ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2019; 5(3): 47-49

www.oraljournal.com
Received: 12-05-2019
Accepted: 16-06-2019

Dr. Mansha Jeelani,
BDS, Private Consultant, Jammu and Kashmir, India

Dr. Asma Altaf
BDS, MDS, Endodontist, Private Consultant, Jammu and Kashmir, India

Dr. Asiya Basher
BDS, MDS, Pedodontist, Private Consultant, Jammu and Kashmir, India

Corresponding Author:
Dr. Asma Altaf
BDS, MDS, Endodontist, Private Consultant, Jammu and Kashmir, India

Assessment of microbial flora in root canals and periodontal pockets of non-vital teeth with advanced periodontitis

Dr. Mansha Jeelani, Dr. Asma Altaf and Dr. Asiya Basher

Abstract
Background: The present study assessed microbial flora in root canal and periodontal pocket in advanced periodontitis.
Materials and Methods: The present study was conducted on 20 teeth in 15 patients of both genders. Bacterial colonies were assessed by both culture and interference microscopy.
Results: There were 31.2% cocci in root canal and 30% in periodontal pocket, rods were 22.5% in root canal and 21% in periodontal pocket, spirochetes were 4.3% in root canal and 3% in periodontal pocket, others were 42% in root canals and 46% in periodontal pockets. The difference was non- significant ($P>0.05$). There was predominance of Streptococcus (20%) in root canals and periodontal pocket (18%). The difference was non- significant ($P>0.05$).
Conclusion: Authors concluded that the occurrence of micro-organisms common to both sites root canal and periodontal pockets. Thus periodontal pocket may be a possible source of root canal infections.

Keywords: Periodontal pockets, micro-organisms, flora

Introduction
Blood borne infection involving the pulp leading to non-vitality of the tooth have been reported. The progression of periodontal disease leads to destruction of the periodontal tissue, allowing bacterial plaque to progress deeper and deeper into the periodontal pocket [1].
Although the endodontic approach remains the treatment of choice, such endodontic procedures cannot always achieve the objectives of shaping and cleaning. In addition, the lack of an apical seal leads to the formation of a micro-environment that is favorable to the development and selection of facultative anaerobic bacteria including Enterococcus faecalis. Numerous authors have shown that this bacterial species resists the action of sodium hypochlorite at concentrations over 5% [2].
The absence of an apical seal, together with the absence of a coronal seal, makes the endodontic system a perfect environment for bacteria to proliferate and form a biofilm. The immune system is unable to counteract the pathogens present in the canals, and the absence of an apical seal allows the bacteria to obtain numerous nutrients via the blood vessels, while the loss of the coronal seal enables new bacteria to enter the tooth [3].
Studies have reported various species in the pulp of necrotic teeth and, therefore, one or multiple species of bacterial pathogens can be isolated from an infected root canal. The presence of facultative aerobic bacteria in the oral cavity, but obligatory anaerobic have not been isolated [4]. The present study assessed microbial flora in root canal and periodontal pocket in advanced periodontitis.

Materials and Methods
The present study was conducted in the department of Endodontics. It comprised of 20 teeth in 15 patients of both genders. The study was approved from institutional ethical committee.
The teeth were caries-free with advanced periodontitis, and diagnosed as non-vital by electric pulp test. A size 25 sterilized paper point, were progressively inserted into the root canal. The reamers and paper point were then removed carefully and immediately placed in 2.0ml of anaerobic transport culture medium, and subsequently transferred quickly into an anaerobic

Subgingival pocket plaque was sampled from the deepest portion of the periodontal pocket. After removing supragingival plaque as completely as possible, a size 40 sterilized paper point was inserted until it reached the bottom of the pocket, and left there for 60 seconds. Bacterial colonies were assessed by both culture and interference microscopy. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of bacteria observed microscopically

