DENTAL IMPLANT/S IN A PATIENT WITH SICKLE CELL ANEMIA – CASE REPORT

[1]Dr. Neeraj Trehan, [2]Dr. Palvideet Kaur, [3]Dr. Medha Sharma, [4]Dr. Upasana Ashutosh Tervankar, [4]Dr. Aarzoo Kataria, [5]Dr. Joshna Hingorani,

[1]DMD, USA (Private Practitioner)

[2]BDS, MDS (Pediatric and Preventive Dentistry) (Private Practitioner, India)

[3]BDS Research Assistant India

[4]BDS, MDS (Periodontics and Implantology) Research Assistant india

[5] BDS Research Assistant USA

[6]BDS Research Assistant India.

Corresponding author: Dr. Neeraj Trehan

Abstract

Sickle cell disease (SCD) is a group of disorders that cause red blood cells to become misshapen and break down prematurely. In SCD, there is an abnormality of the hemoglobin that carries oxygen to cells throughout the body. We have presented a case report of 27-year-old patient with sickle cell anaemia who underwent dental implant/s therapy. In sickle cell patients, follow-up and almost all care can be conducted in an outpatient setting by an implantologist. Awareness of the complications and recommendations surrounding the management of patients with severe sickle cell disease is essential.

Key words: Dental implant, sickle cell anaemia

Introduction

The use of dental implants is considered as the best treatment option for treating partial or complete edentulism and replacing single

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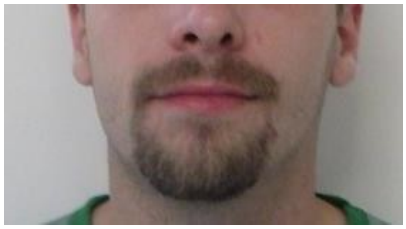
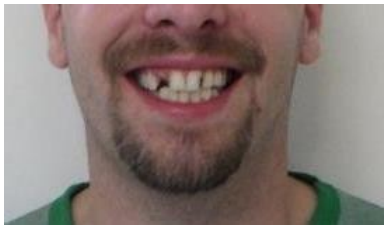
missing tooth in the anterior and posterior regions of the mouth. High survival rates for dental implant supporting single crowns or fixed partial prothesis have been reported; however, systematic reviews of the literature have also identified a variety of the complications associated with dental implants and prothesis superstructures.[1- 3] Sickle cell disease (SCD) is a group of disorders that cause red blood cells to become misshapen and break down prematurely. In SCD, there is an abnormality of the hemoglobin that carries oxygen to cells throughout the body. The abnormal hemoglobin, known as hemoglobin S, has a lower functional capacity and causes multiple systemic complications. Hemoglobin S distorts the shape of the red blood cell into a sickle or crescent shape, giving the disease its name.[4- 6] We have presented a case report of 27-year-old patient with sickle cell anaemia who underwent dental implant/s therapy.

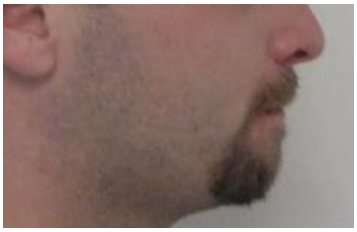
CASE REPORT

In the present report, a 27-year-old male patient reported with missing mandibular right and left permanent first molars. On obtained medical details, patient gave history of suffering from sickle cell anemia and was on medication (hydroxyurea). Thorough intraoral examination was done and working casts were made. Radiographic evaluation was done and under controlled conditions, dental implant therapy was carried out in all the patients. Prosthesis was completed on follow-up and after one year, both radiographic and clinical assessment of patients was done.

Extra oral Exam







Intraoral Exam

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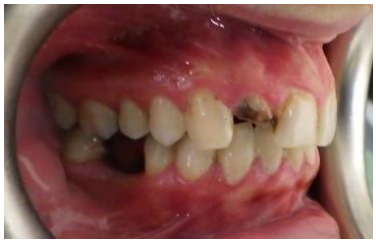

