

## Knowledge, Attitudes And Practices Regarding Controversies In Infective Endocarditis Prophylaxis In Dentistry – A Survey

### Abstract

Dental procedures have been regarded as a predisposing causative factor for Infective Endocarditis. A lot of emphasis has been laid on making the dental professionals at various levels aware. This double blind, randomized study was conducted to gauge the awareness of dental surgeons regarding Infective Endocarditis prophylaxis in dentistry, their attitudes towards the controversial issues surrounding antibiotic prophylaxis and current practices regarding dental treatment in patients with pre-existing heart diseases

### Key Words

Endocarditis Prophylaxis, Dentistry, Controversy

### Introduction

Infective Endocarditis is a serious, potentially life threatening disease involving proliferation of microorganisms on the endothelium of heart secondary to bacteremia, usually in patients already suffering from a structural heart disease. Dental procedures, especially extractions are frequently blamed as the cause of bacteremia[1], and a lot of emphasis is laid on antimicrobial prophylaxis before such procedures in cardiac patients. However, analysis of available data indicate that the proportion of cases of endocarditis which result from a dental procedure is exceedingly small [2], [3]. Although 40% of Infective Endocarditis cases of native valve endocarditis which are positive for Streptococci originate from the mouth, the emphasis for Infective Endocarditis causation has shifted from procedure related bacteremia[4] to cumulative bacteremia[5]. Some authorities have gone to the extent of recommending that routine administration of prophylactic antibiotics is neither necessary nor cost effective and may even be hazardous [3].

### Aims And Objectives

A double blind, randomized study was conducted to gauge the awareness of dental surgeons regarding Infective Endocarditis prophylaxis in dentistry, their attitudes towards the controversial issues surrounding antibiotic prophylaxis and current practices regarding dental treatment in patients with pre-existing heart diseases.

### Materials And Methods

The survey was conducted on 60 dental surgeons working in the departments of Oral and Maxillofacial surgery, Endodontics, Pedodontics and Periodontics of the D.A.V. Centenary Dental College, Yamuna Nagar, which is a post-graduate teaching institute. Interns, post graduate students and faculty members were included in the study. They were asked to fill a questionnaire containing 12 questions of objective and subjective nature. The answers were analysed to evaluate the level of knowledge regarding Infective Endocarditis Prophylaxis, their attitudes towards the recent controversies and the current practices regarding dental procedures in cardiac patients

### Observations And Analyses

75% of dental surgeons were of the opinion that dental extraction is the most common predisposing factor for causing bacteremia leading to Infective Endocarditis whereas 17% thought that other procedures like scaling or root canal treatment were the leading factors. Only 3% appeared to be aware that in fact, intra venous drug abuse is the most common cause of bacteremia leading to Infective Endocarditis.

Half (50%) of the dentists surveyed had the impression that the risk of a patient with valvular heart disease developing infective endocarditis after dental extraction without antibiotic prophylaxis was very high (75%-100%). Nearly 45% thought that the risk was moderately high (25%-50). Only one faculty member was aware of the fact that the risk was actually

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Submission : 22<sup>nd</sup> April 2013

Accepted : 9<sup>th</sup> October 2014

Quick Response Code



very low.

As many as 25% of the surveyed dental surgeons were not aware of the commonest organisms causing Infective Endocarditis after dental procedures. 20% were not clear which kind of procedures required endocarditis prophylaxis, although the majority had the concept clear that procedures causing gingival or mucosal bleeding warranted prophylactic administration of antibiotics.

Only 20 out of 60 (33.3%) surveyed dentists were aware of the cardiac lesions in which antibiotic prophylaxis was required. The maximum confusion was regarding risk of infective carditis in patients with stents, coronary artery bypass graft, surgically corrected congenital heart disease and cardiac pacemakers.

As many as 25% were not clear about the dosing and timing of antibiotic prophylaxis. Majority (66.6%) thought that a second dose of half the initial dose of antibiotic is recommended in all cases, whereas 17% were of the opinion that a second dose is not required. Only 16% were aware of the current consensus that a second dose should only be given in high risk cases.

Only 25% were of the opinion that a thorough cardiovascular examination should be done in all cases before dental procedures involving bleeding, whereas

the majority (75%) thought that a cardiovascular check up is required only where history is suggestive of cardiovascular disease.

