TREATMENT MODALITIES FOR ECTODERMAL DYSPLASIA PATIENTS AT A TERTIARY CARE HOSPITAL

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OBJECTIVE: The objective of this study were to
   › To obtain the profile of ectodermal dysplasia (ED) patients reporting to tertiary care dental hospital for oral rehabilitation.
   › Report treatment modalities offered to ED patients

METHODOLOGY: It was a cross sectional study conducted at department of Prosthodontics, de’Montmorency College of Dentistry, Lahore. The duration of study was one year. One hundred ED patients were selected by purposive non-probability sampling technique. After taking consent, structured Performa was filled. Their clinical features were noted, radiographic analysis was also carried out and treatment was provided. After collection of data, statistical analysis done by SPSS software program and results were tabulated.

RESULTS: A total of 100 (57 male & 43 females) patients were included in this study. These patients were divided into five groups on the basis of their age. 42 males and 21 females had history of ED in their family. On the basis of missing teeth pattern, 27% patients were categorized into mild to moderate hypodontia, 69% had severe hypodontia and 2% had anodontia. Conical teeth were found in 30% patients while 11% had peg shape teeth. In 40% patients mandibular third molar were un erupted (38 & 48 both 20% each) while 23% had un erupted maxillary third molar (18= 11% & 28= 12%). In one patient left maxillary second molar was unerupted and in one patient all mandibular incisors were unerupted.
Removable partial dentures were fabricated for 72 patients (females 32% and males 40%). Partial over denture were provided to 08 patients while for 64 patients, conventional removable partial denture were fabricated. Conventional complete dentures were provided for 10 males (10%) and 4 females (4%). Fixed Prosthodontics treatment was provided to 15 patients, 8 were males (8%) and 7 were females (7%). Five patients did not come on their subsequent visits, so no prosthodontics treatment was provided for these patients

CONCLUSION: Most common presentation of ED patients was severe hypodontia. Patients were treated with removable and fixed prosthesis.

KEY WORDS: Ectodermal dysplasia, hypodontia, Prosthodontic treatment options, removable and fixed prosthesis.


INTRODUCTION

The National Foundation for Ectodermal Dysplasia (NFED) defines ectodermal dysplasia as a “genetic disorder in which there are congenital birth defects (abnormalities) of two or more ectodermal structures”¹.

Hypodontia (absence of one or several teeth excluding third molar) and anodontia (absence of all teeth) are associated with Ectodermal dysplasia. Hypodontia is more common in permanent dentition with a higher frequency of 3:2 in females. Males tend to have a single missing tooth where as females more commonly have two or more missing teeth. On the basis of missing teeth, hypodontia can be classified into mild to moderate, severe and anodontia².
The remaining teeth are small, conical or peg shape, infra occluded, with marked loss of vertical dimension of occlusion, and underdeveloped ridges. Extra oral features are characterized with fine and sparse hairs, malformed nails and pigmentation on skin. Decrease salivary and sebaceous gland secretions are also found

Multi disciplinary approach is often required for oral rehabilitation of such patients, before embarking upon any prosthodontics treatment. Factors such as number of teeth to be replaced, adjacent tooth condition and position, periodontal condition, amount of alveolar bone, patient motivation, social and medical conditions are considered.

Treatment options may include conventional removable prosthesis including over dentures, fixed prosthesis, implant-supported prosthesis, implant-retained prosthesis or combination depending upon the severity of disease and patient’s need. Early treatment provides an opportunity to develop normal speech, better chewing, improved swallowing and good facial support with improved temporomandibular joint function. At an early stage removable prosthesis is the best choice, which may be relined or rebased at a later stage. Fixed prosthesis or implant supported prosthesis is preferred when growth is fully achieved.

Although the fabrication of removable partial denture provides better function and marked improvement in esthetics, but placement of clasp assembly poses some difficulties since the teeth are small and conical in shape. In anodontia the treatment of choice is conventional complete dentures at an early stage. Patient cooperation and proper behavioral management techniques are critical factors for the fabrication of conventional complete dentures at an early stage.

Over denture is also one of the important treatment option for ED patients, as presence of conical shape teeth with reduced occlusal vertical dimension along with aplasia of alveolar bone in the edentulous area makethe fabrication of over dentures easy and convenient for such patients.

In fixed prosthesis, different options like resin-bonded bridge, conventional bridge and implant supported prosthesis are available. Resin-bonded bridge is indicated when minimal amount of tooth is available for preparation. Conventional fixed prosthesis is indicated where edentulous span is short, it is more esthetical and stresses can be evenly distributed, preparation of abutment teeth in patients of ED patients requires care to avoid any pulpal exposure.

**METHODOLOGY**

It was a cross sectional study carried out in the Department of Prosthodontics, de’Montmorency College of Dentistry. The duration of study was one year. One hundred diagnosed ED patients were selected by purposive non-probability sampling technique. These patients were diagnosed on the basis of clinical examination and OPG. After taking consent for collection of data, structured performa were filled. Patients with impacted or un-erupted teeth, missing teeth due to caries, periodontal problems, trauma and extraction were excluded from the study.

Clinical features of the patients were noted, and OPG was also carried out. Various treatment options were offered, with consent of patient desired treatment was provided. After collection of data statistical analysis done by SPSS soft ware program and results were tabulated.

For numerical data like age, mean and standard deviation were obtained. For qualitative variables like gender, family history of the patient, patient's past dental history, disease/s along with details of ED and dental treatment provided to such patients, frequency and percentage were calculated.