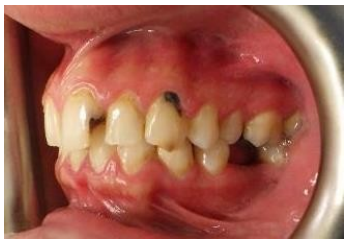

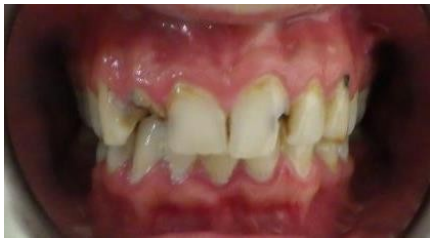

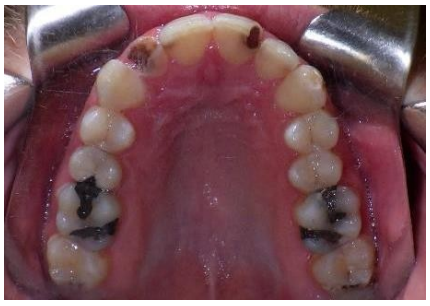

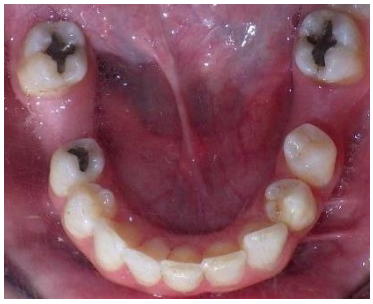

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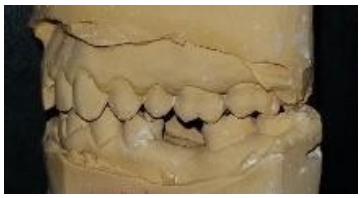

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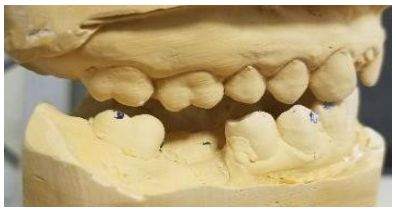

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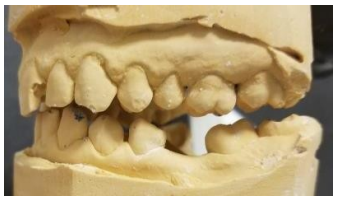

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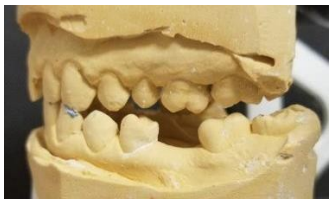

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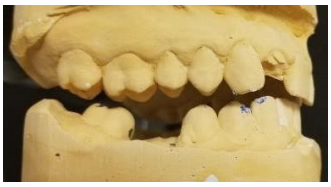

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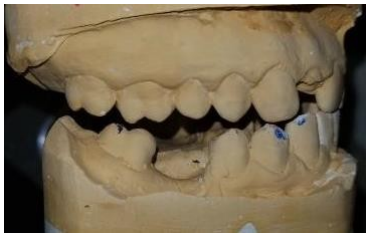
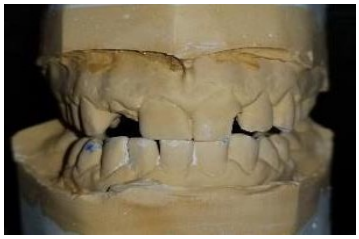
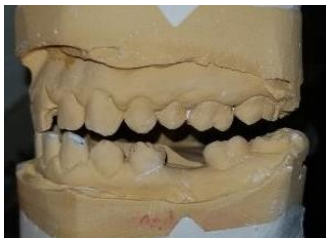
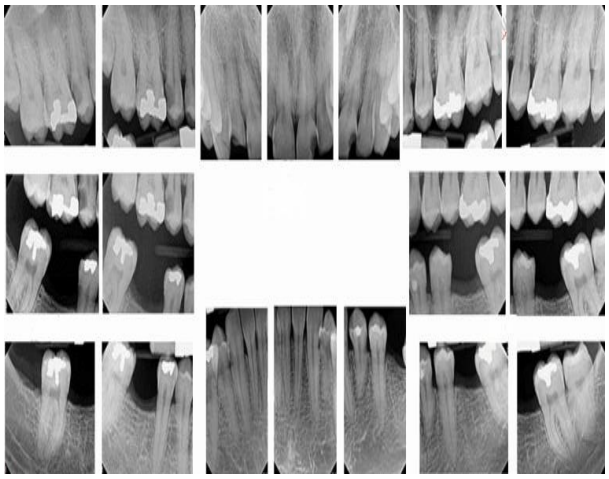
Occlusal Evaluation – Dynamic (Anterior)