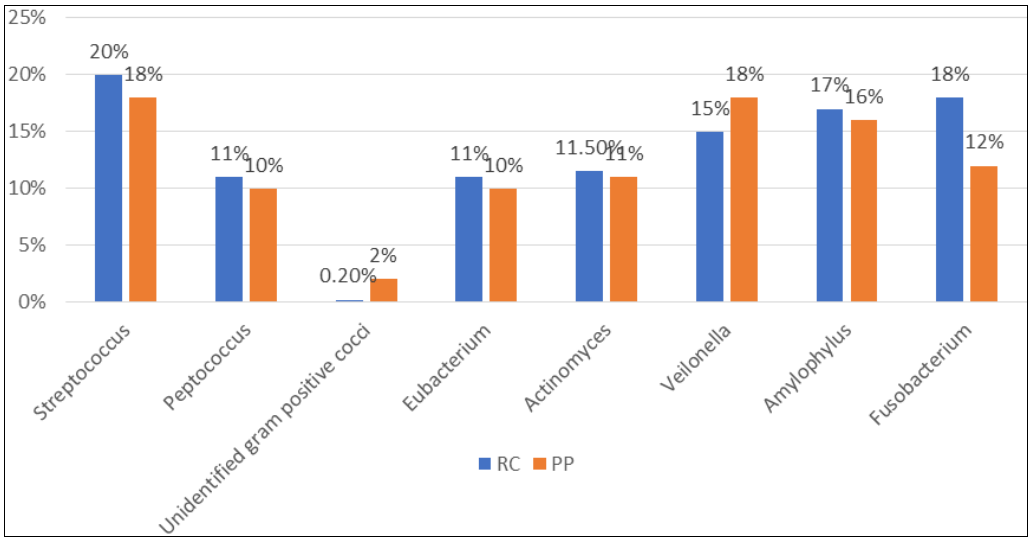
	Root canal (%)	Periodontal pocket (%)	P value
Cocci	31.2	30	0.92
Rods	22.5	21	0.91
Spirochetes	4.3	3	0.82
Others	42	46	0.81

Table 1 shows that there were 31.2% cocci in root canal and 30% in periodontal pocket, rods were 22.5% in root canal and 21% in periodontal pocket, spirochetes were 4.3% in root canal and 3% in periodontal pocket, others were 42% in root canals and 46% in periodontal pockets. The difference was non-significant (P>0.05).

Table 2: Distribution of cocci and rods in root canals and periodontal pocket

Species	RC	PP	P value
Streptococcus	20%	18%	0.06
Peptococcus	11%	10%	
Unidentified gram positive cocci	0.2%	2%	
Eubacterium	11%	10%	
Actinomyces	11.5%	11%	
Veillonella	15%	18%	
Amylophilus	17%	16%	
Fusobacterium	18%	12%	

Table 2 shows that there was predominance of Streptococcus (20%) in root canals and periodontal pocket (18%). The difference was non- significant (P>0.05).



Graph 1: Distribution of cocci and rods in root canals and periodontal pocket

Discussion

The persistence of pathologies such as chronic apical periodontitis, despite endodontic treatments, can lead to persistent intra-radicular and extra-radicular infections that are sustained by Gram-negative anaerobic bacteria such as Actinomycetes, Propionibacterium propionicum, and Enterococcus faecalis. Furthermore, Enterococcus faecalis has the ability to penetrate and invade the dentinal tubules. Intracanal medicaments can be used in order to reduce the intracanal bacterial load, but they cannot respectively resolve persistent intracanal infections in the absence of an apical and coronal seal [5]. The present study assessed microbial flora in root canal and periodontal pocket in advanced periodontitis.

In present study, we included 20 teeth in 15 patients. The teeth were caries-free with advanced periodontitis, and diagnosed as non-vital by electric pulp test. A there were 31.2% cocci in root canal and 30% in periodontal pocket, rods were 22.5% in root canal and 21% in periodontal pocket, spirochetes were 4.3% in root canal and 3% in periodontal pocket, others were 42% in root canals and 46% in periodontal pockets.

