Oral Rehabilitation in a Hypertensive patient - Case Report

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Abstract

Globally, hypertension affects over a billion individuals as a chronic condition. When treating dental patients, it is important to take into account the alarmingly high incidence of the condition. The condition is dangerous since symptoms do not appear until more significant issues arise. By analyzing preoperative blood pressure measurements, doing risk assessments, and recognizing when to pursue a medical consultation with a hypertensive patient in a dental context, dentists may frequently be on the front lines of hypertension prevention. Many antihypertensive medications interact with pharmacologic agents used in dentistry practices, placing the oral health care professional in a unique position to actively manage patients who arrive with a history of hypertension.

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Introduction

The current definition of hypertension (HTN) is systolic blood pressure (SBP) values of 130 mm Hg or more and/or diastolic blood pressure (DBP) of more than 80 mm Hg. Hypertension ranks among the most common chronic medical condition characterized by a persistent elevation in arterial pressure. Hypertension has been among the most studied topics of the previous century and has been one of the most significant comorbidities contributing to the development of stroke, myocardial infarction, heart failure, and renal failure.[1, 2] Blood pressure is highly variable within an individual, and is not well characterized from a

single or very few measurements. Historically, a diagnosis of hypertension in the majority of interventional trials has been based on repeated clinic measures taken on multiple occasions.[3]It is estimated that 17.3% of the 80 million US adults with hypertension are undiagnosed. Undiagnosed hypertension has been proven to shorten a life span by 10–20 years. The number of people with hypertension in the US and worldwide, the number of people with undiagnosed hypertension, and the future growth of the disease make hypertension a public health concern. It is important that the oral health care practitioner is well versed on the challenges involved in prevention, management, and treatment options for this population of patients, as well as on the available opportunities that may improve overall patient care and treatment outcomes in the dental office. The role of the dental practitioner as a part of the overall health care team is often overlooked but should be considered important in screening for hypertension.[4- 7]

Case report

A 57-year-old male patient sought dental assistance due to missing dentition, expressing a desire for prosthetic rehabilitation to address the gaps. Intra-oral examination revealed the absence of teeth 35, 36, and 37, necessitating a comprehensive treatment plan to restore both functionality and aesthetics. During the medical examination, it was discovered that the patient was managing hypertension and was under medication, specifically Amlodipine. The diagnostic phase involved the fabrication of diagnostic casts, enabling a detailed assessment of the patient's oral anatomy. Occlusal evaluation was performed with precision, considering both static and dynamic positions to ensure a comprehensive understanding of the occlusal dynamics. This thorough examination laid the groundwork for a tailored treatment approach that considered the patient's specific dental needs in conjunction with his hypertensive condition.

Dental implant procedures were then undertaken to address the missing teeth, incorporating the latest advancements in implantology. A meticulous try-in process was conducted to assess the fit and functionality of the prosthetics before the final crowns were expertly placed. This step not only ensured a comfortable fit but also allowed for any necessary adjustments to be made to optimize the patient's occlusion. Follow-up appointments were scheduled to monitor the healing process and assess the long-term success of the dental implant procedures. Radiographic evaluation played a crucial role in gauging the stability of the implants and the overall health of the surrounding tissues. This comprehensive approach, combining dental expertise with a consideration of the patient's systemic health, underscores the commitment to delivering a prosthetic rehabilitation that not only meets aesthetic expectations but also promotes the patient's overall well-being.

