to other organs or tissues in the body. In patients with damaged heart valves as in congenital heart disease there is a possibility of the micro organisms settling in and invading the damaged endocardium with the result the patient suffers from sub acute bacterial endocarditis. The systemic disease sub acute bacterial endocarditis stands out as a special entity in focal infection. It became clear that in many patients stropococcus viridans was the causative agent and they were also found in large numbers in the oral cavity of these patients. Even though the above condition needs further detailed study the role of the dental practitioner should be to prevent the development of bacteraemia in all patients with a history of rheumatic heart disease. Prophylactic use of antibiotics is recommended by the American Heart Association for all dental procedures in these patients.

BRAIN ABSCESS

Cases have been reported in literature where children with congenital heart disease developed brain abscess and it was noted that the abscess had a cultured flora very similar to that found in the oral cavity.⁵ As a result of observations, a proposal was put forward that even after effective root canal treatment of primary teeth in these children, infection can arise from accessory root canals which gets carried in the blood stream to the other organs like the brain. Dental extraction should be the procedure of choice for complete elimination of dental infection in children with congenital cyanotic disease. Reason behind this line of thought rests in that it is difficult to eliminate all the organisms from the accessory canals which become exposed with the physiologic resorption of the root. Since brain abscess is a condition with a high mortality and morbidity for children with congenital heart disease the aim of the practitioner should be the complete elimination of any possible source of infection. In these patients it is advisable to initiate all preventive measures like routine dental care, use of prophylactic antibiotics and when indicated removal of teeth with evidence of presence of infection.

ROLE OF ENDODONTICS

Endodontics as a branch of dentistry dealing with diagnosis and treatment was made possible with the research work of Fish and MacLean.² As a result of it, treatment and preservation of pulpless teeth became an accepted form of treatment in dentistry. The medical practitioner may consider a pulpless or a badly decayed tooth as a possible source of dental focus of sepsis. With the availability of the new drugs and modern techniques in endodontics, the well treated pulpless teeth are not considered a source of dental infection. In certain systemic diseases like patients with history of rheumatic fever and blood dyscrasias like haemophilia, dental officers prefer to carry out endodontic treatment of permanent dentition than extraction. Other examples of conditions where endodontic treatment is indicated are

patients suffering from chronic lukaemia and patients receiving irradiation for malignant conditions. Extraction of teeth as a surgical procedure is much quicker and less expensive to the patient, but benefits derived as a result of preserving the pulpless teeth with root treatment in a normal dental patient are much greater when one remembers that artificial tooth or a denture is no substitute for a natural tooth. Present day endodontic treatment is an entirely predictable procedure. Elderly and debilitated patients withstand endodontic procedures much better than extraction.

USES OF PULPLESS TEETH

Pulpless teeth that are well treated serve as abutments for bridges or for partial dentures. (Figs. 2, 3). In the case of anterior teeth if the crown is weak and undermined due to large carious cavity, it can be strengthened by cementing a post in the root canal. The construction of a post crown following the root treatment restores a pleasing appearance in addition to giving food function. (Figs. 4, 5). It is also possible to bring about orthodontic movement if indicated in pulpless teeth for treatment of malocclusion.



Figure 2. Periapical radiograph showing incisor teeth with periapical lesions prior to root treatment.



Figure 3. Periapical radiograph of incisor teeth one year after root treatment.

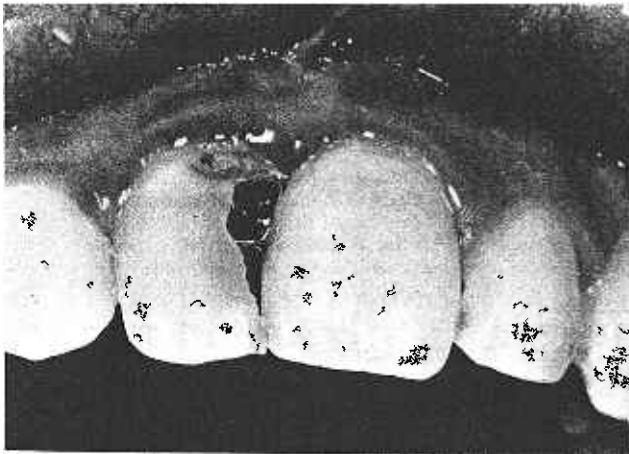


Figure 4. Photograph showing a non vital incisor tooth due to a carious lesion.

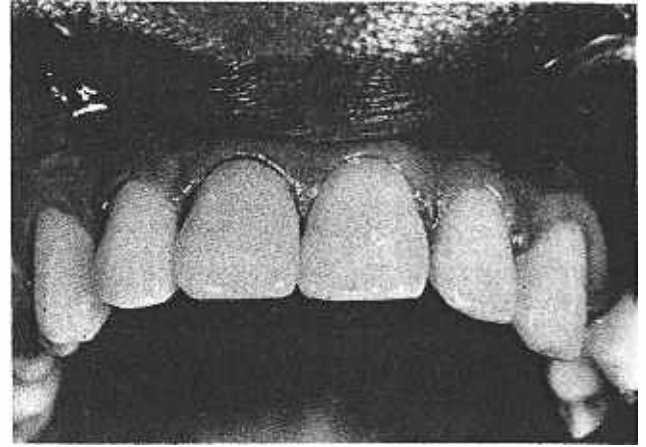


Figure 5. Photograph showing appearance after restoration with a post crown.

CONCLUSION

There is no scientific evidence available to indicate that pulpless teeth can be a source of infection in the normal dental patient. It is advisable to preserve pulpless permanent teeth with effective root treatment. With the availability of new drugs and modern techniques it is possible to eliminate the infection in root canals and periapical areas enabling one to restore normal radiographic appearance. If the tooth is maintained in a clinically sound state there is no adverse effect on the health of the patient. On the other hand the pulpless teeth can be utilised for advanced restorative procedures. Primary teeth in children with congenital cyanotic heart disease deserve special consideration.

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