

Clinical Management of Partial Anodontia in Ectodermal Dysplasia – Case Reports

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Citation this Article: Dr. Kiran B Patel, Dr. Vivek Gaur, Dr. Nishtha Patel, Dr. Khyati Sojitra, Henis Patel, “A clinical study of patients with head injury among vehicular accidents”, IJMSIR- September - 2023, Vol – 8, Issue - 5, P. No. 115 – 119.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

The abnormal development of tissue and structure of ectodermal origin i.e. Ectodermal Dysplasia (ED), which is a rare hereditary disorder with characteristic physiognomy. ED has dental trait of completely or partial anodontia with no or few permanent teeth present. Two cases of ED are presented in this paper. The patients reported with the complain of difficulty in chewing due to missing teeth since birth except two or three teeth that are erupted. Twin brothers showed similar complain. Relatively less hair growth, more rounded lower lip and elongated shorter face. The clinician confirmed the syndrome by the oro – facial features and orthopantomogram (OPG). The outcome of full mouth rehabilitation in ectodermal dysplasia patient with the single piece corticobasal implants following immediate loading protocol. Cortico-Basal Implantology is a

modern innovative implantology system which utilizes the basal cortical portion of the jaw bones for retention of the dental implants, which are less prone to resorption and are infection free. The new concept laid by basal implantology eliminate all drawbacks of conventional implantology and denture. Oral rehabilitation of partial anodontia with fixed prosthesis gives a satisfactory result in terms of esthetics and function. TAKE-AWAY LESSON: Immediate loading implantology is boom to patient suffering from anodontia, as it is less invasive and sustainable and short duration treatment.

Keywords: Anodontia, Ectodermal Dysplasia, Immediate Functional Loading Implant, Oral Rehabilitation.

Introduction

A heterogeneous disorder which is pack of finding of defects teeth, skin and appendage structure including

hair, nails and sebaceous gland is characterized as Ectodermal Dysplasia (ED). ED can be inherited in any form among the several genetic patterns including autosomal recessive, autosomal dominant or X-linked modes.¹ The incidence of this condition is 1:100000. More prevalence is males than in females.⁴

Ectodermal Dysplasia has two major patterns based on sweat glands: 1. Christ-Siemens-Touraine syndrome, in which sex chromosome anhidrotic or hyperhidrotic, wherein sweat glands are either absent or reduced. 2. Coluston's syndrome, in which the secretion of sweat gland is normal and hence the condition is inheritable as chromosome dominant.⁴

The oro-facial feature of ED is shorter face, high zygomatic arches, relatively long chin, shortened philtrum, fuller and more rounded lower lip, more protrusive nose and narrower mouth.⁵ Along with these due to the abnormality in development of tooth bud hypodontia, change in size and morphology of tooth such as peg shaped or pointed tooth, taurodontism and enamel defects including hypoplasia is also observed.⁶ Reduced salivary flow i.e., xerostomia makes tooth more prone to dental caries.

In such cases, where there are only few teeth or no teeth are present; it is difficult to provide prosthesis or denture, corticobasal implantology provides access to functional movement and esthetical appearance in a better way.

Case Report

In present paper the two cases of twin brothers are presented. There was no family history of ectodermal dysplasia but the brothers were diagnosed with the same.

Case 1: A 18 years old male patient reported with the chief complain of missing teeth. Extra oral examination showed slow hair growth, absence of eyebrow hairs, everted lower lip was observed. On intraoral examination no functional teeth were present for

mastication. Conical shaped teeth were present. The patient was facing difficulty in mastication and in speech. Very thin alveolar ridge was present suggestive of no formation of alveolar bone Orthopentamogram(OPG) showed presence of retained deciduous teeth in maxillary and mandibular jaw i.e. 11, 13, 21, 23, 33 and 43. Generalized atrophy of jaw bone in both the arch. No sign of permanent tooth. (Fig 1)

