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CASE REPORT

Eyeglass Frame - Supported nasal prosthesis rehabilitation: A case report

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ABSTRACT

Patients with facial defects resulting from neoplasm, congenital malformation or trauma can be restored aesthetically and emotionally with facial prosthesis using different materials and retention methods to restore missing tissues and help patients to overcome social, psychological difficulties, and function. A nasal prosthesis can re-establish esthetic form and anatomic contours for midfacial defects. For successful results, a lot of factors such as harmony, texture, color matching and blending of tissue interface with the prosthesis are important. This clinical report describes the details of a prosthodontic rehabilitation of a 52-years old female patient, who came to RSGM UGM Prof. Soedomo who received partial rhinectomy and complaints of esthetic appearance. The treatment plan was making nasal prosthesis using high temperature vulcanized (HTV) silicone rubber using an eyeglass frame and adhesive silicone. Mechanical devices such as eyeglass frames can provide more retention and support for the nasal prosthesis. One week after insertion, the patient felt comfortable and had no complaints. Nasal prosthesis can cover the nasal defect and help to improve the patient's quality of life. (IJP 2024;5(1):66-69)

INTRODUCTION

After removal of part of the nasal (rhinectomy) due to a tumor or congenital defect, the surgeon and prosthodontist must do everything possible to repair the damage to the facial area. But sometimes, the patient's condition does not allow plastic surgery rehabilitation, so they require a silicone nasal prosthesis that provides good aesthetics, respiratory function and social restoration.[1]

Maxillofacial prosthodontics is a branch of prosthodontics related to the restoration or replacement of stomatognathic and craniofacial structures with prostheses that can or cannot be removed periodically or electively.[2]

The materials used in making this nasal prosthesis are silicon HTV (high temperature vulcanized). Retention of prosthesis in the mid-facial region has been accomplished with engagement of anatomic undercuts, adhesives, eyeglasses and attachment to maxillary obturators, prosthetic connections to endosseous implants. When suitable conditions are provided, mechanical retention obtained by anatomic undercuts is the most advantageous. The advantages of this prosthesis are that the technique is noninvasive, tissue tolerant, aesthetic, comfortable to use, and easy to fabricate and clean. Additionally, these prostheses are often preferred by patients because their weight and cost are low.[3]

CASE REPORT

A 52 years old woman patient, came to RSGM UGM Prof. Soedomo who received partial rhinectomy and complaints of esthetic appearance. The patient wants to have a nose made so that the nasal cavity is closed and not directly exposed to dirty air.

On objective examination, the nasal socket was normal, there was no irritation, and there was no infection figure 1. There is redness around the nasal due to the use of bandages and plastic towels to cover the nasal. The bridge of the nasal, including the nasal bones was not included in the resection.

The informed consent was provided by the Prosthodontics Specialist Universitas Gadjah Mada, RSGM, and given to the patient. The patient agreed to select a nasal prosthesis using silicone rubber yang dilekatkan pada kacamata. Mechanical devices such as eyeglass frames and adhesive materials can provide retention and support for the nasal prosthesis.

Management

The patient's nasal socket applied a thin layer of Vaseline so that the impression material does not stick. A layer of gauze

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Figure 1. Initial appearance of patient`s face

Figure 2. Impression for custom-made tray extraoral

Figure 3. Try in a custom-made tray

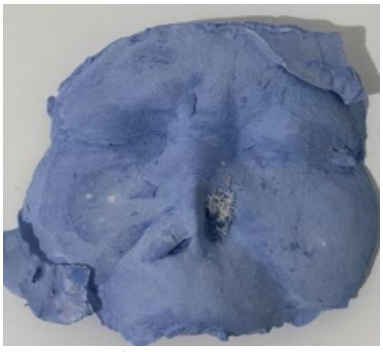

Figure 4. Final impression

was placed over the defect to prevent impression material from entering the nasal cavity. The defect is cast by placing boxing wax, prior to making an impression using irreversible hydrocolloid for making a custom extraoral tray figure 2 The cast was filled with dental stone as a working model. A custom tray was fabricated with polymethyl methacrylate using the contours of a nasal model. The custom tray was finished, polished, and tried on the patient figure 3.

Gauze and pipe were placed over the defect to prevent the molding material from entering the nasal cavity and being able to breathe during the molding process. An impression was made using light body consistency addition silicone elastomeric impression material. The impression was invested with die stone to obtain the final cast figure 4.

The prosthesis is made using wax by printing a model nose that is approximately the same size as the patient's nose with the same procedure as printing the patient's nose. The mold is filled with dental modelling wax. The wax model is tried on on the patient's nose mold and contoured according to the patient's facial profile, the esthetic contours was developed figure 5. The wax pattern adaptation on the patient's face was checked especiallly in the border areas figure 6. In order to get the maximum adaptation with the underlying tissues, functional wax was added to the borders.

