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Case Report

Natural Tooth Pontic Incorporated into a Periodontal Splint for Replacement of a Periodontally Compromised Mandibular Incisor: A Case Report

Running Title: Natural Tooth Pontic for Periodontally Compromised Teeth

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ABSTRACT

Background: Replacement of periodontally compromised anterior teeth can be challenging when adjacent teeth have reduced periodontal support. Using the extracted natural tooth as a pontic may provide a conservative and economical alternative while preserving natural tooth morphology.

Case presentation: A 47-year-old male presented with a mobile mandibular left central incisor, while adjacent teeth exhibited severe recession, bone loss, and mobility. Following initial periodontal therapy and re-evaluation, the central incisor was extracted due to poor periodontal prognosis. The extracted tooth was modified extraorally and used as an ovate pontic. After apical endodontic instrumentation and composite sealing, it was incorporated into a multistranded stainless-steel wire splint bonded to the adjacent teeth.

Outcome: After 6 months, the patient reported satisfactory esthetic and functional outcomes, with slight discoloration and no functional complications.

Conclusion: Use of an extracted natural tooth as a pontic within an adhesive periodontal splint represents a conservative tooth-replacement option for selected periodontally compromised patients. Further studies with longer follow-up are needed to evaluate its durability.

Keywords: natural tooth pontic; periodontal splinting; tooth mobility; periodontitis; anterior tooth replacement

INTRODUCTION

Advanced periodontal destruction can result in increased tooth mobility and eventual tooth loss, creating simultaneous periodontal, functional, and esthetic challenges. Management of a mobile tooth requires consideration not only of the prognosis of the affected tooth but also of the periodontal condition and biomechanical capacity of the remaining dentition. Extraction may be considered when a tooth has a hopeless prognosis. [1] Following extraction of an anterior tooth, replacement options include removable prostheses, conventional tooth-supported fixed prostheses, resin-bonded prostheses, and implant-supported restorations. [2] In periodontally compromised dentitions, the use of conventional prostheses may be challenging because the available abutments may themselves have reduced periodontal support. [3]

An alternative approach is to repurpose the extracted tooth as a natural tooth pontic. This technique allows the patient's own tooth to retain its original morphology, dimensions, surface characteristics, and shade. Previous case reports have described natural tooth pontics bonded to adjacent teeth using wire, polyethylene fiber, or fiber-reinforced composite materials, including in patients with periodontal disease. [4–7] The present case describes the use of a mandibular central incisor with poor periodontal prognosis as a natural tooth pontic after extraction. The modified tooth was incorporated into a multistranded stainless-steel wire adhesive splint extending to the remaining mandibular anterior teeth. The clinical rationale, technique, and 12-month outcome are presented.

CASE PRESENTATION

Patient information

A 47-year-old male patient presented with a mobile mandibular left central incisor. Clinical examination revealed severe gingival recession and bone loss involving the adjacent teeth, which also demonstrated varying degrees of mobility. (Fig 1) The initial periodontal management consisted of supragingival and subgingival scaling, followed by periodontal re-evaluation after 2 weeks. The periodontal tissues demonstrated a favorable clinical response to the initial periodontal therapy, and the patient was compliant with the prescribed oral hygiene instructions. Despite the initial periodontal therapy, the mandibular left central incisor was considered to have a poor periodontal prognosis and was deemed unsuitable for continued retention. (Fig 2)



Figure 1- Pre – operative clinical photograph



Figure 2 - Pre – operative Radiograph

Treatment planning

Following discussion of the available treatment options, three principal approaches were considered:

1. A removable partial denture (RPD);
2. A conventional fixed partial denture (FPD); and
3. Use of the patient's extracted natural tooth as a pontic incorporated into an adhesive splint.

An RPD requiring supporting clasps was considered less favorable because the remaining teeth had compromised periodontal support. A conventional FPD was considered feasible but involved greater treatment complexity and financial cost. The natural tooth pontic approach was therefore selected as a conservative alternative that would allow the patient's own tooth to be retained as the replacement tooth while simultaneously splinting the remaining anterior teeth. The patient was informed of the potential risks associated with the procedure, including possible discoloration and failure of the splint/pontic assembly.

TREATMENT

Extraction and preparation of the natural tooth

Following administration of local anesthesia, the mandibular left central incisor was extracted without complications. (Fig 3) The extracted tooth was thoroughly cleaned, scaled, and polished to remove residual deposits. The tooth was subsequently modified extraorally to permit passive adaptation to the edentulous ridge corresponding to the extracted central incisor. The root portion was reshaped using diamond burs to create an ovate pontic configuration. (Fig 4) The tooth was then endodontically instrumented apically and sealed with composite material. This preparation was performed to facilitate the use of the extracted tooth as a pontic rather than as a biologically functioning tooth.



