International Journal of Dental Sciences
www.dentaljournal.in
E-ISSN: 2663-4708, P-ISSN: 2663-4694
Received Date: 11-01-2020 Accepted Date: 12-02-2020; Published: 15-03-2020
Volume 2; Issue 1; 2020; Page No. 13-16

Characterized gingival provisional: A new way of shade matching in gingival porcelain: A case report

Smruti Tushar Thakkar[1*], Sachin Haribhau Chaware[2]
[1] Post Graduate Student, Department of Prosthodontics, MGV's KBH Dental College and Hospital, Panchavati, Nashik, Maharashtra, India
[2] Post Graduate Guide and Associate Professor, Department of Prosthodontics, MGV's KBH Dental College and Hospital, Panchavati, Nashik, Maharashtra, India

Abstract
Siebert's Class III ridge defect can be corrected either surgically or prosthetically. When surgery is not a viable, gingival porcelain can be an optimal solution for restoration of both hard as well as soft tissues. Shade matching in gingival ceramic is a very technique sensitive task as there are limited shade guides and communication to the laboratory becomes difficult in cases of heavy melanin pigmentation. Chairside characterization remains the only possible alternative for achieving accurate colour, volume and texture. The aim of this case report is to introduce a novel technique of chairside shade matching and laboratory communication by fabricating a characterized gingival provisional using denture base stains.

Keywords: gingival ceramic, gingival veneers, all ceramic restoration, Denture base stains, characterization, provisional, gingival shade matching

1. Introduction

Ridge resorption is an inevitable phenomenon after extraction. The amount varies with the degree of trauma the tooth bears before and during this procedure also delayed treatment of the missing teeth can contribute to loss of gingival architecture. Siebert classified ridge defects into 3 classes, class I includes buccolingual loss, Class II is apico-coronal loss and Class III includes both Buccolingual as well as Apico-Coronal loss [1]. It is a therapeutic challenge if such defects occur in the anterior aesthetic zone. Restoration of both the missing hard as well as soft tissues only can achieve optimal esthetics. Surgical restoration of soft tissue contour is the ideal treatment plan. It requires extensive grafting procedures seldom leading to dehiscence of tissue post-surgery, donor site morbidity, post-operative pain and hematoma [2]. To avoid multiple surgeries and minimize the treatment duration gingival porcelain proves to be a viable and affordable alternative in restoration of gingival contours and excellent esthetics. However, shade matching is quite difficult for the gingival area as it is a gradation of various shades and the shade guide mostly has pink undertones not applicable for pigmented gingiva [3]. Single shade cannot be communicated as gingival shade as it requires minute characterization. Chair side colour matching can only bring exact turnout of the shades and excellent results. An attempt has been made to present gingival porcelain as the optimal solution for rehabilitation of Siebert's Class III ridge defect.

2. Case Description

Mr. Niraj Patil, 24 years male presented to the department of Prosthodontics with a chief complaint of missing teeth in the right front region of upper jaw. He presented with a history of trauma in the right front jaw region 3 years ago with a history of extraction with 11 and 12. On Clinical examination, 11,12 were missing and ridge defect was of Siebert's class III [1]. Patient was advised surgical restoration of the ridge defect followed by implant placement with 11,12, due to high chances of dehiscence of graft tissue and donor site morbidity resulting in unpredictable outcome, low socioeconomic status and increased duration of the treatment, All Ceramic restoration with gingival porcelain was selected as the optimal treatment alternative.

2.1 Technique

1. 1.Orientation and centric records were made and diagnostic casts were mounted on semi-adjustable articulator and shade selection was done. (Figure 1,2,3)
2. Wax mock-up was done considering the 70 % Recurring Esthetic Dental Proportion [4] and Putty indices (Zhermack Zetaplus Putty, Italy) were made and sectioned to be used as a guide for tooth preparation. (Figure 4)
3. The gingival area to be restored was also mocked up and a putty index was made for fabrication of provisionals.
4. Tooth preparation was done with an all shoulder finish line for 13, 21 placing the putty guides and depth cutting bur. (Figure 5, 6, 7).
5. Gingival Retraction was done with 000 non-impregnated knitted retraction cord (Sure-cord, Suredent, South Korea.) and final impression was made with addition silicone elastomeric impression material (Aquasil, Soft Putty/Regular set, and Aquasil Ultra Plus Light Body, Dentsply DE TREY, Germany). The final working cast was

analysed using stereomicroscope. (figure 8, 9, 13,14)

6. Provisionals were fabricated by direct technique using Protemp 3 A2 (3M ESPE) and the gingival area was hand painted using denture base tints (skin, red and brown shades, MP Sai Enterprises, Mumbai, India) for characterisation and self-cure acrylic resin (DPI- RR Cold Cure, India) to mimic the shade and contour of the ridge defect. (figure 10, 11, 12)
7. For easy shade matching and communication a set of hand-painted characterised gingival provisional was sent to the laboratory for exact simulation of the gingival characteristics.
8. 8.Coping trial with gingival extension was obtained and tried intraorally for marginal fit and incisal clearance. (figure 15, 16)
9. Final restoration was cemented with conventional protocol. (figure 17, 18, 19, 20)

3. Discussion

Though surgery remains the primary treatment option for restoration of ridge defects, defects in the anterior esthetic zone are quite efficiently manageable with Prosthodontic intervention. Gingival Porcelains are a viable treatment alternative to restore favorable natural crown ratios and emergence profiles in complex situations, thereby reducing the necessity for technique-sensitive surgical procedures [5, 6]. Gingival veneer is defined as prosthesis worn in the labial aspect of the dental arch which aims to restore the mucogingival contour and esthetics in areas where periodontal tissues are deficient [7]. Gingival tissue replacement may be used to replace tissues lost through trauma surgical gingival procedure, ridge resorption or traumatic tooth extraction. Gingival replacements are flange prosthesis and synonymous with gingival veneer, gingival mask, gingival veneer prosthesis, and artificial gingiva [8].

