REHABILITATION OF A FINGER AMPUTEE WITH ACRYLIC PROSTHESIS — A CASE REPORT

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ABSTRACT

Injuries to the fingers are common in accidents at home, work, or play. Fingers as organs of manipulation have an important role in function and aesthetics. Moreover, for the majority of patients, the loss of the finger can lead to psychological problems. Peretz defines loss as “a state of being deprived of or being without something one has had and valued”. The problem of replacing external parts of the body missing from surgery or trauma often falls to the maxillofacial prosthodontist. Maxillofacial prostheses replace lost body parts using artificial substitutes like acrylic or silicones. These prostheses support the patients psychologically and enhance their social acceptance. A case report is being presented where a custom made finger prosthesis; comfortable in use and esthetically acceptable to the patient was fabricated; using acrylic material. The prosthesis was retained by using a ring.

INTRODUCTION

Prosthesis refers to artificial replacement of an absent part of the human body.1 These artificial substitutes serve primarily to improve the patient’s appearance and to support them psychologically. They play an immense role in making the patient more socially acceptable.2 Absence of hands or fingers may be caused by congenital abnormalities, trauma or diseases. Whatever the reason, the complete or partial amputation of a finger causes functional deficiencies and aesthetic problems. Psychological problems may also be caused by the poor appearance after the loss of fingers.3,4 Currently, many injuries and traumatic amputations of fingers can be rescued by micro-surgery through reimplantation. For some, reconstructive surgery cannot be performed due to technical difficulties, financial and psychological issues, or due to surgical failure.5 In some cases, reconstructive surgery cannot restore esthetics as much as prosthesis can and thus has limited role in case of lost body parts. The major role in rehabilitating the patient is thus played by the maxillofacial prosthodontist and the anaplastologist.6 Thus, the purpose of this report is to describe a simple technique for fabrication of a acrylic finger prosthesis for a patient after an accident at work. These prostheses can also improve function by restoring the normal shape and length of the finger, protecting the stump, and transferring sensations such as pressure.7 The primary purpose of a prosthesis is to allow the patient to pass unnoticed8

CASE REPORT

A 50 year-old man was referred for prosthetic rehabilitation of his lost left little finger at the level of the distal interphalangeal joint as a result of an accident. He was not able to flex at inter phalangeal joint but the web spaces were intact. (figure - 1) After a through history and diagnosis, it was decided to fabricate a acrylic finger prosthesis. He was informed about the limitations of the prosthesis to enable acceptance.
A thin layer of petroleum jelly was applied on the patient’s finger to prevent adherence of the impression material to hair and skin. The patient was instructed to keep the hand in normal resting position and impression of the amputed finger was made using irreversible hydrocolloid impression material (Zelgan plus-Dentsply). After the irreversible hydrocolloid sets, dental plaster was placed over it for support and was allowed to set. (fig 2)

Once the material sets, the patient was instructed to remove the hand from the container. (fig 3) The
The casted ring was then incorporated into the wax pattern. The completed wax pattern along with the ring was tried on the patients. Now the wax pattern along with the cast was invested in a flask with dental plaster and dewaxing was carried out. Color matching and incorporation of nail the most critical step was to match the color of the prosthesis to the patient’s skin color. The basic skin color was observed. The colors were mixed with the acrylic resin to obtain the base color. Maximum efforts were made to match the color of the prosthesis. Color matching of the dorsal and ventral surface was done separately. The nails were made from cold cure clear acrylic resin. They were properly shaped and trimmed to the required size. Around 1 mm of nail bed was carved in the wax patterns and the nails were incorporated in that space. The molds were closed, light pressure applied to remove excess material and it was processed. The prosthesis was removed carefully and excess material was removed with scissors. Polishing was done using fine sand paper.

**DISCUSSION**

Loss of a finger has both functional and psychological consequences. Even if the stump is adequate for daily functions, poor appearance remains the main concern for the patient. Beasley (1987) has noted that individuals who keep their hands hidden inside pockets due to embarrassment over appearance are as functionally disabled as a forequarter (scapulothoracic) amputee. Jean Pillet enumerated the essential characteristics of a prosthesis as the prosthesis should be of high quality both technically and aesthetically, resemble the digit of contralateral hand, skin must correspond to the natural skin in all details and match the colour as appropriately as possible, should not be affected by climatic variations, heat resistant and must not be stained by ordinary materials. Prosthesis must be cleaned easily and should not irritate the skin.

Various materials have been used in the fabrication of these extraoral prosthesis like wood, clay, leather, enamelled porcelain, acrylic resin and silicone elastomers. Over the past decades, silicone elastomers have proven to be the most promising material but even silicone has some short comings like microbial growth, weak retention, instability, lack of sensibility and short durability, with proper care it may last only for 3-5 years. More silicone is more difficult to
pigment and degrades due to colour instability when exposed to ultraviolet rays. Various methods have been used for the fabrication of wax pattern for the finger prosthesis such as donor technique or using the impression of the contra-lateral side. Cabibikan suggested the use of computed tomography data in the affected and non-affected region. With this method the number of visits by the patient can be reduced while replication the finger details immediately and effectively. Retention is of prime concern and is important for aesthetics, function, and comfort thus enhancing quality of life. Finger prosthesis is routinely retained by vacuum effect on the stump, using medical grade adhesive or mechanical means such as a finger ring. In the recent years osseo integrated implants have also been used.

CONCLUSION

Loss of a finger has been found to affect the person psychologically. In such situations restoring aesthetics with sufficient retention becomes the prime concern. Thus a custom-made finger prosthesis using silicone polymers is aesthetically acceptable, partially restores some degree of functionality and is comfortable for patient.

REFERENCES