Case Report
Journal of Pierre Fauchard Academy (India Section), *Vol 32(1-2), DOI: 10.18311/jpfa/2018/21784, March - June 2018 p. 31-38* *ISSN (Print) : 0970-2199* *ISSN (Online) : 2405-772X*

Customized Soft Tissue Model for Implant Working Cast

N. Gopi Chander[1*], N. Vignesh[2], Padmashini Gnanam[3], V. Sriram[4] and R. Srividya Devi[5]

[1]Professor, [2,3]Senior Lecturer, [4,5]Post Graduate Student, Department of Prosthodontics, SRM Dental College, Ramapuram, Chennai – 89, India; drgopichander@gmail.com

Abstract

The objective of this technique was to fabricate a customized soft tissue gingival mask with vinyl poly siloxane impression materials. Microsoft paint software was used to obtain the concentration of color on the patient images and matched for the color differences of impression materials. This color concentration is transferred to the Vinyl Siloxane Impression (VPS) material. The colors were added by addition technique to the catalyst paste of VPS impression materials. Disposable syringe is used to inject the material around the implant analogue of the implant impression and soft cast obtained simulates the gingival color and tissue of the patient around the implant. The patient gingival color on the cast is obtained with this customized technique of gingival mask.

Keywords: Gingival Mask, Soft Cast, Soft Tissue Mask

1. Introduction

The transfer of soft tissue details around implants is essential for obtaining an esthetic and functional implant restoration[1–3]. Many techniques have been proposed and materials available to obtain the gingival esthetics on the laboratory models[4–7]. These techniques may provide valuable information to technician to fabricate prosthesis. The precise information on gingival esthetics can be obtained through the gingival mask may aid in fabricating a superior restoration[8,9]. The use of commercial materials is simple and provides appreciative results.

The earlier techniques and materials proposed have limitations. Majority of the techniques proposed uses specifically designed commercial materials. The gingival color of the patient may not be the same as of the commercial gingival mask materials. Additionally, the materials are expensive and it adds up to the lab cost. Generically the commercial available gingival masks are similar to the most of the clinical used impression materials. The use of these conventional impression materials primarily varies with the color.

The literature has not specified on any technique or method to customize the regular impression materials. This technique proposes a customized technique of gingival color transfer to the working model.

2. Technique

- The typhodont images (JPEG) of implant region are made with DSLR camera in different views - centric, right lateral, left lateral. The images made are transferred as JPEG images to PC/ lap top platform. The transferred images are viewed using the Microsoft paint software (Figure 1 and 2).
- The Color Picker tool of Microsoft Paint software is selected and applied on the gingival area of the image to obtain the color coordinates of gingiva close to the implant region of the partially edentulous arch (Figure 3). The obtained gingival color coordinates are set in the color 1 of the paint background tool (Figure 4).
- The top of the paint software as the edit button. The edit button is selected (Figure 5). This shall

