

## Comprehensive Dental Care of an Adolescent Who Has Hypodontia: A Clinical Report

Mohammed S. Aldossary\*

Department of Pediatric Dentistry, The University of Edinburgh, Edinburgh Dental Institute, Edinburgh, UK

Currently: Specialist in Pediatric Dentistry, Ministry of Health, Riyadh, Saudi Arabia. P.O.Box 13743 Riyadh 11414, Saudi Arabia

### Case Report

#### \*Corresponding author

Mohammed S. Aldossary

#### Article History

Received: 05.10.2017

Accepted: 13.10.2017

Published: 30.10.2017

#### DOI:

10.21276/sjds.2017.4.10.2



**Abstract:** This case describes dental management of a 15 years old female patient who has moderate hypodontia, missing four permanent teeth (13, 12, 23, 45). The treatment modality included orthodontic close of all spaces except space for missing 12, which was idealized to be replaced with a resin retained bridge. Tooth 22 is diminutive; microdontia, and the space was idealized for composite build-up. Interdisciplinary work between Orthodontic and Pediatric Dentistry Departments is very important to achieve optimum outcome for the patient.

**Keywords:** Hypodontia, Microdontia, Resin-Retained Bridge, Esthetic Dentistry, Orthodontics

### INTRODUCTION

Hypodontia is the congenital absence of one or more teeth which can affect both the primary and the permanent dentition (excluding third molars). It can be mild (one to two teeth missing), moderate (three to five teeth missing) or severe; Oligodontia (six or more teeth missing). Anodontia is the complete absence of teeth. Commonly, after third molars, the mandibular second premolars followed by maxillary lateral incisors are missing and hypodontia is more common in females. The etiology is multifactorial which can involve genetic and environmental factors [1].

Microdontia is commonly associated with hypodontia and more common in females. Missing lateral incisors are often associated with diminutive contralateral tooth. With the variety between cases, multidisciplinary treatment planning is essential to maximize the outcomes to support growth and development, social implications, esthetic and function [2].

This case presents the management of a 15 years old female who has moderate hypodontia and one diminutive lateral incisor.

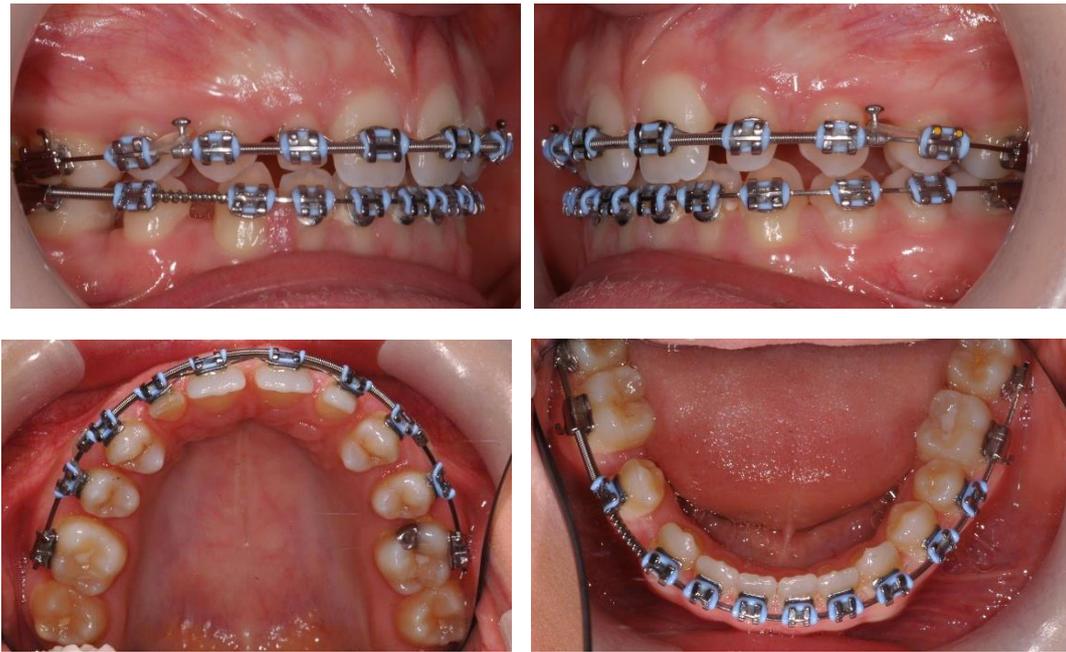
### CASE REPORT

CM, 15 years old female, medically fit and well, has moderate hypodontia, missing four permanent teeth (13, 12, 23, 45) in addition to third molars with retained primary teeth that showed roots resorption. Tooth 22 is diminutive; microdontia and she also had a midline diastema. Following extraction of retained primary teeth 53, 63 and 85, placement of upper and lower fixed appliance was done by Orthodontic Department to create and idealize space for prosthetic replacement of 12 and for composite build-up of

