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Case Report

A simplified approach for prosthodontic management of syndromic oligodontia

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Introduction

Prosthetic rehabilitation of patients with congenitally deformed teeth, to normal form and function is essential in children whose dentition fails to develop normally. The treatment modalities are essentially similar to those applied for adult therapy. Teeth lost due to congenital or acquired conditions in children, are frequently restored using complete or removable partial dentures.¹ The prevalence of oligodontia has been reported as 0.3%.² It affects females as much as males, with a gender ratio of 3:2.³

The basic treatment goal in oral rehabilitation of the affected child patient is to improve both the sagittal and vertical skeletal relationship during craniofacial growth and development, as also to provide better esthetics, improved phonetics and masticatory function. The treatment options in

such cases can be completely tissue supported, tooth supported and/or implant supported prosthesis.

Removable prosthesis is a frequently used treatment modality in the management of oligodontia. In this case report, maxillary and mandibular overdentures were identified as the most appropriate treatment considering its benefits of simplicity and non-invasiveness as well as preservation of alveolar bone, which typically is underdeveloped in such cases.

Case report

A 17 year old female patient reported to the dental OPD with a chief complaint of unsatisfactory look of teeth (Fig. 1). Intraoral examination revealed multiple retained deciduous [52, 53, 62, 63, 64, 71, 74, 75, 81, 83, 84, 85] along with abnormally shaped permanent teeth [11, 12, 16, 26, 37, 46]. The teeth were conical in shape with reduced mesio-distal diameter.

The patient also presented with a depressed nasal bridge and complained of severe discomfort in hot environment owing to the inability to sweat. Her hair and nails were normal but the skin was dry and scaly. Salivary secretions were found to be normal. The parent informed of a similar condition in one of the patient's younger sister indicating a genetic predilection to the condition. A skin biopsy was advised to confirm the absence of sweat glands which came out in the affirmative. Radiographic examination was done using orthopantomogram and intraoral periapical radiographs which confirmed the clinical findings. On collaborating clinical and radiographic findings, the case was diagnosed as oligodontia associated with anhidrotic ectodermal dysplasia (ED).

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Fig. 1 – Pre-op intraoral view.

After considering various rehabilitative options the treatment chosen for the particular patient was tooth supported maxillary and mandibular overdentures. Extraction of 52, 53, 62, 63, 71, 74, 81, 83, 84 was planned owing to lack of bony anchorage and unfavourable crown-root ratio to serve as overdenture abutments. The remaining teeth 16, 11, 12, 64, 26, 37, 75, 85, 46 were considered as abutments on which individual protective copings were fabricated post tooth preparation (Fig. 2).

Thereafter final impressions were made using custom trays. Jaw relations were recorded and try in was done. Subsequently injection molding technique was used to fabricate maxillary and mandibular complete dentures (Fig. 3). Processed dentures were polished and finished. During denture insertion (Fig. 4), denture retention, stability and occlusion were evaluated; and necessary occlusal refinements were done. Post insertion instructions and importance of periodic recall check up were explained.

Patient was periodically recalled; dentures, abutments and supporting structures were examined. Oral and denture hygiene instructions were reinforced. Patient expressed her satisfaction about denture stability and function.

Discussion

Ectodermal dysplasia is a hereditary disorder occurring as a consequence of disturbances in the ectoderm of the developing embryo. The triad of alopecia (scanty hair on the scalp and eyebrows), nails dystrophy (onychodysplasia) and palmo-plantar hyperkeratosis, is associated with lack of sweat

glands and hypodontia/anodontia of primary and/or permanent dentition.¹

There are two major types ED depending on the number and functionality of the sweat glands: (1) X-linked anhidrotic or hypohidrotic, where sweat glands are either absent or significantly reduced in number (Christ-Siemens-Touraine syndrome) and (2) hidrotic, where sweat glands are normal and the condition is inherited as autosomal dominant (Clouston's syndrome).⁴

Oral traits of ED may be expressed as hypodontia or anodontia, with or without association of cleft lip and palate. Anodontia also leads to deficient alveolar ridge development⁵; resulting in reduced lower facial height, disappearance of vermillion border and prominent lips. The remaining dentition may be malformed and the oral mucosa becomes dry. The facial feature gives the patient an aged appearance.⁶

Treatment for the children with anhidrotic ED requires a team approach.⁷ Early intervention would give the child an opportunity to develop normal oral functions like mastication, speech and swallowing with improved facial support. Early intervention in ED patients have proved to provide both psychological and dental benefit.⁸ As a result of the few remaining teeth, these patients may require multidisciplinary treatment approach to regain appropriate function, esthetics and comfort.⁹

Prosthetic treatment modes includes RPDs, complete dentures and/or implant supported prosthesis in the clinical management of young patients with severe hypodontia. Oligodontia associated with ED is often characterized by

Fig. 2 – Metal coping cemented over prepared abutments.

Fig. 3 – Investing the trial denture for injection molding technique.

Fig. 4 – Completed prosthesis in-situ.

underdeveloped alveolar bone with missing or reduced alveolar ridges resulting in reduced bone volume to support conventional prosthetic dentures and for the placement of dental implants.

Although removable prostheses are the most common management option, implant supported prosthesis are gaining popularity. In situations where alveolar bone is insufficient, bone grafting is indicated before implant therapy.⁵

Endosteal implants were being used more widely in the prosthodontic management of ED. As reported by Guckes et al¹⁰ dental implants have shown 90% success rate at second-stage surgery in 13–69 years old ED patients. Overdentures are the treatment of choice when few firm teeth are present for support. Injection molding was used in the present case for the fabrication of overdentures as it provides greater impact strength, better dimensional accuracy and hardness over conventional compression molding. This is particularly relevant in overdentures as they are subjected to greater torsional forces as compared to conventional tissue supported dentures. However injection molding technique requires additional armamentarium and prolonged laboratory time, increasing the overall cost of the prosthesis. The dentures fabricated out of this technique have shown less craze resistance.

Conflicts of interest

All authors have none to declare.

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