Extra-oral examination

Intra-oral examination

Occlusal evaluation-static

Occlusal evaluation- Dynamic Occlusal evaluation- Static

Right Working

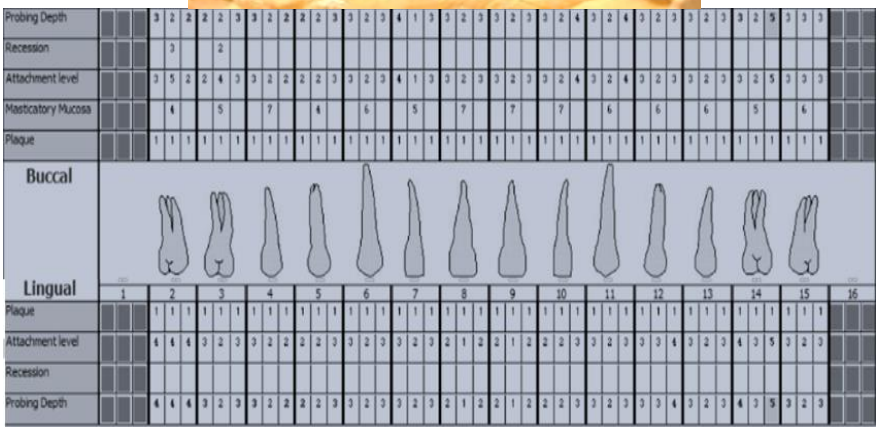
Left Working

Non-Working

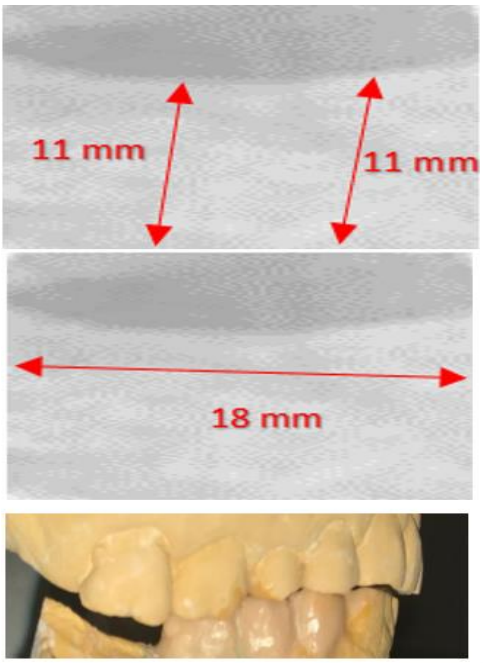
Non-Working

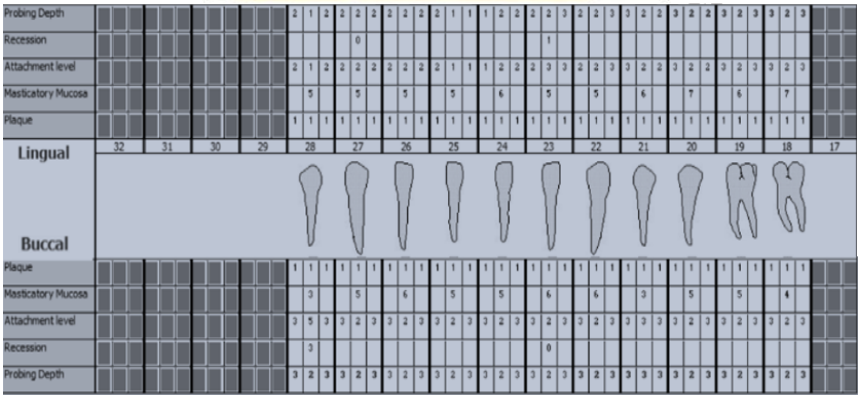
Occlusal Evaluation – Dynamic (Anterior Guidance) Radiographs:

