

## Dental management of patients prior to cardiac surgery

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### Abstract

A retrospective analysis of cases treated at the Dental department after referral from the Gleneagles Jerudong Park Medical Center (GJPMC) prior to cardiac surgery. The cases were divided into high risk, moderate risk and low risk based on antibiotic administration and analyzed. They were also divided based on patients with bleeding disorder or without bleeding disorder based on drugs which modified the hemodynamics of blood flow. On an average it took a week to render the patient orally fit for cardiac surgery with minor dental procedures such as extractions, where as it took two weeks on an average for patients who required major dental procedures such as removal of impacted molars or cyst removals. This data helped us to formulate a time period prior to dental fitness for cardiac patients prior to cardiac surgery.

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### Introduction

All patients undergoing open heart surgery, especially prosthetic valve replacement, are routinely screened for oral foci of infection and have to be rendered orally fit prior to cardiac surgical intervention [1]. On average 4 patients a month were referred from GJPMC for dental fitness prior to cardiac surgery from January 2005 to December 2005. Oral fitness is important because studies have implicated as increased risk in cardiovascular disease and other systemic diseases [1]. Dental infections fall into 3 general categories: localized (e.g., acute periodontal abscess, peri-implantitis), spreading (e.g., early cellulitis, deep space infection), and life-threatening (e.g., fasciitis, Ludwig's angina). The most common dental infections include dental caries, dentoalveolar infections (pulpal infections and periapical abscess), periodontal disease (including pericoronitis and peri-implantitis). If left untreated, dental infections can spread systemically and contribute to polymicrobial infections at other sites, including the sinuses, the sublingual space, palate, central nervous system, pericardium, and lungs. Dental disease [caries and periodontal] has been implicated in systemic disease such

as diabetes, cardiovascular, osteoporosis and spontaneous preterm birth [3]. Many risk factors have been studied for periodontal disease out of which clear risk factors were dental plaque and frequency of dental visits; other risk factors are presence of plaque with *Porphyromonas gingivalis* and *Bacteroides forsythus*, male gender, age, diabetes, and smoking. Stress, osteoporosis, and genetics also have been studied as risk indicators for periodontal disease [4]. The risk factors for cardiac diseases and periodontal diseases seem to overlap.

### Materials and methods

Seventeen patients referred to RIPAS dental department for dental clearance from GJPMC in 2005 that were incorporated in the study. Thirteen patients were male and 4 were females. Their ages ranged from 42 to 74 years. These patients were categorized based on risk assessment using British Cardiac Society guidelines for endocarditis prophylaxis 2003 [5]. Data were analyzed based on type of treatment rendered, period of stay in hospital, number of patient admitted in the hospital prior to or during the treatment, and the time taken to certify them orally fit.

### Results

The study had 4 patient in the high risk group, 13 patients in the moderate risk group and nil in low risk group. Twelve patients had bleeding tendencies out of which

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2 were on Heparin, 7 on Warfarin, 2 on Asprin alone, 7 on aspirin and warfarin and 1 on heparin and aspirin. All patients required scaling, emphasis on oral hygiene and oral hygiene instructions. 9 (52%) patients required multiple teeth extraction, 2 patient required single tooth removals. One patient required surgical lower third molar removal. 1 patient required surgical removal of dental cyst. Seven (41%) patients required dental fillings. Eight (45%) patients were admitted in the hospital during treatment. Two patients had to stay more than 2 days whereas others were discharged from dental within 2 days. The entire high

risk group patient was admitted in the hospital for dental treatment. All patients who required extraction and are taking warfarin or heparin were hospitalized. The average time taken for dental fitness was an around a week. Eleven (64%) patients were rendered dentally fit in a week's time. Three (17%) patients were certified fit on the same day, 2 patients required more than 2 weeks due there medical condition and dental status. One patient required more than 1month for dental fitness due to a dental cyst which required removal.