diminutive 22. Also, orthodontic treatment aimed to bring 14 and 24 forward to canine position and to close the space in 45 region and midline diastema. Fixed appliance was fitted on for a period of three years (Fig. 1).

CM was referred to our Pediatric Department to extract retained 52 before fixed appliance debonding and for arrangement for prosthetic replacement of 12 and composite build-up of 22.

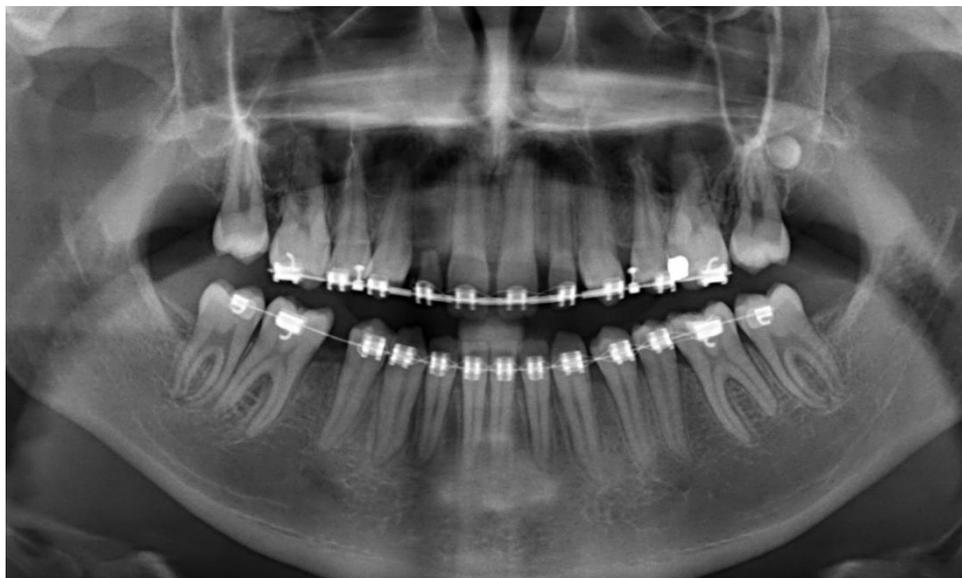
Clinical examination revealed good oral hygiene with no caries detected, diminutive tooth 22, mesial amalgam restoration on tooth 26, and deep stained fissures of posterior teeth.



**Fig-1: Intraoral views following fixed appliance placement**

The orthodontic assessment showed class II skeletal base, class I incisor relationship, right and left class II full unit molar relationships, overjet of 2 mm, 50% overbite, lower midline shift to the right by 4 mm. The space available for teeth 12 and 22 was 7 mm each.

The radiographic findings were unerupted diminutive 28, reasonable root parallelism of teeth 14 and 11, no caries, normal roots length except retained 52 with advanced root resorption, and no obvious bony pathology (Fig. 2).



**Fig-2: Dental Panoramic Radiograph view**

The treatment aims were to maintain oral hygiene, implement prevention appropriate to caries risk status, improve esthetic and maintain the dentition and occlusion. The treatment plan included:

**A. Initial management**

- Preventive advice: standard prevention including oral hygiene instructions (OHI) and dietary advice.
- Extraction of retained 52.

**B. Intermediate management**

- Provision of temporary pontic replacing missing 12.
- Liaise with Orthodontic Department for upper and lower fixed appliance debonding.
- Provision of upper and lower removable retainers.
- Composite build-up of diminutive 22.

- Prosthetic replacement of missing 12 by provision of resin retained bridge (RRB) and using 14 and 11 as abutments.
- Provision of new upper removable retainer.
- Fissure sealant of posterior teeth.