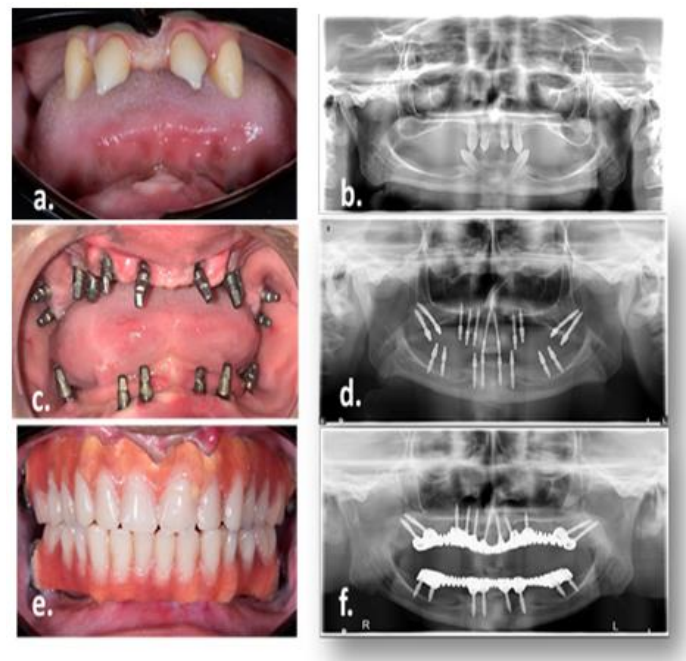


Fig 1: Intraoral and Radiographic presentation of the treatment. a. Preoperative picture showing retained teeth. b. Preoperative OPG. c. Implants placement. d. Positions of implants. e. Prosthesis placed on the implants. f. Postoperative OPG.

Case 2: A 18 years old male patient reported with the chief complain difficulty in eating and speaking. The patient had slow hairs and nail growth along with dry scalp and frontal bossing was observed. On intraoral examination two teeth in maxillary arch. The teeth were conical in shape, thin alveolar ridge and loss of vertical dimension. OPG revealed presence of 11 and 21. Generalized bone loss and no sign of permanent posterior teeth. (Fig 2)

Patient was given the treatment options like denture and

denture implant. The patient has chosen the implant as it is a permanent option for fixed prosthesis. Verbal informed consent for publication of their clinical details and clinical photographs was taken from the guardian of the patient as well as the patient.

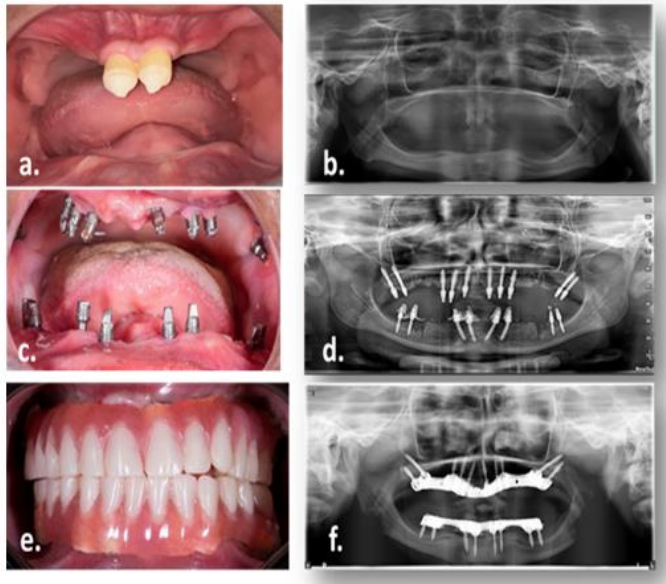


Fig 2: Intraoral and Radiographic presentation of the treatment. a. Preoperative picture showing retained teeth. b. Preoperative OPG. c. Implants placement. d. Positions of implants in the bone. e. Prosthesis placed on the implants. f. Postoperative OPG.

Treatment protocol

Post evaluation of radiograph and final diagnosis the treatment plan was explained to the patient and treatment was initiated.

The treatment was initiated with the extraction of all teeth under local anaesthesia (lignox® 2% A lignocaine with adrenaline 1:80000). Nerve block was avoided to judge the proximity to vital anatomical structures and to avoid accidental insertion of implant at critical positions, so local anaesthesia was infiltrated. All the procedures were done flapless.