*Author for correspondence

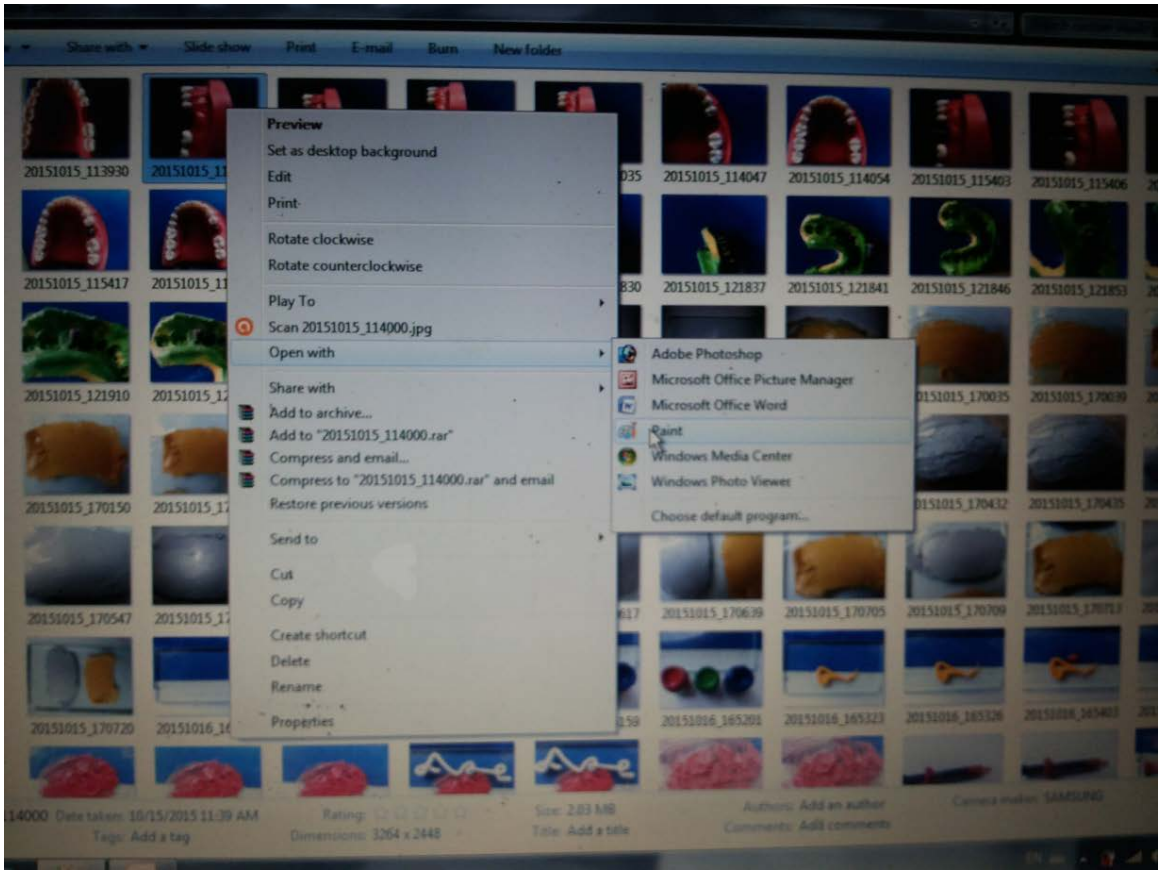


Figure 1: Transferred images lap top and opening with Microsoft Paint software.

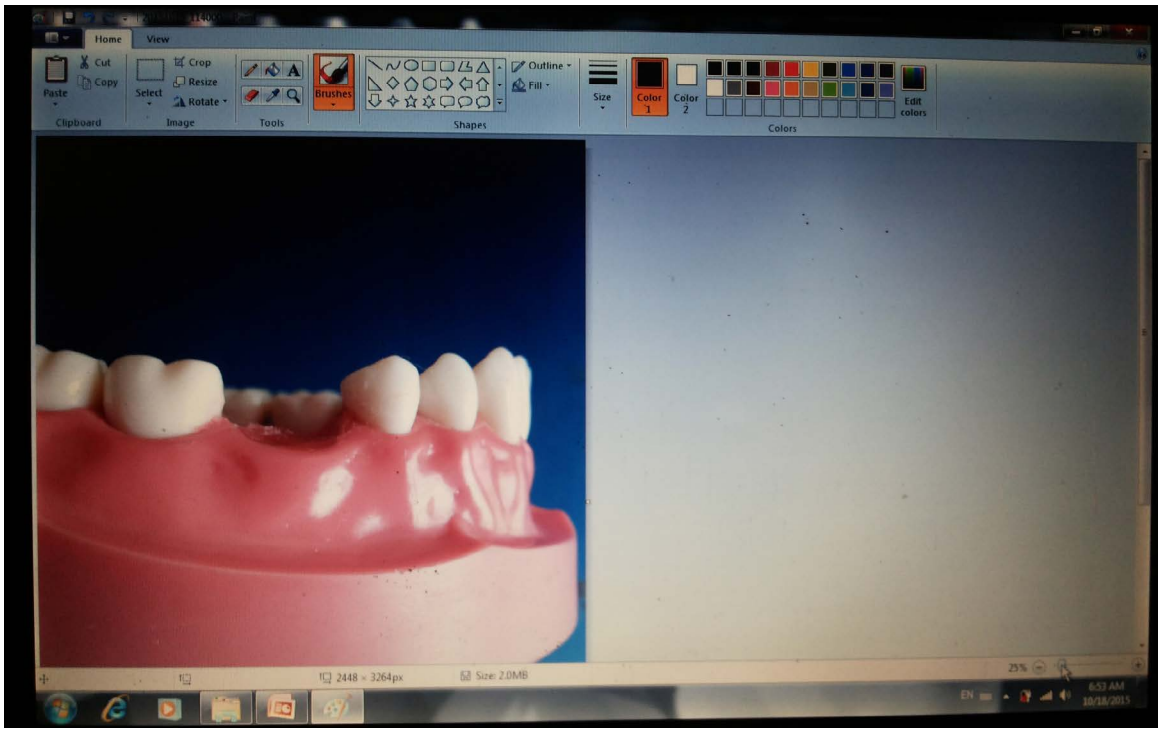


Figure 2: Image in Microsoft Paint software.