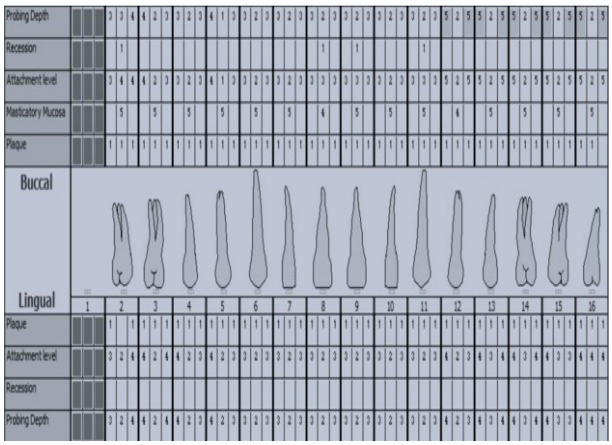




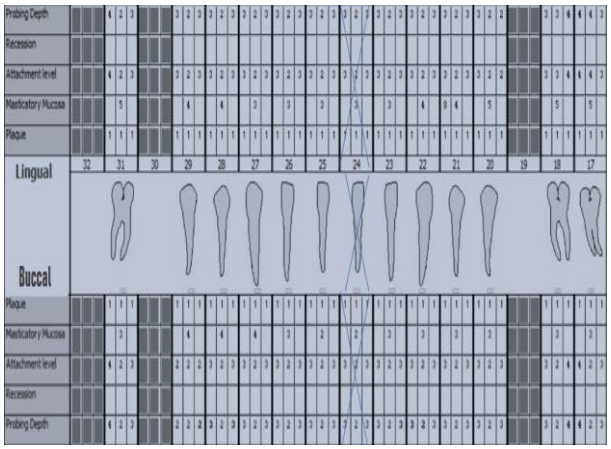
Radiographs



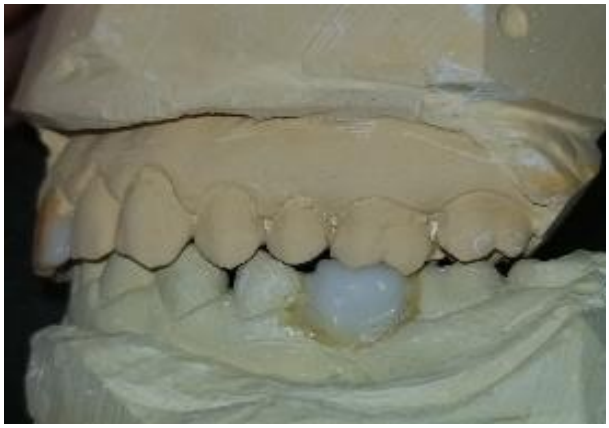
Periodontal Charting: Maxilla



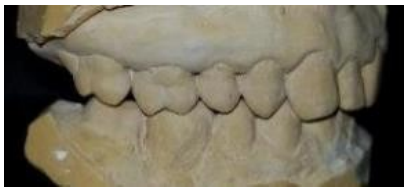
Periodontal Charting: Mandible



Post – operative:



Post operative Occlusal Evaluation - Static



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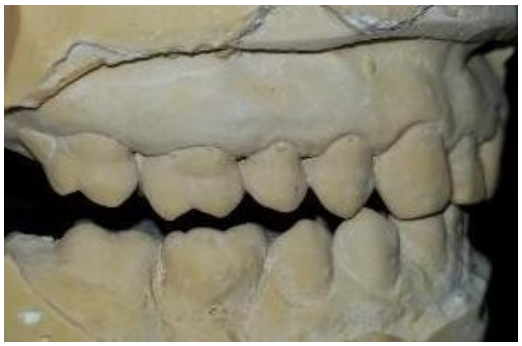

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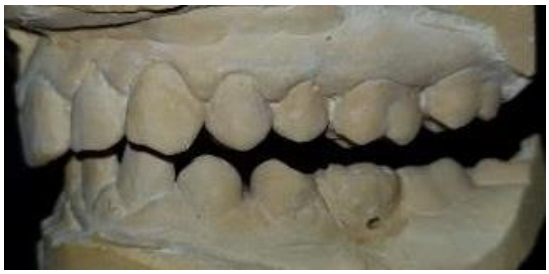

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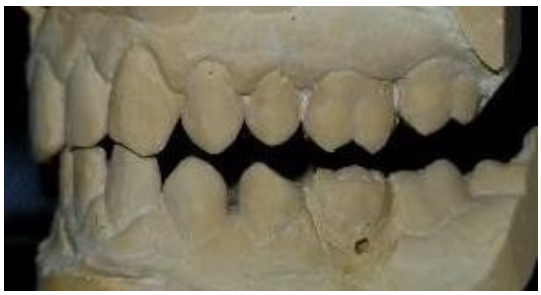
Post operative Occlusal Evaluation - Dynamic



