Submitted: Jul 08, 2025 | Accepted: Nov 10, 2025

Case Report

Vol. 8/No. 2/July-December, 2025

Modified Fixed Prosthesis to Rehabilitate Edentulism in Growing Patients: Report of two cases

Sushma Paudel[1], Amita Rai[2], Sneha Shrestha[3], Luna Ghimire[4], Bishnu Poudel[5], Sunanda Sundas[6]

[1]Post Graduate resident, Department of Pediatric and Preventive Dentistry, People's Dental College and Hospital, Sorhakhutte, Kathmandu, Nepal.

[2]Assistant Professor, Department of Pediatric and Preventive Dentistry, People's Dental College and Hospital, Sorhakhutte, Kathmandu, Nepal.

[3]Associate Professor, Department of Pedodontics and Preventive Dentistry, B.P Koirala Institute of Health Sciences, Dharan, Nepal

[4]Post Graduate resident, Department of Pediatric and Preventive Dentistry, People's Dental College and Hospital, Sorhakhutte, Kathmandu, Nepal.

[5]Consultant Pediatric Dentist, Kopila Dental Care, Kathmandu, Nepal

[6]Professor and Head of the Department, Department of Pediatric and Preventive Dentistry, People's Dental College and Hospital, Sorhakhutte, Kathmandu, Nepal.

ABSTRACT

Tooth loss in children and adolescents, can lead to difficulty in chewing, change in speech, and compromised esthetics that significantly impacts the overall quality of life. There are limited options available for rehabilitating edentulism in young patients. Modified fixed prosthesis is a transitional fixed prosthesis which is comfortable to the patient, easy to fabricate, cost-effective, and it does not interfere with the development of jaw bones and permanent tooth. This case report highlights the provision of modified fixed prosthesis in two young female patients.

Keywords: Children, Dental caries, Edentulism, Modified fixed prosthesis

INTRODUCTION

Teeth are the primary functional elements of the oral cavity playing crucial role in mastication, speech, and contribution to facial aesthetics.[1] Tooth loss in children and adolescents, whether caused by genetic factors or dental caries, is one of the most frequent issues pediatric dentists face in their daily practice.[2]

Conflict of Interest: None

***Corresponding Author**

Dr. Sushma Paudel
Department of Pediatric and Preventive Dentistry, People's Dental College and Hospital, Nayabazar, Kathmandu, Nepal
People's Dental College and Hospital, Nayabazar, Kathmandu, Nepal
Phone: 00977 9861944142
E-mail: sushma.paudel12@gmail.com

Prevalence of partial edentulism is found to range from 0.5% in young children, 47.4% in adolescents and 38% in adults according to studies conducted in Nepal and different parts of the world.[3,4,5] Partial edentulousness refers to the loss of one or more, but not all, natural teeth in a dental arch. It is commonly caused by dental caries, periodontal disease and trauma.[1] The absence of teeth can lead to difficulty in chewing, change in speech, and compromised esthetics, significantly impacting the overall quality of life.[1]

Loss of posterior teeth disrupts jaw curvature, causing neighboring and opposing teeth to shift, which ultimately reduces the chewing efficiency, and potentially affects the temporomandibular joint. Prosthodontic rehabilitation aims to

restore the function and aesthetics effectively.[6] Several prosthetic options like fixed partial dentures, removable partial dentures (RPD) and implants are available to rehabilitate partial edentulism.[2] Rehabilitation of edentulism in young patients with conventional prosthetic appliance is challenging due to continuous growth and limited patient compliance. This case report highlights the provision of modified fixed prosthesis in two young female patients both aged 13-years, who presented with the loss of second premolar and first permanent molar respectively due to dental caries.

CASE REPORT

A 13-year-old female patient presented to the department with the chief complaint of missing lower right back tooth. On examination, 45 [Figure 1a, 1b] was missing. Another 13-year-old female patient presented to the department with the chief complaint of missing lower left back tooth. On examination 36 [Figure 3k] was missing. Extraction of both the teeth were done due to dental caries. Both the patients had no relevant medical history. After taking informed assent and consent from patients and parents, fabrication of a modified fixed prosthesis was planned.

Technique

Band fabrication was done on the mesial and distal abutment teeth, and alginate impressions of both the arches were made. The bands were adapted in the impressions, and dental stone models were prepared [Figure 1c, 1d]. A wire mesh was fabricated using 19G stainless steel orthodontic wire. The bucco-lingual width of mesh was kept as six millimeter (mm) in the first patient and seven mm in second patient respectively so as to accommodate the bucco-lingual dimension of the pontic. The mesio-distal length and contour of mesh corresponded to the edentulous space. The mesh was then soldered to the bands contoured to the abutment teeth. [Figure 2e, 3l] The mesh served to hold the three units of bridge together. The gingival extension of the wire mesh was placed one mm above the ridge so as to allow adequate cleansing while not allowing food entrapment or gingival irritation. Then the solder joints were finished and polished. A mandibular second premolar and a first molar resin teeth of shade A1 were selected as pontic in the first and second patients respectively. The pontic was attached to the finished wire framework using auto polymerizing acrylic resin. The acrylic attachment was finished and polished. [Figure 2f, 2g, 2h]