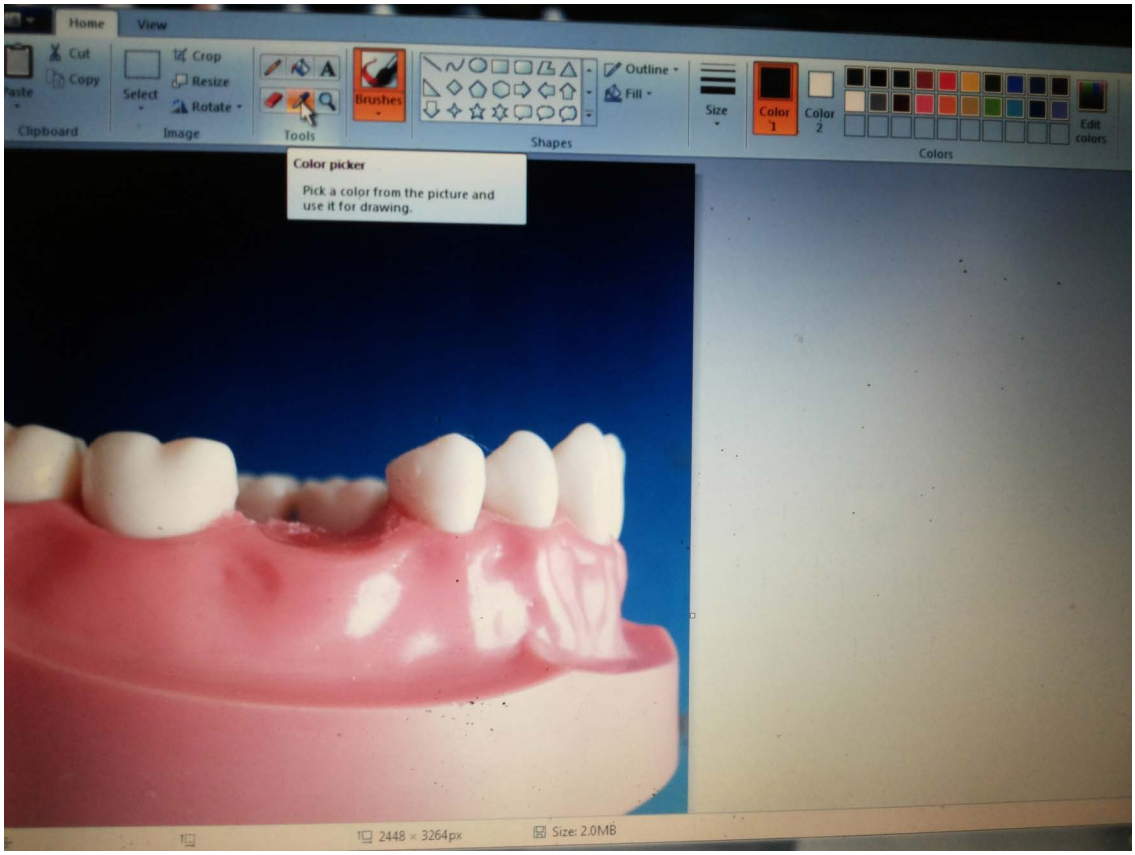


Figure 3: Color Picker tool in Microsoft Paint.