Periodontal Charting: Maxilla



Periodontal Charting: Mandible





Postoperative

Discussion

Hypertension is the leading preventable risk factor for cardiovascular disease (CVD) and all-cause mortality worldwide. In 2010, 31.1% of the global adult population (1.39 billion people) had hypertension, defined as systolic BP ≥140 mmHg and/or diastolic BP ≥90 mmHg. The prevalence of hypertension is rising globally owing to ageing of the population and increases in exposure to lifestyle risk factors including unhealthy diets (i.e. high sodium and low potassium intake and lack of physical activity. However, changes in hypertension prevalence are not uniform worldwide. In the past two decades, high-income countries (HICs) experienced a modest decrease in hypertension prevalence, while low and middle-income countries (LMICs) experienced significant increases.[7-10] A 57-year-old male patient reported with missing dentition and wanted prosthetic rehabilitation for the same. On intra-oral examination, 35, 36 and 37 were found to be missing. On medical examination, patient was found to be hypertensive and was on medication Amlodipine for the same. Diagnostic casts were fabricated and occlusal evaluation was done both at static and dynamic position. Dental implants procedures were carried out. Try-in was done and final crowns were placed. Follow-up was done and radiographic evaluation was carried out. Barry JM et al, documented a case report of dental management of the hypertensive patient. This case report exemplified how the dentist can play a key role in the detection of hypertension by simply taking vital signs on all patients. It is

incumbent upon us as health-care professionals to understand the causes of hypertension, the therapeutic drugs used and associated side effects, and the potential for drug interactions. The dentist's ability to recognize and appropriately manage hypertension will greatly enhance the health and safety of patients.[11] Kumar et al, in a previous study evaluated the prevalence and inadequately treated undiagnosed hypertension in the general population. A total of 2500 patients were enrolled in the study within the age group of 20–60 years, attending dental clinics. For every patient, blood pressure (BP) was taken three times, and all the readings were grouped into four categories including normal, prehypertensive stage, Stage 1, and Stage 2 of hypertension. In the dental clinic, the BP assessment was done considering parameters such as sex, smoking and alcohol, the effect of local anesthesia, gutkha chewing, age group, and regular exercise. About 24.39% of undiagnosed hypertensive patients were found among all who attended the OPD of the department of oral and maxillofacial surgery. It was observed that the rise in BP was 16.71% and 2.35% in Stage 1 and Stage 2, respectively, after giving the local anesthesia. Their study revealed that early diagnosis of undiagnosed and inadequately treated hypertension among general people notified by dentists is an important role, and this should be promoted and emphasized to restrict fatal life complications.[12]Doble A et al reported the case of a 65-year-old man with a previous history of hypertension, taking antihypertensive medication, attended a BP clinic at the University of Plymouth, Peninsula Dental School as part of a hypertension case finding pilot. His systolic and diastolic BP were 150 and 85 mmHg, respectively, and as per the trial protocol, a referral letter was sent to his GP for suspected further assessment and investigation. Then, an onward referral was made to secondary care and the participant was subsequently hospitalised for 13 days for treatment of heart failure and suspected acute coronary syndrome. This case report highlighted that BP readings taken in a primary care dental setting can be very useful and recommends better integration of dental services into primary care to reduce the risk of major cardiovascular events.[13] The stages in management of hypertensive patients undergoing dental treatment include initial evaluation of each patient with hypertension should include detailed family history of cardiovascular disease, history of hypertension, medications, duration and antihypertensive treatment history, severity of disease, and its complications. Before starting dental treatment, dentist has to assess the presence of hypertension and accordingly the treatment changes needed. Patients with hypertension are at increased risk of developing adverse effects in a dental office. Therefore, measuring blood pressure (BP) will be done in the dental office to every new patient for each visit. In patients with chronic systemic diseases, BP measurement will be carried out during more complicated dental interventions as oral surgical procedures, restorative treatment complicated with longer sessions, placing dental implants, and periodontal surgery. Routine measurement of BP may reduce the risk of cardiovascular events and acute complications during dental treatment, especially when conscious sedation or general anesthesia is required. Whenever a dentist meets a patient with hypertensive crisis, the dental procedure should be postponed and the patient should be immediately sent to a hospital (Hogan et al).[14]

Conclusion

Patients with hypertension are frequently encountered in dental practice and it is necessary to treat them. Safe and effective dental management of such patients requires close medical and dental coordination, an understanding of the potential hazards during dental treatment, knowledge of drugs used in treatment of hypertension, and the potential adverse effects of drugs commonly used in dentistry.

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