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Original Research Paper

Dentistry

FULL MOUTH REHABILITATION IN PATIENT WITH ECTODERMAL DYSPLASIA USING BASAL IMPLANTS AND MONOLITHIC ZIRCONIA BRIDGE.

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ABSTRACT Full Mouth Rehabilitation with dental implants in patients with less bone is a great challenge. Young adults, with condition such as ectodermal dysplasia, have underdeveloped alveolar bone, compromised esthetics and chewing efficiency. Bestowing a fixed permanent solution in such patients is very critical as it not only improves function, but also imparts a great psychological benefit. This report aimed at highlighting the advantage of using basal implants in a patient with ED, where a conventional implant was not possible.

KEYWORDS : Ectodermal Dysplasia, Basal Implantology, Full Mouth Rehabilitation, Dental Implants

INTRODUCTION

The documentation of ectodermal dysplasia dates back to 1878, where Thurnam reported two cases[1]. Hypohydrotic. Christ-Siemens-Touraine syndrome is the common variant and is associated with hypodontia, inadequate sweating (hypohydrosis) and scares thin hair (hypotrichosis)[2].

One of the prominent oral manifestations of ectodermal dysplasia is the observation of hypodontia or oligodontia. The individuals generally report missing most of their primary and permanent teeth. Individuals may have completely missing mandibular teeth with few teeth present in the maxillary arch. The teeth that are present have abnormal crown shapes. Other oral manifestations are high palatal arch and reduced anterior facial height as a result of underdeveloped maxilla and the mandible placed forward and upward[3,4].

With no specific remedy to treat ectodermal dysplasia, symptomatic treatment by replacing the teeth to enhance mastication and aesthetics is considered to be one of the important aspects of treatment[5].

In this case report, we aimed at documenting full mouth rehabilitation in a patient with ectodermal dysplasia.

Case Report

A 24-year-old male patient came to the clinic with a chief complaint of missing teeth in his upper and lower front and back teeth region since childhood. His history revealed that the teeth were absent since childhood and have thought it to be delayed eruption. But on consulting a dentist, when the patient was 8-year-old, he was diagnosed with ectodermal dysplasia. The patient also gave a history of intolerance to heat and frequent bouts of fever since his childhood.

On general physical examination, the patient had a classic triad of hypotrichosis, hypohidrosis and hypodontia. Extra oral findings included shorter lower third of the face than the middle and upper thirds; prominent supraorbital ridges, spares hair, very thin eyebrows, saddle nose, depressed nasal bridge and dry skin.

On intraoral clinical examination, all the teeth were missing except for the maxillary central incisors. The incisors were short and conical shaped. The mandible was completely edentulous with deficient buccal and lingual vestibules. The patient has apparently been using a denture for the past years but is not satisfied with the results as it was neither enhancing the function, nor his aesthetics.

For radiographic examination, an orthopantamograph was taken confirming the clinical findings of hypodontia. All the above findings converged to a final diagnosis of hypohydrotic ectodermal dysplasia.

The patient wanted to get full mouth rehabilitation with the help of implants. Considering, the quality and quantity of his bone structure, the patient was explained about basal implantology. Having understood the advantages of basal implants and immediate rehabilitation of getting permanent teeth in 3 days the patient wanted to go ahead with the treatment.

Full mouth rehabilitation was done under antibiotic therapy with a combination of compressive and basal implants in both the arches after extracting the central incisors. 12 single piece implants in the upper arch and 10 in the lower arch were placed. Pterygoid implants were placed to take the advantage of the cortical bone to provide a proper support to the prosthesis. The procedure was done under local anaesthesia, using flapless technique with minimal intervention. No intraoperative complications were noted.

Single stage impressions were then taken using 3M ESPE monophase polyether impression material. Intermaxillary records were tentatively taken using high viscosity polyvinylsiloxane (coltene jetbite). Temporization was done and the patient was informed about all the post operative care that is to be taken.

Casts were poured and the models were mounted on the articulator. The casts were scanned using 3 shape CAD CAM and zirconia framework was designed.

On the second visit, abutments were trimmed and a trial was done to check for the margins and seating of the bridge over the implants. Following this, definitive intermaxillary records were taken and the bridge was adjusted accordingly.