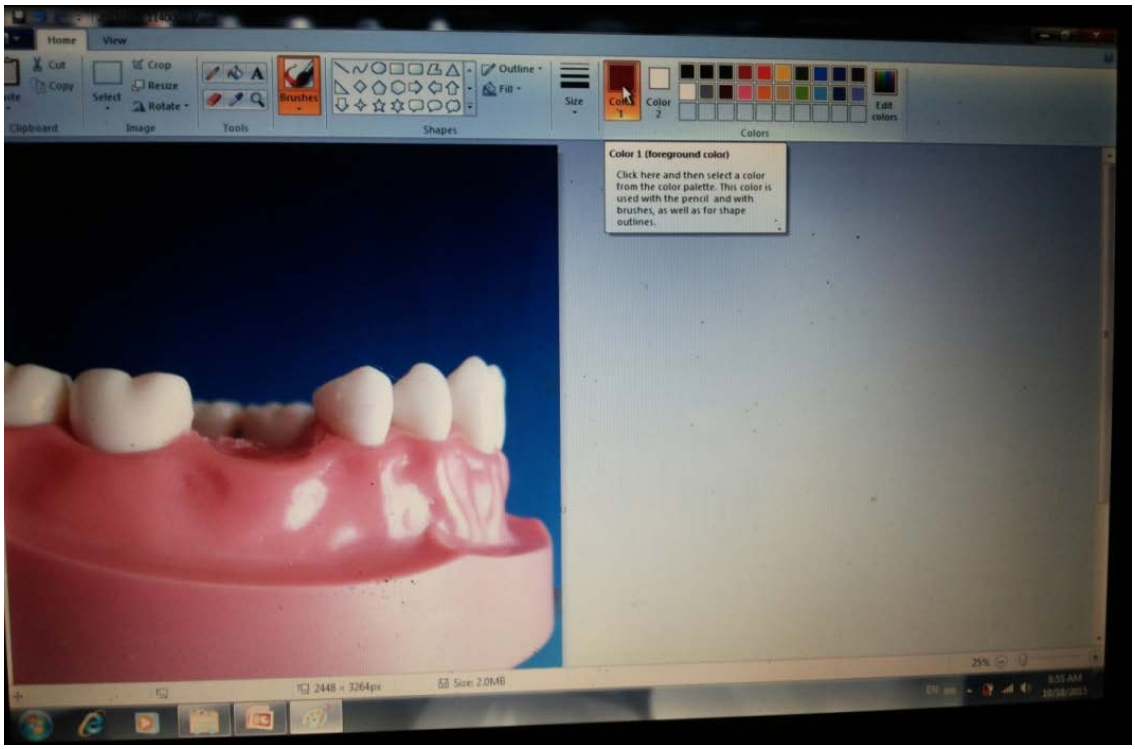


Figure 4: Set gingival shade is set in Color 1.

provide the RGB color values (Figure 6). The RGB color values displayed in the box is recorded (Figure 7).

- The picture of the manipulated impression material made, and the images are transferred to the software platform (Figure 8). The RGB values of impression materials is obtained from the images as explained in earlier steps (Figure 9).
- The difference in the color (RGB Coordinates) between the impression material and gingiva is observed. The required color is transferred to the catalyst paste of the impression material (1 drop = .05ml) (Figure 10).
- Material manipulated is rechecked similarly for color match. The optimized matched color is manipulated, loaded in the syringe and injected around the implant to produce soft tissue models (Figure 11–16).

3. Discussion

This technique produces a more customized technique of fabrication of soft tissue cast with simple procedures. The procedure described is simple and easy method to fabricate a customized gingival mask. This technique avoids the use of separate gingival mask materials[4]. It is economical and the color obtained is superior to regular gingival mask materials.

Adobe Photoshop 7 or c 5 extensions or Microsoft (MS) paint or any similar image software can be used for this technique. The MS paint software used in this technique is versatile and the software package is commonly available in Microsoft software package. The results obtained with different software are similar and it varies with the software application of determining the RGB coordinates.

The inclusion of color pigments to the catalyst paste is done by addition technique. Technically it aided in better color distribution and it eased the color manipulation with the base paste. The addition of color to the materials was done in accordance to the difference obtained in RGB coordinates from the JPEG images loaded in the software. The amount of color pigments added is calculated arbitrarily on the percentage of color concentration and the color (Fevicryl[R], Pidilite Industries ltd, Maharashtra, India) drops are added to the material. The custom gingival material is used on laboratory model and the medical grade properties of impression materials are not affected by addition of color pigments.

The clinical color obtained simulates the clinical gingiva color excluding the limitations factors like light, pigmentations, photographic variations, loss of color determinants in transfers and perceptions. The proposed laboratory technique aids in obtaining superior color with the conventional materials. It avoids the use of separate gingival mask materials.The commercial material though they are available in different gingival shades they can't be ideal match. The material fabricated by this technique has limitations in accuracy due to arbitrary percentage of pigment addition, but they are superior in esthetics in comparison with the trade materials.