Thorough clinical evaluation and diagnostic mock-up are necessary to outline the amount of volume of the hard and soft tissues to be restored. Various factors such as smile line, lip mobility, lip length, lip support and characteristic gradation of gingival contour have to be analysed and mimicked in the diagnostic wax-up.

Necessary colour measurements of gingiva can be performed using visual, spectrophotometric, or photographic techniques [9]. Limited information on the fundamental optical properties of human gingiva, its polychromatic nature, and the imperfections of existing gingival shade guides just add to the complexity of the topic [10, 11, 12] As Indian gingival tones exhibit heavy melanin pigmentation, the available shade guides offer little help and chairside shade matching remains the only optimal alternative. Gingival tissue can be simulated either in ceramics, composites and acrylics out of which ceramics are the best available option due to its intraoral comfort because of the smooth uniform interface between the prosthetic gingiva and the remaining tissues and excellent shade matching [5, 6]

The use of composites or acrylics can be great provisional material to develop the required colour, contour and texture of the gingiva. There are limited shades available for pink composites, cost factor and difficulty in shade communication to the laboratory gingival composites are less popular [13].

This paper develops the fabrication of a bis-acrylic provisional using stains used for characterisation of denture base with self-cure acrylic resin. Due to its feasibility, simplicity and cost-effectiveness, various combinations of characterization can be hand painted and duplicate provisionals can be fabricated for the technician as a customised shade guide for exact simulation of the colour, contour, volume and texture of the missing tissues.

4. Conclusion

Thus, a novel technique of fabricating a characterised provisional and sending it to the laboratory for accurate simulation of the gingiva is advocated by this paper. Though it increases the chairside time and efforts of dentist to correctly match the shade, it is worth the final esthetic outcome.

5. Clinical Significance

Esthetics and function are the prime concerns of restorative dentists. Exact simulation of volume, contour of the gingival tissues is now possible with a stable and reversible technique of fabricating characterized provisionals and communication to the laboratory becomes simplified as the technician has a copy of provisional to mimic the gingiva accurately.

6. Acknowledgment

There is no Source of funding.

7. Figures: total 20

Fig 1: Pre-operative frontal view

Fig 2: Shade selection

Fig 3: Orientation Jaw Relation

Fig 4: Wax Mock-up

Fig 5: Placement of depth cuts

Fig 6: Putty index as a guide for tooth preparation

Fig 7: putty index showing adequate tooth preparation

Fig 8: final tooth preparation and gingival retraction

Fig 9: final impression

Fig 10: Characterized gingival provisional

Fig 11: Try-in of Characterised gingival provisional

Fig 12: Frontal view of Characterised gingival Provisional

Fig 13: Stereomicroscopic view of 21

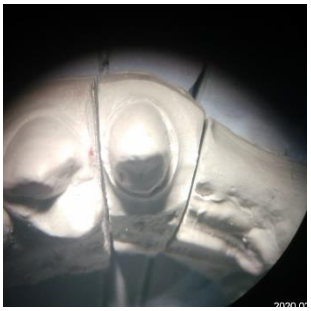

Fig 14: Stereomicroscopic view of 13

Fig 15: Coping trial frontal view

Fig 16: coping trial occlusal view

Fig 17: Final Restoration frontal view

Fig 18: final restoration lateral view

Fig 19: Final restoration in occlusion

Fig 20: Post- operative frontal profile

8. References

1. Seibert JS. Reconstruction of deformed, partially edentulous ridges, using full thickness onlay grafts. Part II. Prosthetic/ periodontal interrelationships. Compend Contin Educ Dent. 1983; 4:549-62.
2. Seiler JG, Johnson J. Iliac crest autogenous bone grafting: Donor site complications. J South Orthop Assoc, 2000, 9:91.
3. Viana PC, Kovacs Z, Correia A. Purpose of esthetic risk assessment in prosthetic rehabilitations with gingiva-shade ceramics. Int J Esthet Dent. 2014; 9:480-489.
4. Lombardi RE. The principles of visual perception and their clinical application to denture esthetics. J Prosthet Dent. 1973; 29:358-82.
5. Gracia LT, Verrett RG. Metal-ceramic restorations – custom characterization with pink porcelain. Compend Contin Educ Dent. 2004; 25:242,244,246.
6. Behrend DA. The design of multiple pontics. J Prosthet Dent. 1981; 46:634-638.
7. Naik NR, Motwani BK, Sahu SK, Singh S, Dani A, Kulkarni S, *et al*. "Gingival Porcelain": Successful Restoration of Lost Smile - Case Report. 2015; 14(3):18-20.
8. Antony VV, Khan R. Gingival Mask-Restoring the lost smile. IOSR journal of dental and medical science. 2013; 5(3):20-2.
9. Bayindir F, Bayindir YZ. Coverage error of gingival shade guide systems in measuring color of attached anterior gingiva J Prosthet Dent. 2009; 101(1):46-53.
10. Dummett CO. Oral pigmentation - physiologic and pathologic. NY State Dent J. 1959; 25:407-12.
11. Paravina RD, Powers JM. Esthetic color training in dentistry. St. Louis: Elsevier, 2004, p. 150-1.
12. Anderson DL. Gingival colours. J Ont Dent Assoc. 1954; 31:181-3.
13. Papaspyridakos P, Amin S, El-rafie K. Technique to Match Gingival Shade when Using Pink, 2016, 1-3.