Figure 1. Types of medications taken by patients which alters there hemodynamics of blood flow

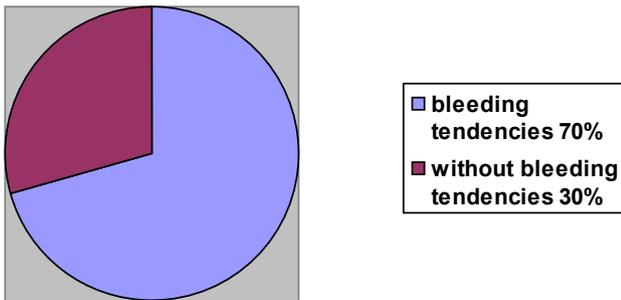


Figure 2. Percentage of patients with bleeding tendencies

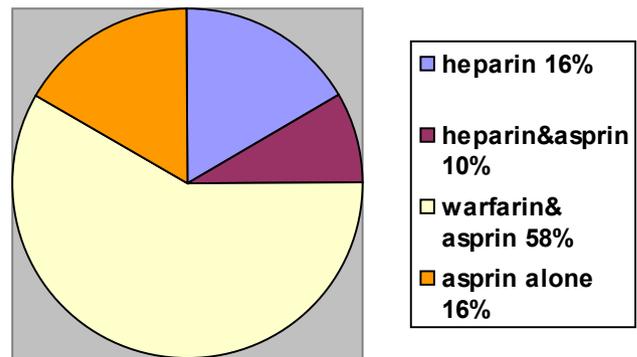


Figure 3. Treatments rendered to the patients

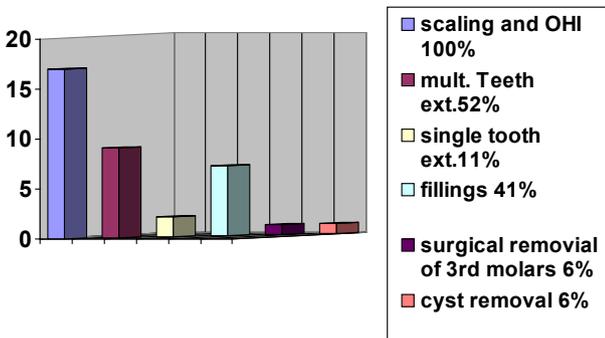
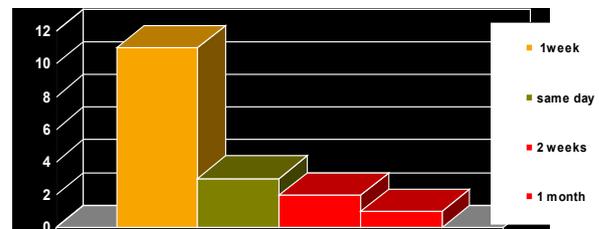


Figure 4. Time taken to achieve dental fitness in the patients



**Discussion**

With increased life expectancy along with better dental care causes greater concern to be focused on long term maintainance of teeth by cardiac patients. Two main concerns for cardiac patients are bleeding tendencies in these patients and future maintenance of dental health. The

main problem faced by dental surgery is bleeding tendency which is mostly caused by anti-coagulants (oral Warfarin) or anti-platelet drugs (Asprin). Traditional management entails the interrupting these drugs prior to dental surgery procedures based on laboratory investigation (INR greater than 3.5for Warfarin) to prevent hemorrhage [6]. This practice may increase the risk of potential life threatening

thromboembolism, the issue is still controversial [7]. The management of oral surgery procedures patients with anticoagulants should be influenced by several factors; extent and urgency of surgery, treatment rendered to the patients laboratory values, treating physicians recommendation, available facilities, dentist expertise and patients oral medical and general conditions [8]. During the past decade, several studies of the relationship between cardiovascular disease and dental diseases have been reported. Case control studies have shown that the higher the caries index the greater the association with heart disease [9]. De Stefino showed that there was relationship between baseline periodontal disease and the subsequent development of heart disease in men younger than 50years [10]. Normative aging study showed increase in stroke by 2.5 times in those patients who had periodontal diseases. In addition this study showed a graded response between baseline bone loss and risk of developing heart disease, people with 60% bone loss had 30% to 40% increase risk of developing heart disease in the next 15 years. Native American on Gila River Indian Reservation were studied because of there low levels of smoking, (only 5% of the population smoked and these smoked only few cigarettes per day). Among 1440 natives studied, a very strong relationship between periodontal diseases and cardiovascular diseases was observed [11].

In our study we found out that most of our patients required dental treatment prior to cardiac surgery. We have discussed about dental disease and cardiovascular disease to emphasis the importance of dental care in these patients. It is not only important to render these patient dentally fit but to motivate them to maintain good oral hygiene and regular dental visits. Our study showed it took on an average about a week to certify them dentally fit which implies that it postpones a major cardiac surgery by a week. Based on evidence it is mandatory to maintain oral hygiene by all and more so by cardiac patients to reduce the risk of cardiovascular complications.

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