40 out of 60 (66.6%) thought that the benefits of antibiotic prophylaxis is established beyond doubt, whereas 10 (16.6%) said they could not say. Only 10 were aware of the recent controversy regarding efficacy of antibiotic prophylaxis.

### Discussion

The survey revealed a paucity of information regarding prophylaxis against Infective Endocarditis in a significant number of dental surgeons, even in a post graduate teaching institute. Not only were there lacunae in the knowledge, there was also a lack of awareness regarding the current controversies prevailing, and a certain casual attitude towards the need for preventive measures.

The most common cause of bacteremia causing Infective Endocarditis is intra venous drug addiction whereas majority thought that it was dental extraction. Even where the source of bacteremia is the mouth, it is the cumulative bacteremia [2] rather than procedure related bacteremia [4] which is responsible for Infective Endocarditis. The seminal paper of Guntheroth [5] showed that cumulative bacteremia in the mouth prior to a single extraction is 5000 times greater than the bacteremia immediately following extraction of a single tooth. The emerging view is that patients with cardiac defects are more likely to develop Infective Endocarditis from everyday bacteremia rather than from dental procedures. Most cases of Infective Endocarditis are caused by bad oral hygiene, inflamed and bleeding gingivae. Contrary to the popular belief among dental surgeons that the risk of Infective Endocarditis is very high after dental extractions, the risk is actually quite low.

The awareness regarding high risk cardiac cases requiring antibiotic prophylaxis was quite low in the present study. The areas of doubt were especially coronary artery bypass graft, stents and pacemakers- all of these are extremely low risk cases and do not require antibiotic prophylaxis before dental procedures. Another misconception was regarding surgically corrected congenital heart diseases. Surgical repair can eliminate risk of Infective Endocarditis if no residual lesion is present [1]. However corrective surgery is not always protective and may itself create potential targets for infection.

A suggestion has been made that only patients with prosthetic cardiac valves or

prior history of Infective Endocarditis should receive prophylaxis [6]. Nevertheless, an expert committee of the American Heart Association along with similar advisory groups in other developing countries has identified procedures that may precipitate bacteremia and patients who should receive prophylaxis [7].

An overwhelming majority of dental surgeons appeared to be unaware of the ongoing controversy regarding the efficacy and desirability of prophylactic antibiotic administration. A Dutch study [8] assessed 427 patients with Infective Endocarditis and concluded that even if antibiotic prophylaxis was 100% effective and was provided to all cases at risk, only a small fraction of cases (5.3%) could be potentially prevented. Some authorities have gone to the extent of suggesting that the standard practice of antibiotic prophylaxis before dental extractions may be more for medico-legal purposes than scientific norms. Researchers at University of Pennsylvania School of Medicine have determined that dental procedures are NOT a risk factor for endocarditis even in patients with underlying cardiovascular abnormalities. In view of high rate of failures for prophylaxis, low incidence of the disease and risk of adverse reactions to drugs, the guidelines regarding antibiotic prophylaxis should be revised. The cost effectiveness also appears to be a deterrent- some Western studies have concluded that Clarithromycin may be more cost effective than Amoxycillin, though this may not hold true in developing countries like India.

These are dissenting views which emphasise that dental causes are still the predominant etiology in causation of Infective Endocarditis. A recent study has shown that the frequency of positive blood culture was significantly lower in patients who received antibiotic prophylaxis than who did not.

The importance of a thorough cardiac examination of patients undergoing traumatic dental procedures cannot be over emphasised. A majority of dental surgeons surveyed were of the opinion that a cardiac check up is essential only in patients giving history suggestive of heart disease. As many as 50% of patients with Infective Endocarditis were not aware of a pre existing cardiac lesion predisposing to infections in different studies.

### Conclusion

The survey revealed that majority of the dental surgeons, even those practising in a post graduate dental institute, were having a lacuna in the knowledge

regarding prophylaxis of Infective Endocarditis in dentistry. The level of awareness may even be lower in those doing private practice. The recent controversies and raging debates regarding efficacy and desirability of antibiotic prophylaxis notwithstanding, the standard practice of giving prophylaxis to high risk cases must be followed, even if only for medico-legal purposes. All patients undergoing invasive dental procedures must be screened for pre-existing cardiac problems, even if that entails some amount of inconvenience to the patient and increased cost factor. In vulnerable patients, the importance of maintaining good oral hygiene and aggressive treatment of local infections is of paramount importance for preventing Infective Endocarditis.

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Source of Support : Nil, Conflict of Interest : None declared