Figure 3- Extraction of Left Mandibular Central Incisor

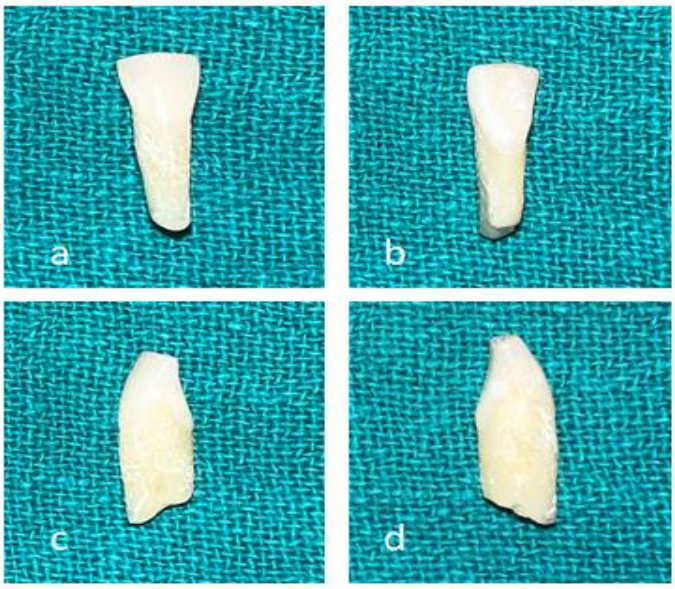


Figure 4- Tooth trimmed in form of ovate pontic design (a) Facial aspect (b) Lingual aspect (c) Distal aspect (d) Mesial aspect

Adhesive splint fabrication

The lingual surfaces of the mandibular lateral incisors and canines were acid-etched, after which an adhesive bonding agent was applied and light cured using an LED curing unit. A multistranded stainless-steel orthodontic-type wire was adapted passively along the lingual surfaces of the remaining mandibular anterior teeth. Flowable composite was used to secure the wire to the prepared teeth, followed by light curing. The natural tooth pontic was incorporated into the splint and positioned to provide passive adaptation to the edentulous site. (Fig 5) Care was taken to ensure that the splint and pontic assembly remained free of occlusal contact and the patient was instructed regarding maintenance of the splinted area using an interdental brush. The patient was subsequently placed on a periodontal maintenance recall schedule. (Fig 6)



Figure 5 – Splinting of extracted tooth with adjacent teeth



Figure 6 – Post-op clinical photograph

OUTCOME AND FOLLOW-UP

At the 6-month follow-up, the patient reported satisfaction with the treatment outcome. The natural tooth pontic remained clinically acceptable from the patient's perspective at the 6-month evaluation. No complications were reported during the available follow-up period. However, there was slight discolouration of tooth due to loss of vitality. The available follow-up was limited to 6 months; therefore, the present case does not establish the long-term survival or durability of the natural tooth pontic–splint assembly.

DISCUSSION

The present case illustrates a conservative approach to anterior tooth replacement in a patient with periodontal destruction affecting both the tooth requiring extraction and the remaining dentition. The use of a natural tooth as a pontic has previously been described as a conservative method for replacing an extracted anterior tooth. Augusti et al. described the use of an extracted periodontally compromised mandibular incisor as a pontic bonded to adjacent teeth using polyethylene fiber and resin composite, emphasizing the preservation of the patient's original tooth morphology and the minimally invasive nature of the approach. [5] Similar techniques using fiber-reinforced composite have subsequently been described in periodontally compromised patients. [6,7] A case report by Tavangar et al. specifically described a natural tooth pontic incorporated into a fiber-reinforced composite bridge in a patient with severe periodontitis and tooth mobility. [7] More recently, natural tooth pontics have also been reported as interim restorations in patients with generalized periodontitis. [8]

One of the principal advantages of this approach is that the pontic is derived from the patient's own tooth. Consequently, the original crown morphology, dimensions, surface anatomy, and shade are retained to a degree that may be difficult to reproduce with an artificial prosthetic tooth. Previous reports have emphasized these esthetic advantages as well as the possibility of performing the procedure directly at chairside. [4–6] The approach may therefore be particularly attractive for anterior tooth replacement where preservation of natural appearance is important. Another important feature of the present case is that the pontic was incorporated into a periodontal splint. The splint therefore served two related purposes: replacement of the extracted tooth and stabilization of the remaining mobile teeth. Current EFP guidance recognizes splinting as a treatment option in selected patients with advanced periodontitis and increased tooth mobility, particularly when it facilitates periodontal treatment and patient comfort. [2,3]

The extracted tooth was modified to create an ovate pontic form and adapted passively to the edentulous ridge. Contemporary prosthodontic literature emphasizes the importance of pontic-site morphology and soft-tissue contour in achieving a favorable emergence profile. [9] Endodontic instrumentation and composite sealing of the extracted tooth were performed before its incorporation into the splint. This approach has been described in previous natural-tooth pontic techniques to remove residual pulpal tissue and reduce the potential for discoloration or decomposition of organic material within the tooth. [5]

An additional consideration is that the natural tooth pontic should not automatically be regarded as a definitive replacement for every patient requiring extraction. Appropriate case selection is essential. Periodontal stability, mobility of potential supporting teeth, occlusal relationships, oral hygiene, patient expectations, and the ability to maintain the splinted area should all be considered. The technique may be particularly useful where preservation of natural tooth anatomy and a minimally invasive approach are desirable and where more definitive prosthetic treatment is not immediately appropriate. Overall, the present case adds to the growing body of clinical reports describing the use of extracted natural teeth as pontics in periodontally compromised patients. Existing evidence supports the feasibility of the concept, but the literature remains dominated by case reports and small clinical series. [4–8] Consequently, prospective clinical evaluation with standardized periodontal, prosthetic, mechanical, and patient-reported outcomes would be required to determine its long-term clinical performance.

CONCLUSION

The use of an extracted natural tooth as a pontic incorporated into a periodontal splint provided a conservative method of replacing a periodontally compromised mandibular central incisor while simultaneously stabilizing the remaining anterior teeth. Within the limitations of a single case and limited follow-up, this technique may be considered as a patient-specific option for selected periodontally compromised patients when minimally invasive tooth replacement and preservation of natural tooth morphology are desired.

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