**C. Long-term management:**

- Liaise with her general dental practitioner (GDP) for continuing dental care and monitoring the dentition.
- Monitoring 28

- Long-term alternative prosthetic option (i.e. Implant)

Extraction of tooth 52 was completed. The alginate impression (Blueprint® Cremix, Dentsply, Surrey, UK) to fabricate the pontic was taken 3 weeks earlier. Fixed appliance was debonded two months later (Fig. 3). Upper and lower Essix retainers were fitted on the same day. The upper Essix retainer was with a pontic replacing missing 12.



**Fig-3: Intra oral views – post fixed appliance debonding**

The following visit included composite build up of tooth 22 (Filtek™ Supreme XT, 3M™ ESPE™, St. Paul, MN, USA), shade A1, using clear strip crown. (Frasaco®, Henry Schein®, Langen, Germany) and using light-cured self-priming dental adhesive (Prime & Bond® NT™, Dentsply, UK). New upper alginate impression was taken to construct new upper Essix retainer following build up of tooth 22. Upper and lower polyvinyl siloxane impressions for RRB were taken (Affinis®, Coltene/Whaledent AG, Altstätten, Switzerland), replacing missing 12 and using 14 and 11

as abutments. Shade A1 was selected and agreed by the lab technician. The new upper Essix retainer was fitted at the end of that day.

Two weeks later, cementation of RRB using opaque white resin cement (Panavia™ F, Kuraray Co., Osaka, Japan) was completed. CM and her mother were very happy with the result. Upper alginate impression was taken for new Essix retainer and fitting of the retainer was done at the end of the same day and instructed to be used at bed time only. I gave OHI,

postoperative instructions and demonstration of how to floss under the bridge with super floss. Another visit; one month review, showed no complaint, good oral hygiene and fissure sealants (Delton® Opaque, Dentsply, Surrey, UK) of posterior teeth, 6's and 7's were completed.

Two months later, CM complained of broken lower Essix retainer. Lower alginate impression for new Essix retainer and fitting of it were done. Fissure sealants were intact. Another two months review showed good oral hygiene, no complaint and intact fissure sealants (Fig. 4). CM was discharged from our Department as she will move to another city.



**Fig-4: Intraoral photos were taken on last review**

The long-term treatment plan and future considerations include:

- Monitor development or eruption of tooth 28.
- Retention of the dentition and review with Orthodontic Department.
- Liaise with GDP for routine dental care, monitor and review.
- Prosthetic replacement in case of RRB failure or if CM wanted implant retained prosthesis for missing 12.

#### **DISCUSSION**

The management of hypodontia need early, long-term and multidisciplinary treatment planning [2]. Management options include partial dentures, orthodontic treatment to either close or idealize spaces, and advanced restorative options including bridges or osseo-integrated implants once the growth has finished.

Many factors are playing important roles to reach the final treatment plan.

Every patient is different and there must be an individualized plan for each patient. True interdisciplinary working is very important to achieve optimum outcome for the patient and their family [1]. In this case, the treatment plan was to close all the spaces, except for missing 12. There was lower midline shift which can be a result of orthodontic anchorage loss. Space was idealized bilaterally for missing 12 and diminutive 22 which showed good results at the end of treatment when CM and her mother were very happy.

This case shows how important is liaison with Orthodontic Department and lab technician for planning and providing the treatment to achieve the best possible results.

Retained primary teeth in hypodontia can be maintained if they have good long-term prognosis in order to maintain the space and the alveolar bone for future treatment consideration with close monitor regarding infraocclusion or root resorption [3,4]. In this case all retained primary teeth were with advanced root resorption and were removed, except 52, prior to the fixed appliance placement to allow teeth movement and facilitate orthodontic treatment to close unwanted spaces. Tooth 52, was left for esthetic reason and the multidisciplinary team planned for that tooth to be remove later with enough time prior to placement of RRB to allow healing of the alveolus.

RRB is a minimally invasive option for replacing missing teeth and showed good success with considerations of case selection, design and clinical procedures [5]. Frenectomy may considered in some cases after diastema closure to prevent relapse, but in this case, with spaces closure, restorations, and maintaining post treatment retention, this was not considered with the earlier treatment plan. Although CM was deemed as low caries risk, her posterior teeth were with deep and stained fissures and thus potentially susceptible to caries [6]. Those teeth were fissure sealed.

#### CONCLUSION

There must be an individualized plan for each patient. True interdisciplinary working is very important for planning and providing the treatment to achieve optimum outcome.

#### ACKNOWLEDGMENT

The author express his appreciation to his clinical supervisors for clinical support, and to Professor Ario Santini for his contribution to the article preparation.

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