Case Report

Gingival-colored Porcelain: A Clinical Report of an Esthetic-prosthetic Paradigm

Abstract

Traditionally, periodontics has been instrumental in treating hard- and soft-tissue defect. Surgical and regenerative periodontal procedures can reconstruct the three-dimensional architecture of the hard- and soft-tissue defect. However, at times, these invasive procedures leave the patients with an esthetic problem. In such situations, the defects can be treated by the prosthetic approach. A predictable esthetically pleasing and functional outcome without any surgical procedure is being a choice of treatment for many. This article discusses about the treatment for the defect of excessive hard and soft tissue, using porcelain fused to a metal restoration with gingival-colored porcelain for both tooth-supported and implant-supported fixed prosthesis.

Keywords: *Esthetics, fixed dental prosthesis, gingival epithesis, implant prosthesis*

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Introduction

The dental profession holds a special position of trust within the society. Years ago, dentists were in the repair business. However, the trend of contemporary dentistry is toward restoration and esthetics as well. Practicing dentistry is not easy and practicing esthetic dentistry steps up to more complex technique and psychological understanding of desires and expectations of the patients.

Dental esthetics is not only based on "white component" of the restoration but also on the "pink component."[1] Many a times, the pink component or gingival tissue is lost due to extensive gingival and periodontal surgical procedures, trauma, ridge resorption, traumatic extraction, or trauma from occlusion.[2] The regenerative surgical procedure that can be employed includes soft-tissue grafts.[3] Even after surgical procedures, in some cases, the results are unpredictable and unsatisfactory in terms of esthetics and function.

An alternative to treat such gingival tissue defect is by the prosthetic approach. Many authors have suggested fixed prosthesis with gingival-colored porcelain or removable gingival prosthesis as a replacement for the defect.[4,5] This clinical report discusses two cases of recreating pink component in the esthetic zone using gingival-colored porcelain for tooth-supported and implant-supported fixed dental prosthesis.

Case Reports

Case 1

A 32-year-old female presented with a main complaint of unaesthetic appearance of the maxillary anterior teeth due to severe gingival recession. She also had complaints of hypersensitivity in the same region. On clinical examination, Grade II mobility and Miller's Class IV recession was seen with maxillary left central incisor, and maxillary right central incisor was Grade I mobile with Miller's Class I gingival recession [Figure 1].

Radiographic and periodontal evaluation presented poor prognosis with maxillary left central incisor that advised extraction of the same whereas maxillary right central incisor presented fair prognosis. Except for extraction of the maxillary left central incisor, because of poor prognosis, the patient did not agree for any of the invasive surgical procedures. Hence, taking into consideration all the aspects of the examination, a comprehensive treatment plan of fixed prosthesis with gingival-colored porcelain was decided. After a thorough oral prophylaxis and diagnostic impression, maxillary left central incisor was extracted followed by its root resection.

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This natural crown, used as natural pontic, was immediately splinted with the adjacent teeth to fulfill an esthetic requirement. After complete healing of the soft tissue and thorough evaluation of the diagnostic wax-up for probable tooth-supported fixed prosthesis with gingival-colored porcelain, the natural tooth pontic was removed. Crown preparation with 11 and 22 was done for receiving porcelain fused to metal restoration. The final impression was made in addition silicone (Express, 3M ESPE, Putty and Light Body, 3M Deutschland GmbH, Germany).

Provisional restoration, made using diagnostic wax-up, was cemented with temporary cement. An intraoral photograph was taken to achieve the natural soft-tissue color with gingival-colored porcelain. The coping trial was done to evaluate the finished margins and extent of probable gingival-colored porcelain. The final prosthesis [Figure 2] was cemented with glass ionomer cement (GC Fuji I Luting cement, GC Corporation, Tokyo, Japan). The patient was instructed about care and maintenance of the prosthesis. At regular intervals, 1-year follow-up was done. The patient was esthetically satisfied.