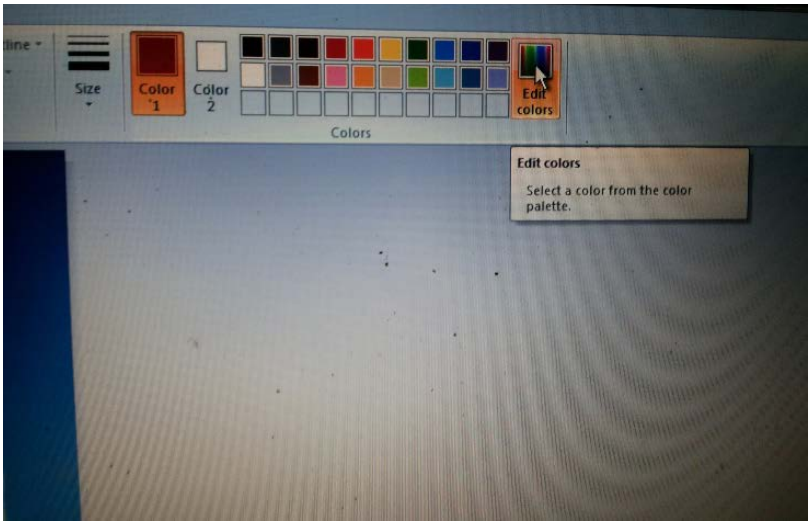


Figure 5: Identification of Edit button.

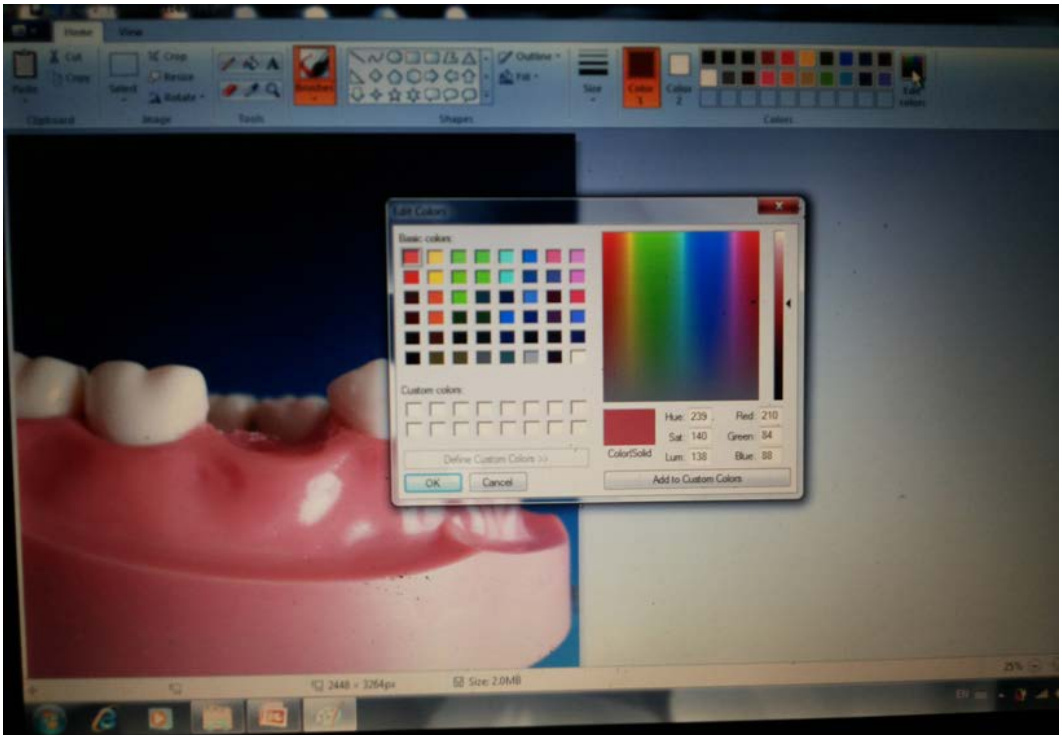


Figure 6: Visualization of color coordinates of gingival shade.