**RESULTS**

Total 100 patients were included in this study, 57 patients were males while 43 were females. Sixty three patients (42 males and 21 females) had history of ectodermal dysplasia in their family as well. All patients were divided into four groups on the basis of their age. Group 1: range from 1-10 years. Group 2: range from 11-20 years, Group 3: range from 21-30 years and Group 4: above 40 years. In this study most of the patients were from group 2 (56%) followed by Group 3 and Group 1 i.e. 16% and 13% respectively, only 2% patients represented in Group 4.

On the basis of missing teeth pattern, 27 % patients were categorized into mild to moderate hypodontia, 69% had severe hypodontia and 2% had anodontia. Conical teeth were found in 30% patients while 11% had peg shape teeth. In 40% patients mandibular third molar were unerupted (38 & 48 both 20% each) while 23% had
unerupted maxillary third molar (18 = 11% & 28 = 12%). In one patient left maxillary second molar was unerupted and in one patients all mandibular incisors were unerupted.

Removable partial dentures were fabricated for 26 females and 32 males while 10 males and 4 females were provided conventional complete denture. Fixed Prosthodontics treatment was provided to 15 patients (8 males and 7 females).

Due to financial constraints of patients, implant supported prosthesis was not provided to any patient. For 8% (4 males and 4 females), restorative procedures were provided and 5% (3 males 2 females) were referred to Orthodontics department. Twelve patients (4 females and 8 males) were referred to tooth/ teeth extraction who were also provided with prosthodontic treatment after extractions. Five patients were not provided with any prosthesis as these patients did not pursue further for prosthodontics treatment.

**DISCUSSION**

Treatment of ectodermal dysplasia requires multidisciplinary approach. Before initiation of Prosthodontics treatment it is better to consult other dental professional for various dental treatments require for ED patients before provision of dental prosthesis. Manuja et al discussed a case report in which removable prostheses were provided after extraction of maxillary teeth. In our study, 25 patients were referred to various departments for other dental treatment before initiation of Prosthodontics treatment. For 8% (4 males and 4 females) restorative procedures were provided and 5% (3 males 2 females) were referred to Orthodontics department. Twelve patients (4 females and 8 males) were referred for tooth/ teeth extraction who were also provided with prosthodontic treatment after extractions.

Orthodontic help is required for ED patients in conditions like diastema, spacing or crowding, malocclusion, malpositioned teeth and un-erupted teeth. Rashid et al discussed orthodontic treatment in a 16 year Pakistani male having congenital missing mandibular central incisors. In our study, 5% patients were referred for orthodontic treatment. In three patients space closure was had been done while in two patients space were created in anterior maxillary segment.

Prosthodontic treatment is final destination for ectodermal dysplasia patients. Various treatment options like removable, fixed or implant are available for such patients. Tarjan et al stressed that early prosthodontic treatment is beneficial in many ways by improving appearance, speech and mastication. They discussed case reports of two young boys with age of 3 year 11 month and 3 year 2 months, respectively, provided with removable dentures. In our study, youngest patient was 5 years of age who was provided with removable partial denture.

In this study removable prostheses were fabricated in most of the cases as they are easy to fabricate, require less time and with low cost which is major contributing factor for any medical or dental treatment in our society. Removable prostheses were provided to 72% patients (42 male and 30 female). Partial over denture were provided to 8 patients while for remaining patients conventional removable partial denture were fabricated Youngest candidate for conventional complete denture in our study was 15 year old girl. Pavarina et al discussed a case of 18 year old man provided initially with removable partial denture followed by over lay removable partial denture and composite restoration. Pannu K and Singh BD discussed a case of 7 year old Indian boy provided with complete denture.

In fixed prosthesis, different options like resin-bonded bridge, conventional bridge and implant supported prosthesis are available. Conventional fixed prosthesis is indicated where edentulous span is short. It is esthetically better and stresses can be evenly distributed. Preparation of abutment teeth in patients of ED patients requires care to avoid any pulpal exposure.

Fifteen patients (8 males and 7 females) in our study were treated with fixed prosthesis. All patients were provided conventional bridges and reshaping of canine into lateral incisor had been done in two cases. Due to financial constraints of all patients, none of the patient was treated with implant supported prosthesis.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Fixed Prosthesis</th>
<th>Orthodontic</th>
<th>Restorative</th>
<th>Removable Partial Denture</th>
<th>Complete Denture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Male</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>5</td>
<td>8</td>
<td>58</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 1: Treatment Options provided for Ectodermal Dysplasia patients
Demographic profile of all the patients were recorded, so that these patients can be recalled in future. Murdock et al discussed the financial impact on treatment of ED patients. They found that with provision of implant supported prosthesis, overall treat cost was markedly increased as compare to conventional dental treatment. Long term follow-up is required for most of the patients. This follow-up is mandatory not only for the evaluation of the prosthesis provided but also it enables prosthodontist to provide definitive prosthesis for such patients. Bergendal discussed a case of a girl suffering from ED, where 20 years follow-up was carried out. At first visit she was 6 year old, initially removable denture was fabricated, then after orthodontic and surgical intervention and implant supported prosthesis was provided.

Prosthodontist can play a major role in oral rehabilitation of ED, provision of early treatment will markedly improve the esthetics and various functional activities of ectodermal dysplasia patients. Our aim of this study is to obtain profile of ED patients as this will serve as a guideline for future needs for oral rehabilitation of ED patients. The results of this study can serve as baseline for further research in this regard.

CONCLUSION

Oral rehabilitation of ED patients by removable and fixed prosthesis will markedly improve the esthetic and functions like mastication and speech in such patients which in turn, improves self esteem as well. Early diagnosis will help such patients to provide early management which in turn will be beneficial for the patients. Special program should be formulated to increase awareness about ED among public in general and health care providers in specific.

REFERENCES