A laboratory procedure by placing wax up into a cuvette. The wax is completely dewaxing from the cuvette. The nasal prosthesis was processed using a HTV silicone. The intrinsically colored silicone was done using an acrylic based paint. The color of the silicone is adjusted to the patient's skin color. Materials are processed according to the manufacturer's instructions. The silicone prosthesis was adapted on the patient's face figure 7. Extrinsic coloration was done to further match with the skin tone of the patient figure 8.

After the final contouring and matching, the superior margin at the bridge of the nose was adapted as closely as possible to the point of contact with the eye glass frames. The eyeglasses were used to maximize retention and to mask this margin of the prosthesis. Glass frame was modified in the bridge area. Eyeglasses are attached using a fishing line. The nasal prosthesis is inserted into the patient and added with silicone adhesive for retention. Detailed instructions regarding care and use were provided to the patient.

Control 1 week later and carry out retention and stabilization checks. From the results of the examination, it was found that retention and stabilization were good, there was no irritation, and the patient felt comfortable.

DISCUSSION

Facial defects result in multiple functional and psychosocial difficulties. Surgical reconstruction techniques, prosthetic rehabilitation or a combination of both the methods to restore these facial disfigurements may improve the level of function and self-confidence for patients.[4]

In our case report, the nasal bones and the associated soft tissues were intentionally left intact. This was done to improve the support of the eyeglasses at the bridge of the nose and to increase skin surface contact to enhance adhesive retention of the prosthesis.

Figure 5. Process wax-up .

Figure 6. Try in wax-up.

Figure 7. Process nasal prosthesis and eyeglass frame attachment.

Figure 8. Insertion of nasal prosthesis attached to eyeglass frame.

When suitable conditions are provided, mechanical retention obtained by anatomic undercuts is the most advantageous. The presence of moisture, mobile soft tissues, or lack of stable tissue support affects the retention; these are disadvantages of anatomic retention.[5]

The nasal prosthesis is made of HTV silicone material. The choice of silicone material is because this material has excellent thermal stability, biologically inert, and color stable when exposed to ultraviolet light. The advantages of HTV (high temperature vulcanized) silicone compared to RTV (room temperature vulcanized) silicone:[6] Fewer chances of air bubble entrapment, since hand mixing of catalyst and pigments with the elastomer, is avoided; Increased tear strength mechanical durability, and chemical resistance; Increased biocompatibility and flexibility.

To get a color that matches the patient's natural face color, this is done by making several samples of a mixture of silicone and dye in different ratios until a suitable color is obtained. Making this nasal prosthesis has difficulties in color adjustment. This is because the edge of the patient's nasal prosthesis borders healthy tissue that has a natural skin color but there is also scar tissue so the skin color is different from normal. This difficulty is overcome by using foundation on both the nasal prosthesis and the patient's facial skin tissue so that there is no color difference.

When reviewing the advantages and disadvantages of each of these materials, it is obvious that no single material is ideal for every patient. Some of the problems inherent in all these materials are.[7]

The continued effect of sunlight and vascular dilation and contraction on the natural tissues, which cannot be duplicated in the prosthesis; The variations of skin tone when the patient is exposed to different light sources (e.g., incandescent, fluorescent, and natural light); Emotional factors which cause color changes in the skin; The inability of the prosthesis to duplicate the full facial movement of the nondefective side; Lack of predictability of the life of the prosthesis, because of the variations among the patients (i.e., secretions, smoking and environment).

CONCLUSION

Facial defects can be rehabilitated using prosthetic rehabilitation so that the patient more comfortably and confidently resumes the regular daily activity. In countries like Indonesia, where cost of the treatment is still a primary concern for the patient, HTV silicone can be used as a material for definitive prosthesis. Mechanical devices such as eyeglass frames and adhesive materials can provide retention and support for the nasal prosthesis.

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REFERENCES

1. Ciocca L., Fantini M. De Crescenzio, F., Persiani, F., Scotti, R. New protocol for construction of eyeglasses-supported provisional nasal prosthesis using CAD/CAM techniques. Journal of Rehabilitation Research & Development. 2010; (47) 595-604
2. The Glossary of Prosthodontic Terms. The Journal of Prosthetic Dentistry. 2017; 94(1):10-92
3. Gurbuz, A., Kalkan, M., Ozturk, A.N., Eskitascioglu, G. Nasal prosthesis rehabilitation: a case report. Quintessence Int. 2004; 35:655-656
4. Guttal, S.S., Patil, N.P., Shetye, A.D. Prosthetic rehabilitation of a midfacial defect resulting from lethal midline granuloma-a clinical report. J Oral Rehabil. 2006; 33:863-867.
5. Asadi, G., Mirfazaelian, A., Amir, A. A technique for the fabrication of a more retentive nasal prosthesis. J Prosthet Dent.2009; 9:36-38
6. Arora, J., Gulati, M., Mishra, A. Maxillofacial orosthesis materials: a review. International Journal of Health Sciences. 2021;5(S2), 112124.
7. Reddy, J.R., Kumar, B.M., Ahila, S.C., Rajendiran, S. Materials in maxillo-facial prosthesis. Journal of Indian Academy of Dental Specialist Researcher. 2015;2(1):1

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