The Implants were then immediately loaded with the final glazed zirconia bridges using 3M ESPE resin cement. Final minor adjustments in the bite were done intraorally in all the functional movements. A splint was given to the patient to be used for the first 3 months after completely removing the excess cement that was there around the bridges.

The patient is under constant follow up and no complications were noted so far. A 2 year post operative follow up OPG has been taken and no unintended complications were noted.

DISCUSSION

The treatment goal of a patient with ectodermal dysplasia is mainly targeted at restoring the function and aesthetics. A multidisciplinary approach is usually recommended following its diagnosis so that the patient is functionally not compromised. Restoration of teeth by giving partial or complete dentures during the growing years helps in an undisturbed development of the jaws. These dentures should however be regularly replaced in accordance with the jaw growth[5].

The ultimate solution for these patients could be restoring teeth with the help of implants and can be considered in those over 12 years of age. However, the quantity and quality of the bone might not permit the use of conventional dental implants[6]. Basal implantology proves to be a great alternative in these patients. It helps in gaining the maximum benefit of the cortical bone. In the present report, the alveolar process was severely compromised and would not permit placing implants. With the use of a combination of compressive and basal implants, and taking advantage of the pterygoid plate (pterygoid implants) a good anchorage was obtained in both the arches, which was followed by placing a full arch monolithic zirconia bridge[7,8].

Choosing the ideal technique and implant type is crucial in such patients with compromised bone. However, restoring the vertical dimension is yet another challenge. In our case report, the patient was rehabilitated with a monolithic zirconia full arch bridge in both the upper and lower arches.

The vertical dimension of the patient was severely deteriorated, due to underdeveloped alveolar bone. To restore it, a compatible material which would address all the aspects of function and esthetics is to be chosen. Literature provides a good validation on the superiority of Monolithic Zirconia over the others when fabricating an implant supported bridge. The high strength, precise marginal fit as it is CAD CAM made, no chipping due to the fact that it is monolithic are some of the major advantages[9,10]. In the present case study, the vertical dimension of occlusion that was to be restored was approximately 40mm. This necessitated the fabrication of bridges that were around 20mm in height. Although many studies have proven that monolithic zirconia is the best choice for implant supported full arch bridge, it is not commonly mentioned if the height of the bridge had any limitation. Although 20mm length is a longer bridge, we did not have any kind of deformities or fractures during fabrication or fixing the prosthesis. This adds to the literature substantiating the superiority of monolithic zirconia bridges when considering full arch implant supported bridges.

CONCLUSION

This case report highlights the advantages of basal implants in patients with less bone. In addition, Pterygoid implants yield great stability, gaining anchorage from the pterygoid plate. When properly done, basal implants provide a definitive and a long-term solution for patients with less bone. The report also adds to the literature, the advantages and superiority of monolithic Zirconia bridge in using it as an implant supported full arch prosthetic material.

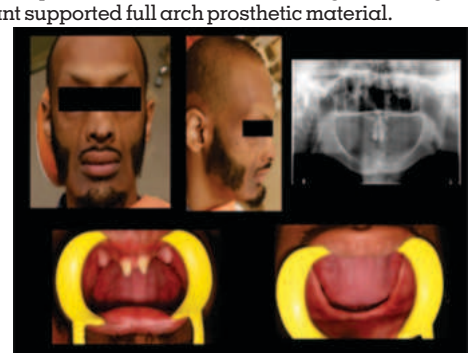

FIG I: Pre-Op Clinical Pictures and OPG

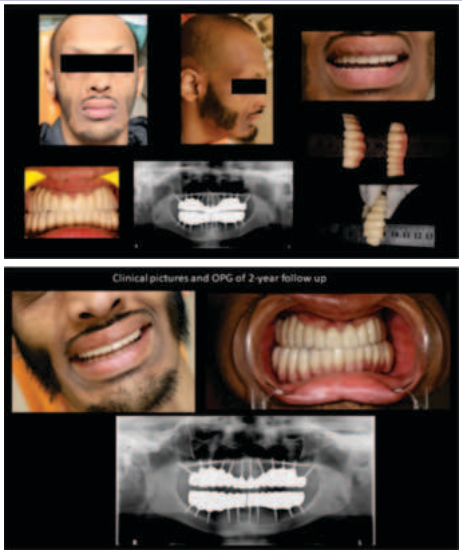

FIG II: Immediate post-op clinical Pictures, Monolithic Zirconia Bridges & OPG

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