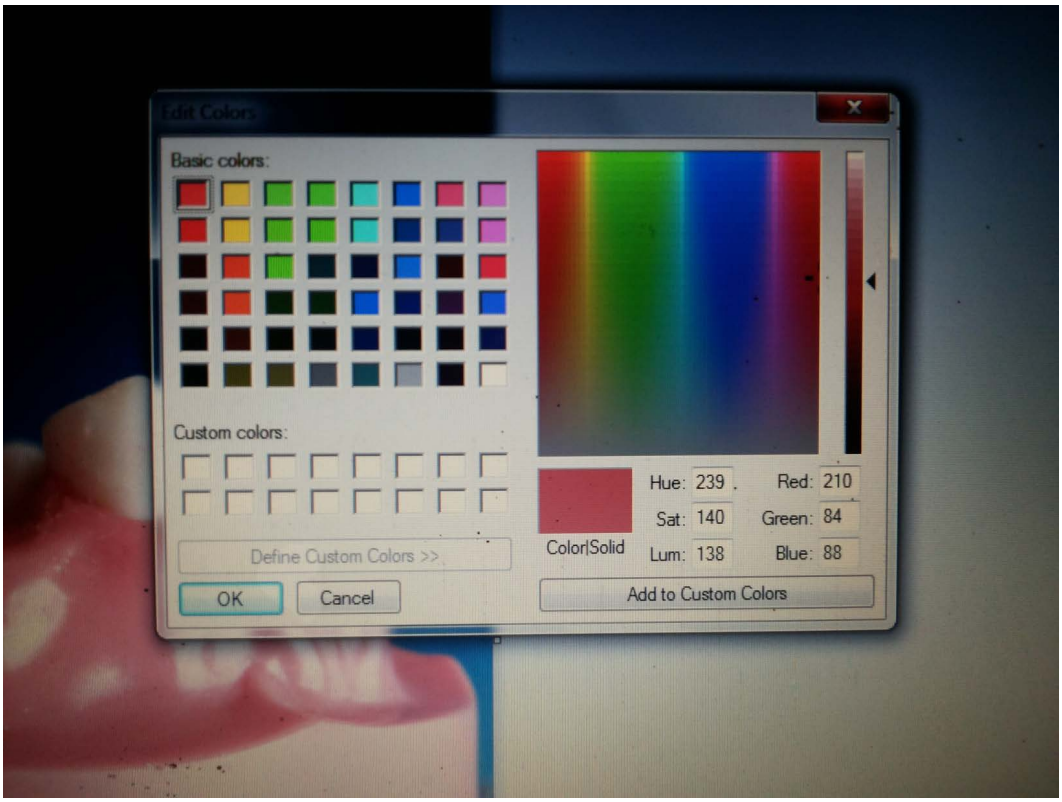


Figure 7: Viewed color coordinates are recorded.