Biocritical screws were placed at strategic location. As per manufacture instruction, BECES® (SIMPLADENT, Gmbh, Switzerland) corticobasal single piece jaw

implants were placed in maxilla. 1:1 reduction Kavo® straight handpiece with external irrigation using 0.9% w/v normal saline. Single pterygoid bilaterally, eight implants were engaged in anterior with nasal cortical anchorage. For mandible, BECES® were placed. Two implants on each side were placed in first molar distal root area and second molar mesial root area engaging to the lingual cortical plate. Four implants were placed in inter mental foramen area. Immediate post-operative OPG was taken to evaluate the position of implants in bone. (fig 1,2)

After the placement of implants, impression was taken with impression tray using impression post supplied by manufacture with polyvinyl additional silicon putty impression material. With the help of aluminium bite registration wax interarch relationship was recorded.

On the next day, metal framework was checked which is made up of Cobalt- Chromium metal, such that its snugly fits over implants, certain adjustments were done in height, width and angulation using the metal cutting burs for the same. Teeth and shade selection was done for prosthesis. On the third day, final hybrid prosthesis was cemented with Glass Ionomer Cement(Fuji-GC) after final adjustments. (Fig 1,2)

The prosthesis given was prepared by the concept given by Dr. S. Ihde and Dr. A. Ihde, which stated occlusal contact on two premolars and anterior half of the first molar with equal bilateral mastication and no contact on anterior teeth and distal to half of the first molar. The patient was recalled after 15 days, 3 months, 6 months and 1 year for regular follow up. (Fig 3,4).



Fig 3: Esthetical view before and after treatments



Fig 4: Esthetical view before and after treatment

Discussion

To improve the relationship of sagittal and vertical skeletal relationship, oral rehabilitation is required⁴ Whether children or adolescents the global self-esteem is highly determined by assessment of one's physical presentation, along with the comparison of attractiveness, ability, intellectual skills and social acceptance of other people. All these are compromised in the person with the condition in one or other way. Due to unusual facial features exacerbate the social challenges of meeting new people.² It is characterized by hyperhidrosis with frontal bossing resulting in partial anodontia or anodontia. The cure for anodontia or partial anodontia are fixed prosthesis like dental implants and removable prosthesis.

Dental implants have expanded the scope of prosthetic rehabilitation of severely compromised dentition.⁷ In complete/ partial anodontia implant is significantly the best indicated option as compared to dentures.⁴ Due to abnormal mandibular growth continuous adjustments and replacement due to decreased vertical dimension of occlusion are required. Retention and stability are also a problematic to achieve because of dryness of oral mucosa and underdeveloped maxillary tuberosity and alveolar ridge.⁸ There are two type implant system 1. Conventional implantology and 2. Corticobasal implantology. Corticobasal implantology has cumulative survived rate of basal implants is 97.5% in such cases; also the skeletal maturity plays an important role in adaptation of implants, so it is better option. Beside in young adults it is uncomfortable to wear denture in public places, while with fixed prosthesis they can confidently wear the smile and also is comfortable while chewing food. It also has a significant result in patient treated with Mucor mycosis and needed a rehabilitation.⁹ The corticobasal implantology is simple design and a prosthetic friendly system. It works on Wolf's law, that states bone is stimulated, strengthened, and continually renewed directly by tooth or an implant. There is a direct link between mechanical loading and bone morphology. Throughout the life of implant, it is under functional load which leads to continuous stimulation of the bone multicellular unit, which cause osteogenesis leading the peri- implant bone to become dense and to adapt over the surface of implant, hence is termed as "osmoadaptation", and therefore remodeling plays a key role and is called 4th dimension.² An important feature of this technique is that it is very less time consuming and fast. Because of short appointment, the individual doesn't get irritated and fast as within 3 days the individual is able to chew the food

from the prosthesis. This clinical approach to work is speedy, painless and effective.

Conclusion

ED is rare and progressive disease; the dentist should be aware of symptoms and proper treatment plan and regular follow up are necessary. In these cases, the patient showed up for regular follow ups and was satisfied esthetically and also functionally even after two years. Hence it can be said that basal implantology gives better quality of life with the fixed prosthesis.

Acknowledgment

The authors thanks Simpladent Implant Solution Pvt Ltd for their support in terms of implant components.

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