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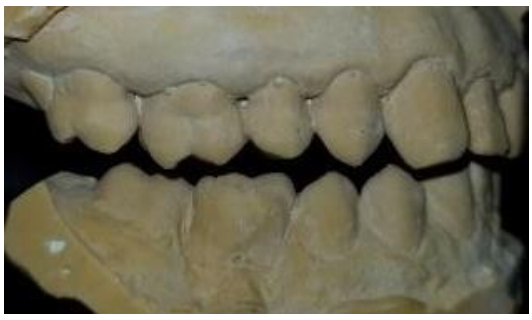

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DISCUSSION

A medically compromised patient (MCP) can be described, as the one who has a distinctive physical or mental feature regarding the people of the same age. In this sort of patients there is a higher risk of interactions between their disease and the implant surgery, implying a higher medical risk. A dental implant is a surgical component that interfaces with the bone of the jaw or skull to support a dental prosthesis such as a crown, bridge, denture, facial prosthesis or to act as an orthodontic anchor. 90%–95% has been reported as the success rate of implants over the 10 years. Although it has become the treatment of choice for most of the dentists, still, the complications arising from dental implant placement are the biggest challenge.[7, 8] Sickle cell anaemia is an inherited disease and is the most prevalent disorder among the sickle cell syndromes. It is a clinically severe condition affecting millions of individuals around the world and often producing fatal symptoms. The disease results from an inadequate production of erythrocytes by the bone marrow, which limits the replacement of circulating blood cells every 120 days. Sickle cell anaemia results in fragile erythrocytes that are unable to survive for more than 20 days.[8-10]

In the present report, a 27-year-old male patient reported with missing mandibular right and left permanent first molars. On obtained medical details, patient gave history of suffering from sickle cell anemia and was on medication (hydroxyurea). Thorough intraoral examination was done and working casts were made. Radiographic evaluation was done and under controlled conditions, dental implant therapy was carried out in all the patients. Prosthesis was completed on follow-up and after one year, both radiographic and clinical assessment of patients was done. Kakkar M et al reviewed the current literature on sickle cell disease and dental implant as a treatment modality for the replacement of the missing dentition. A comprehensive systematic literature review was conducted using the PubMed, Medline, Embase, Cochrane Central Register of Controlled Trials, Web of Science, Google Scholar, the US National Institutes of Health Trials Registry, WHO Library, with no language filter. Of the five studies included, one study investigated the changes in the bone pattern using radiographic parameters, such as 1) trabecular bone pattern (step-ladder or spider web); 2) integrity of the lamina dura (loss of sharpness and continuity, partial or complete absence, and increased thickness), in patients with SCD. Another study performed a retrospective analysis of SCD patients who had undergone oral surgery procedures in an

outpatient setting. Two studies included literature reviews related to oral surgery and the management of patients with sickle cell disease. Only a single case report on dental implant placement was identified and incorporated into the systematic review. Abnormal trabecular pattern secondary to medullary hyperplasia may have a negative impact on mechanical properties of the bone, thereby affecting bone-to-implant contact and osseointegration.[11]

Having a dental infection complicated by a sickle cell crisis significantly increases the likelihood of hospital admission among adult SCD patients presenting to the Emergency Department (ED). According to relevant literature, patients with SCD are most frequently admitted to hospital emergency care and require subsequent hospitalization compared to other medical conditions. The incidence of oral and dental issues in SCD is higher than that in many other disorders, but evidence from available clinical studies is very limited for sickle cell patients.[12- 14] Patients with sickle cell disease are considered ASA III. The use of local anesthetics is preferable to general anesthesia due to the reduced risk of decreased oxygenation, anxiety, and pain. In dentistry, one of the main advantages of local anesthesia with vasoconstrictor is to minimize the patient's discomfort during clinical treatment by increasing the life span of the anesthetic drug in the tissue in which it was infiltrated. Then, whenever possible, it is used before any procedure that triggers pain. The most consistent approach would be to use anesthetics with vasoconstrictors in specific and really necessary cases, such as surgical interventions. However, the use of anesthetics with vasoconstrictors is still very controversial.[15- 17]

CONCLUSION

In sickle cell patients, follow-up and almost all care can be conducted in an outpatient setting by an implantologist. Awareness of the complications and recommendations surrounding the management of patients with severe sickle cell disease is essential.

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