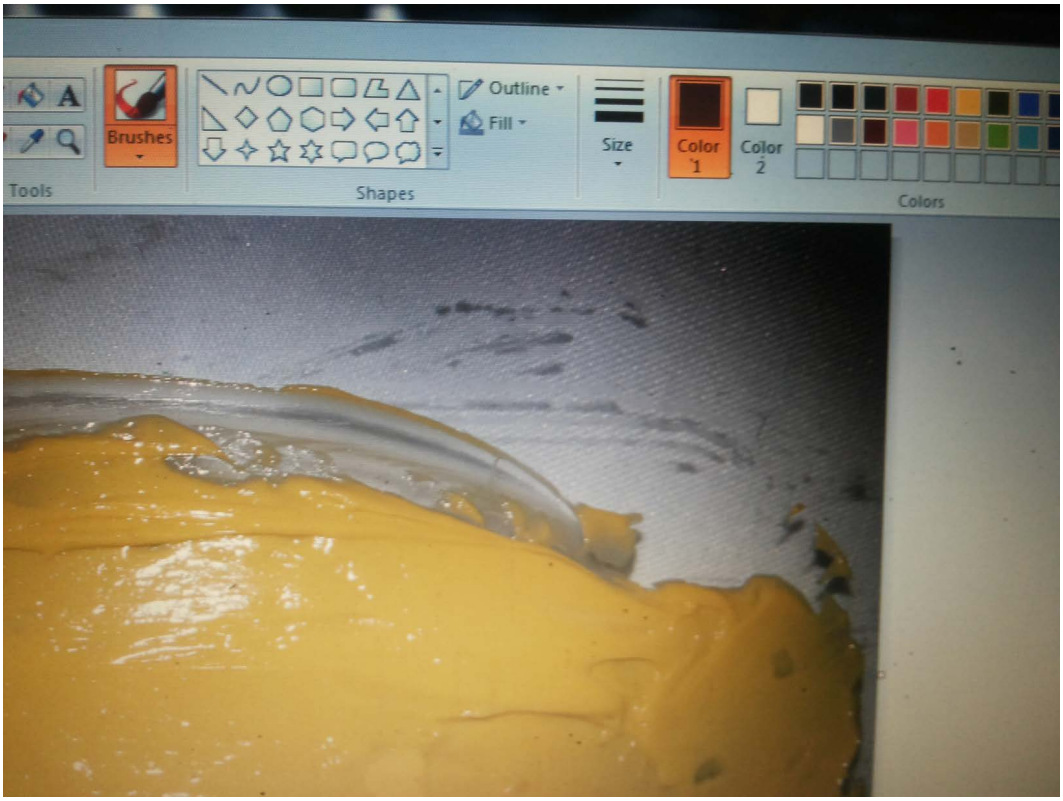


Figure 8: Image of manipulated impression material.

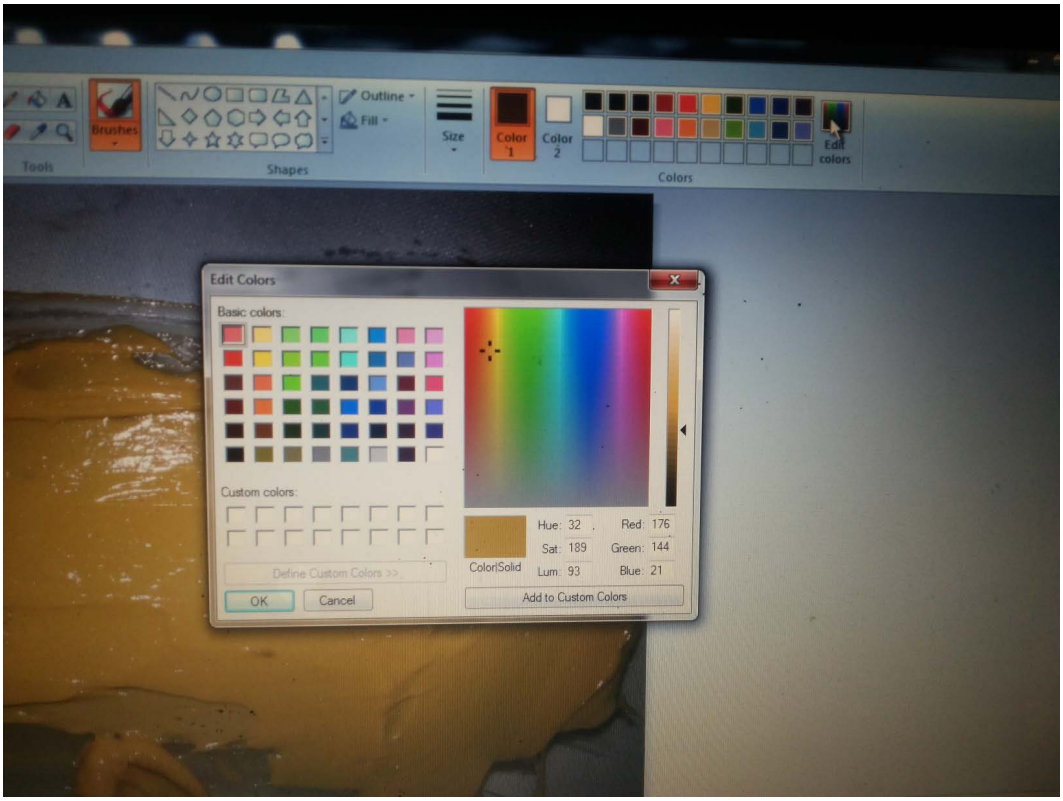


Figure 9: Color coordinates of Impression material.



Figure 10: RGB Colour pigments.



Figure 11: Addition of Red color pigment to catalyst.