Matusow *et al.* [6] studied the microbiological status of infected teeth which were not exposed to the oral microflora previously. Of the forty six cases, 38 yielded growth i.e. 17% were sterile. The number of strains recovered in individual cases varied from none to six. A total of 71 strains were isolated. The largest single group consisted of the Aerobic streptococci (20 strains); followed by Micrococci (15 strains) and Anaerobic cocci (12 strains). 32% of the strains were Anaerobes.

We found that there was predominance of Streptococcus (20%) in root canals and periodontal pocket (18%). Yanagimura *et al.* [7] reported in their histopathological survey of caries-free and non-restored teeth affected by advanced periodontitis, that when a 10mm-deep pocket and 100 per cent bone loss were both present, vascular disorders of the pulp were induced. They also state that in such cases the pulp is necrotic and almost totally destroyed, and a massive hacterial invasion can he observed.

Sundqvist *et al.* [8] conducted a study in which a total of 52 patients having non-vital anterior teeth were covered. 41 (78.8%) out of 52 cases studied showed the presence of microorganisms in the root canal of the teeth. A total of 83 different strains were isolated. The anaerobic organisms constituted 30.1% of the total isolates. 51.7% of the root canals showed presence of polymicrobial etiology of the non-vital teeth.

Pulp diseases are the main cause of the invasion of endodontic

spaces by oral microbial flora. The survival of bacteria and fungi in this environment depends on a series of factors that involve the presence of nutrients, the environmental conditions of anaerobiosis, the pH value, competition/cooperation with other microorganisms, and the microenvironmental characteristics [9].

Nikhil [10] who used a dark-field microscope to identify intra-pocket bacterial flora. The detection rate of facultative Gram-positive cocci was high in the periodontal pocket; most such cocci were facultative Streptococcus. A convincing explanation for the phenomenon is that bacteria from the upper portion of the pocket could have been collected during paper point sampling.

Conclusion

Authors concluded that the occurrence of micro-organisms common to both sites root canal and periodontal pockets. Thus periodontal pocket may be a possible source of root canal infections.

References

1. Robinson HBG, Boling LR. The anachoretic effect in pulpitis, Bacteriologic studies. JADA. 1941; 28:268.
2. Gier RE, Mitchel DF. Anachoretic effect of pulpitis. J Dent Res. 1968; 47:564-570.
3. Allard U, Nord CE, Sjoberg L, Stromberg T. Experimental infections with Staphylococcus aureus, Streptococcus sanguis, Pseudomonas aeruginosa, and Bacteroides fragilis in the jaws of dogs. Oral Surgery. 1979; 48:454-462.
4. Macdonald JB, Hare GC, Wood AW. The bacteriological status of the pulp chambers of intact teeth found to be non-vital following trauma. Oral Surg Oral Med Oral Pathol. 1957; 10:318-322.
5. Shovelton DS, Sidaway DA. Infection in root canals. Br Dental J. 1960; 108:115-118.
6. Matusow RJ. Acute pulpal-alveolar cellulitis syndrome. Clinical study of bacterial isolates from pulps and exudates of intact teeth, with description of a specific culture technique. Oral Surg. 1979; 48:70-76.
7. Yanagimura N, Takatsuka M, Shimizu T, Noda T, Haka K. Effect of advancing periodontitis on the dental pulp. Journal of Japan Association of Periodontology. 1983; 25:324-339.
8. Sundqvist G. Taxonomy, ecology, and pathogenicity of the root canal flora. Oral Surg. Oral Med. Oral Pathol. 1994; 78:522-530.
9. Siqueira JF, JR Rocas IN, Alves FR, Silva MG. Bacteria in the apical root canal of teeth with primary apical periodontitis. Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endod. 2009; 107:721-726.
10. Nikhil V, Wadhwani KK, Loomba K. The relationship between clinical symptoms and various strains of bacteria from infected root canals *in vivo* study. J Cons Dent. 2000; 3:27.