Case 2

A 24-year-old male presented with the main complaint of missing maxillary anterior teeth and wanted replacement of the same for esthetics. Clinical examination showed Seibert's Class III ridge defect and Miller's Class I gingival recession with 12 and 22. Taking into consideration the thorough clinical and radiographic evaluation and the age and desire of the patient, a treatment plan of an implant-supported fixed prosthesis with gingival-colored porcelain was decided.

A thorough medical history and dental history was taken, and diagnostic wax-up was done on the mounted casts. Two implants (Myriad Plus, Equinox Medical Technology, Amersfoort, NL) of 3.3 mm × 9.5 mm and 3.3 mm × 11 mm were placed in the maxillary 11 and 21 regions. Four months after placement and healing, following the standard protocols, the implants were uncovered and gingival formers were placed for 2 weeks. The final impression was made using open tray technique. The prepared abutment was screwed onto the implants with a torque of 30 N-cm [Figure 3].

Metal coping trial was done, and final porcelain fused to metal restoration, which included gingival-colored porcelain [Figure 4] to recover the missing peri-implant soft-tissue defect, was cemented using zinc phosphate cement (Harvard cement normal setting, Harvard Dental International GmbH, Germany). The patient was followed-up for 2 months and thereafter once in 6 months. After 2-year follow-up, the patient was functioning well without any complications with the prosthesis.

Discussion

A person's smile clearly plays a significant role in the perception that others have of our appearance and our personality. Restoration of the defective environment inside an esthetic zone is always a challenge. Surgical or reconstructive procedures to re-establish the three-dimensional architecture of hard- or soft-tissue deformities have been developed and performed successfully throughout the past 15 years.[6]

Figure 1: Miller's Class IV recession with 21 and Class I recession with 11

Figure 2: Final prosthesis with gingival-colored porcelain

Figure 3: Prepared abutments screwed onto the implants

Figure 4: Functional and esthetic restoration

However, the result of the surgical procedure is slow, dependent on patient's cooperation, and cannot replace Class III and Class IV Miller's recession defect where bone loss and gingival recession is severe. It is possible to create esthetically pleasing and anatomically correct tissue contours when small volumes of tissues are being reconstructed. However, this method is unpredictable when a large volume of tissue is missing.[1]

In such situations, a gingival-colored prosthesis can be one of the options as a treatment to recover the hard- and soft-tissue defect. This gingival-colored prosthesis can be of fixed or removable type.[1,2] Various authors have described clinical situation-based and material-based gingival-colored prosthesis.[7-9] This article presented two clinical reports of gingival-colored prosthesis for both tooth-supported and implant-supported fixed prosthesis.

However, the biomechanical principles associated with each approach are completely different. As a result of severe bone loss and supportive periodontal ligament, it was not possible to recreate the soft-tissue architecture in either of the cases. A retrospective study in the maxillary anterior region has shown that when the distance from the contact point to the bony crest was greater than 5 mm (due to bone loss), the preservation of interproximal papilla may not be predictable.[10] The option of fixed prosthesis was chosen for both the cases since it gives a significant comfort and self-confidence to the patient with a more natural feeling without any discomfort.

Except for crown preparation and implant placement, both the patients do not have to undergo any additional, uncertain surgical procedure. Furthermore, with the diagnostic wax-up, it was possible to show the patients more of a predictable outcome of the planned treatment. Alani *et al*.[7] stated excess sound tooth tissue removal from root dentin, difficult assess for cleansability, and color with characterization mismatching as potential limitations of gingival color porcelain. A wider understanding and proper technical utilization of gingival-colored porcelain in esthetic zone deformity can be involved as a prosthetic paradigm in practicing contemporary esthetic dentistry.

Conclusion

Dentistry is varying with induction of modern science to practice dentistry.[11] Two clinical situations were discussed to manage hard- and soft-tissue defect for both tooth-supported and implant-supported fixed prosthesis. The meticulous use of gingival-colored prosthesis can not only reproduce a predictable esthetic result but can also give the patient satisfaction as well, without any further invasive procedure.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms.

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Conflicts of interest

There are no conflicts of interest.

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