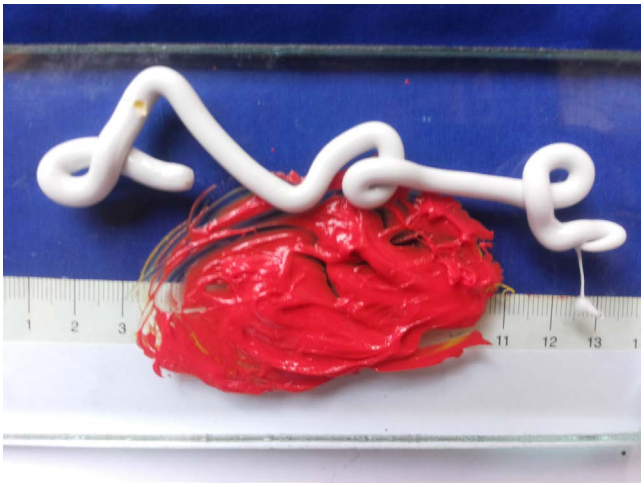


Figure 12: Manipulation of pigment to catalyst and addition of proportionate base paste.

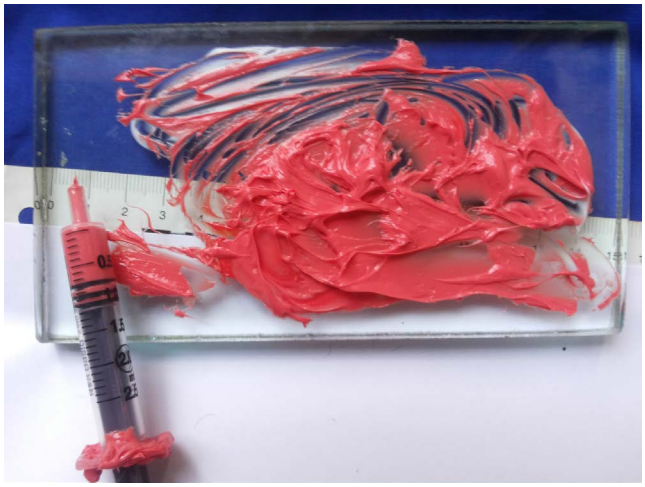


Figure 13: Manipulation of custom gingival mask and loading in syringe.

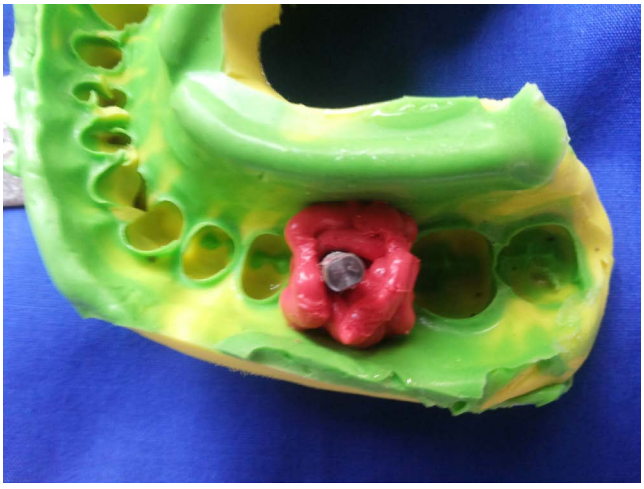


Figure 14: Making of soft cast on the impression material.

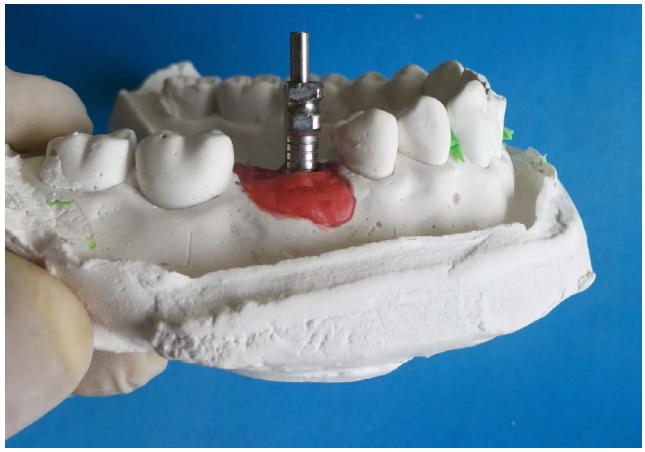


Figure 15: Customized soft tissue working cast of typhodont with impression post.



Figure 16: Customized soft tissue working cast of typhodont with implant abutment.

The color pigments added is less and do not significantly affect the material properties. The adding of color pigments is arbitrary more definitive color transfer can be obtained by digitally gauged transfer of color pigments to the material. In future more customized and accurate approach is feasible with the adaptation of this technique.

4. Conclusion

The technique proposed a simple and easy method of making a customized soft cast for implant with vinyl poly siloxane impression materials.

5. References

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