

God-given right of every human to appear human, Prosthetic rehabilitation of amputated thumb with silicone prosthesis: a case report

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ABSTRACT

Background: Finger or thumb amputations are the most common amputation of the upper limbs. It is caused by trauma, congenital or malformations. It affects the psychological or social life of the patient. Silicone prosthesis is especially useful in case of loss of body part as given esthetically as well as functionally. This case report emphasizes on the amputated thumb rehabilitation through silicone prosthesis, which is acceptable, user friendly and have a great esthetic appearance to the patient.

Keywords: Rehabilitation, prosthodontics, dentistry.

INTRODUCTION

The thumb is the most active and used to complete tasks like grasping and holding. Amputation of the thumb is the most caused by trauma. Congenital or malformations are also a factor in the amputation of the thumb (1). Amputated thumbs are replaced by the silicone prosthesis nowadays. Medical grade silicones are used for the rehabilitation of the thumb prosthesis is more about being than science art than science, which provides a similar appearance to the missing structures of an individual. Prosthetic rehabilitation is relatively quick, reversible, medically uncomplicated, and affordable (2). Silicone elastomers are mainly used material for prostheses nowadays. Clear or transparent silicone is easily compatible with the intrinsic or extrinsic colouring systems available, which gives an esthetic appearance. This case report presents a simple method of rehabilitation of an amputated thumb with a silicone prosthesis.

CASE REPORT

A 68-year-old male patient reported to the Department of Prosthodontics for the rehabilitation of the amputated thumb of the right hand due to trauma ten years back. On examination – a solitary healed wound was seen on the dorsal aspect of the amputated thumb. The surrounding area appeared to be normal, with no infection, and scar tissues were observed. Informed consent was taken from the patient before starting the treatment to ensure his willingness for prosthetic rehabilitation.

Technique

The patient's hand was placed in a relaxed position and lubricated with a thin layer of petroleum jelly. This prevents the hydrocolloid impression material from adhering to the surgical site and tissue surface. Thus, it allows easy removal of impression material from hand. An empty container was used to make an impression. The hand was placed inside the container on the palmer side first and then the dorsal side in a normal resting position without stretching. Irreversible hydrocolloid material was

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poured into a container, and after setting the material, the hand was retrieved. The impression was then poured into an orthogonal dental stone (kalabhai), using a vibrator to avoid voids. A positive replica of the hand was retrieved, and the wax pattern was sculpted in modelling wax with the borders merged with the area adjacent to the defected side. To give the wax pattern a natural appearance, the anatomic lines and crease lines were accentuated using the left hand of the patient as a guide. During the try-in stage, the fit, stability, and sealing of the wax pattern, along with its shape and size, were evaluated. The shade selection of the patient's hand was made using the shade guide (colour swatch).



Figure 1: Pre Operative View.

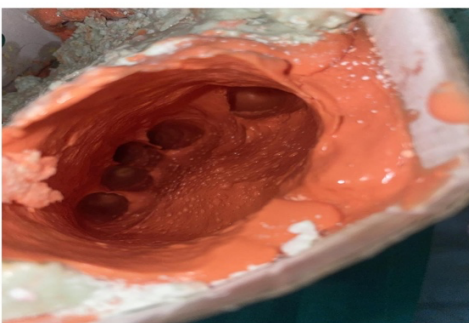


Figure 2: Impression taken from irreversible hydrocolloid impression material.



Figure 3: Colour matching by colour swatch.



Figure 4: Wax pattern evaluation.



Figure 5: Dorsal Surface of Prosthesis.



Figure 6: Ventral surface of the prosthesis.



Figure 7: Post-operative view of prosthesis.

Flasking of the wax pattern should be done in two pour techniques and then dewaxing was done. After dewaxing, mould space was obtained. A reduction of 1- 1.5 mm was done on the stump all around and was reoriented on the obtained mould. This produced a prosthesis, which was smaller in diameter by 1- 1.5 mm, and it stretched over the amputated stump to provide retention. The mould was packed with high-temperature silicone rubber. Remember that the high surface tension of the silicone can make it easier for air to enter the prosthesis, and every precaution should be taken to prevent this. The material was allowed to bench cure overnight and for the final polymerization it was placed in hot water for one hour at 45 degree Celsius. After cooling, the final prosthesis was retrieved, and excess material was trimmed using a sharp blade and finishing was done by fine sandpaper. To complete the prosthesis, an artificial nail is placed on the surface of the prosthesis to make a realistic appearance. The nail was according to natural thumb.

The final and most important step was inserting the prosthesis into the patient's amputated thumb. The patient was instructed and demonstrated how to use and maintain the prosthesis. The gratitude and satisfaction in the patient's eyes made the tedious and time-consuming procedures well worth their while.

DISCUSSION

Prosthetic rehabilitation is one of best advantageous is that it is reliable, quick, medically uncomplicated and allows the surgical site to be closely monitored. Silicone elastomers are widely used materials for prosthetic rehabilitation. Intrinsic and extrinsic colouring is well adapted to the silicone for the natural appearance. The custom-made prosthesis is well acceptable by the patient and make comfortable for use, resulting in psychological improvement and personality.

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