Try-in and final adjustments of the modified bridge was done in the patient's mouth. The bridge was assessed for the gingival extension and soft tissue blanching. The occlusal and eccentric movements were adjusted. The bridge was cemented with Glass ionomer luting cement. [Figure 2i, 2j, 3m, 3n] Snug fit of the prosthesis was ensured. The patient was reviewed every six months, during which the prosthesis was removed to allow thorough cleaning of the abutment tooth and the application of topical fluoride was done. Following this maintenance procedure, the prosthesis was recemented. In a follow-up of 12 months, the bridge exhibited excellent soft tissue acceptance and had restored the masticatory function as well. Patients were happy with the prosthesis as it was comfortable during mastication.

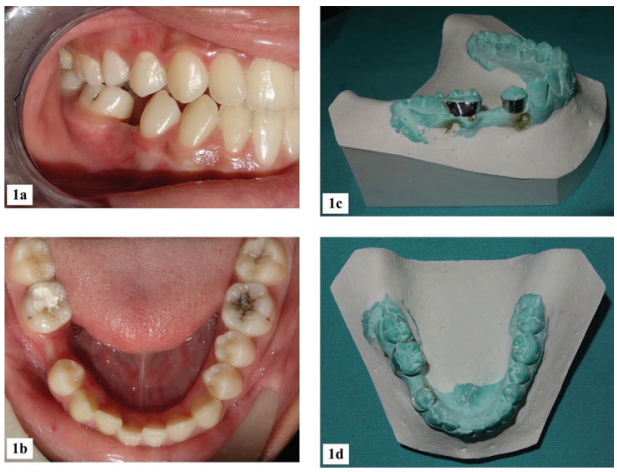

Figure 1: *(1a, 1b) Pre-op intraoral view. (1c, 1d) Band adaptation.*

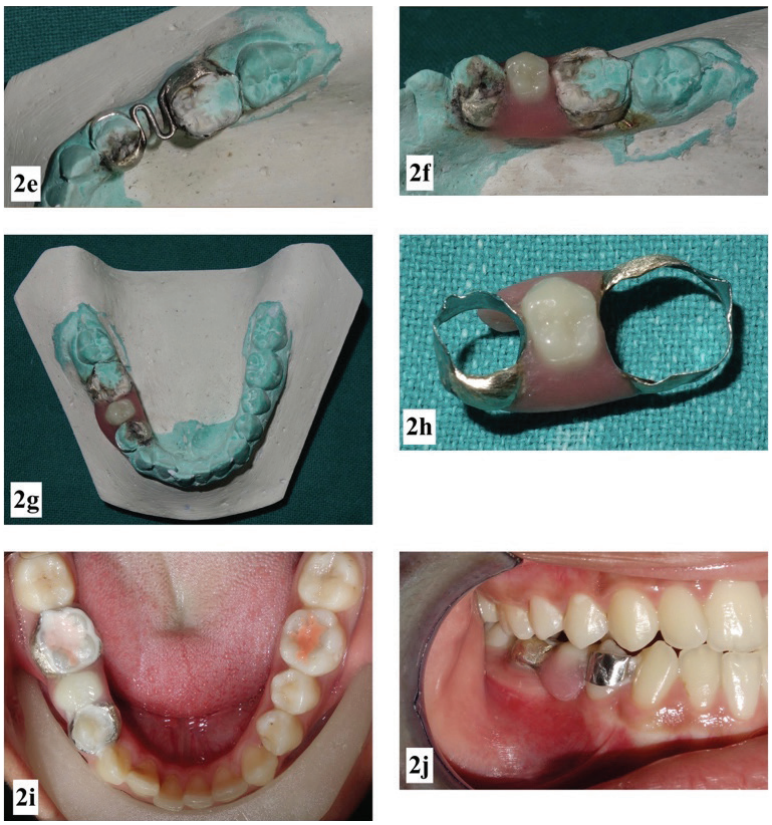

Figure 2: *(2e) Wire mesh frame work. (2f, 2g, 2h) Appliance fabrication. (2i-2j) Post-op intraoral view after appliance cementation.*

Figure 3: *(3k) Pre-op intraoral view. (3l) Band adaptation and wire framework. (3m) Appliance fabrication. (3n) Post-op intraoral view after appliance cementation.*

DISCUSSION

Maintaining space with a prosthesis after the loss of a permanent tooth is crucial in order to restore chewing ability, enhance appearance, and to boost self-confidence. The challenges of restoring function and aesthetics tend to be more significant in younger patients than in other age groups. Prosthetic rehabilitation should be carried out as soon as possible to preserve the missing space, maintain oral function, support normal growth, and promote social development.[7] There are various options available to rehabilitate tooth loss in older patients viz. implants, fixed bridges, and removable prostheses.

Dental implants are not indicated in growing patients as the jaws continue to grow during childhood, and implants, acting like ankylosed teeth, can disrupt maxillary development. Implants crossing the midpalatal suture may also restrict transverse maxillary growth. Apart from this, continuous alveolar growth which occurs

in young patients can lead to infraocclusion and displacement of implants. Therefore, implant placement in the growing maxilla should be postponed until early adulthood.[8,9] Fixed bridges require tooth preparation, which risks pulpal exposure due to large pulp chamber in young patients. Additionally, ongoing jaw and tooth development can affect the long-term fit and stability of fixed prosthesis. Removable partial dentures offer a suitable, reversible option for young patients with missing teeth, allowing easy adjustments and maintenance, but they require patient compliance.[10]

Modified fixed prosthesis is intended as a temporary solution to be maintained until the completion of the patient's craniofacial growth. Upon completion of growth, the patient has to be evaluated and referred for a definitive fixed prosthetic rehabilitation, either with a fixed partial denture or a dental implant, depending on clinical suitability and patient preference. In the present cases, implants and fixed bridges were not feasible options due to the patient's growing age, and RPD could not be selected an option as the patient's desired a fixed prosthesis. The provision of modified fixed prosthesis helped to rehabilitate the masticatory function as well as esthetics in both the patients.

CONCLUSIONS

Premature loss of permanent teeth is common due to various reasons like dental caries, trauma and periodontal diseases etc. Modified fixed prosthesis can be a good alternative for replacing missing posterior teeth in young children. This prosthesis precludes the need of tooth reduction, and is easy to fabricate without damaging the natural teeth.

ACKNOWLEDGMENT

Dr. Tripti Lath, Dr. Mahalaxmi Shah Kalwar, Dr. Srija Joshi and Dr. Asmita Kumari Shah for their insightful review of the manuscript and their input on patient management and record-keeping.

REFERENCES

1. Hama AM. Rehabilitation prosthesis provided to the partially edentulous patients visiting piramerd dental center. Int J Inf Res Rev. 2016;3(7):2633-5. PMID: 28876749
2. Goswami M, Chauhan N. Prosthetic management with removable partial dentures in pediatric dental care: case series. Int J Clin Pediatr Dent. 2023;16(3):534. DOI: 10.5005/jp-journals-10005-2593
3. Shrestha P, Bhagat T. Partial edentulism in patients visiting the dental out-patient department at the tertiary care centre in the eastern part of Nepal. J Nepal Prosthodont Soc. 2018;1(1):33–7. DOI:10.3126/jnprossoc.v1i1.23848
4. Khapung A, Rao GN, Shrestha S. Reasons and patterns of permanent teeth loss among patients attending a dental college in Kathmandu. J Nepal Soc Periodontol Oral Implantol. 2020;4(1):1013. DOI:10.3126/jnspoi.v4i1.30896
5. Anbarserri NM, Ismail KM, Anbarserri H, Alanazi D, AlSaffan AD, Baseer MA, Shaheen R. Impact of severity of tooth loss on oralhealthrelated quality of life among dental patients. J Family Med Prim Care. 2020;9(1):18791. DOI:10.4103/jfmpc.jfmpc_909_19 PMID: 32110588
6. Arifin R, Pertiwi FC. Rehabilitation of mastication and lack of space treatment in narrow edentulous with fixed-fixed bridge. REHABILITATION. 2021;6(2). DOI:10.20527/dentino.v6i2.12003
7. Mahato M, Saxena N, Samani K, Marwah N, Chalana S. Maintenance of space by innovative clinical application of flexible partial denture: a case report. Int J Contemp Pediatrics. 2023;10(06):955-8. DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20231508
8. Rai A, Koirala B, Dali M, Shrestha S. Delayed replantation of avulsed permanent maxillary central incisor: Case report with 6-year follow-up. Clin Case Rep. 2024;12(2). DOI: 10.1002/ccr3.8487

9. Mankani N, Chowdhary R, Patil BA, Nagaraj E, Madalli P. Osseointegrated dental implants in growing children: a literature review. J Oral Implantol. 2014 Oct 1;40(5):627-31. DOI: 10.1563/AAID-JOI-D-11-00186

10. Rajashekhara BS, Keyur JM, Bhavna D, Poonacha KS. Management of early loss of first permanent molar: A new technique. J Indian Soc Pedod Prev Dent. 2012;30(4):349-51. DOI: 10.4103/0970-4388.108942

11. Gupta A, Yelluri RK, Munshi AK. Fiber-reinforced composite resin bridge: a treatment option in children. Int J Clin Pediatr Dent. 2015;8(1):62. DOI: 10.5005/jp-journals-10005-1285