Abstract

Hemangiopericytoma is a vascular neoplasm characterized by the proliferation of capillaries surrounded by masses of round or spindle-shaped cells. The mode of treatment for these lesions is surgical excision. The surgical ablative treatment of these types of cases may sometimes cause facial disfigurement and lip incompetence for which facial prostheses could serve as a viable definitive treatment. In patients with incompetent lips due to surgical excision, the unsupported impression material can slip inside and cause respiratory distress, making the procedure an impossible task. In order to avoid the respiratory distress due to slippage of material and to hold the breathing tubes for proper ventilation a putty material was used as an alternative. The material when set become hard enough to resist the alginate material from slipping inside and stabilizes the breathing tubes in the centre for proper breathing by the patient while the impression is made.

Keywords: Hemangiopericytoma, facial prosthesis, incompetent lips

Introduction

Large facial deformities can result from treatment of tumors, trauma, burns and congenital anomalies. Hemangiopericytoma is a vascular neoplasm characterized by the proliferation of capillaries surrounded by masses of round or spindle-shaped cells. It is an uncommon tumour which has been found to have a wide anatomic distribution, including the oral cavity. It has no sex and age predilections, majority of the cases being reported in individuals less than 50 years of age. These lesions are firm, apparently circumscribed and often nodular, and may appear encapsulated but not microscopically confirmed. The mode of treatment for these lesions is surgical excision. The surgical ablative treatment of these types of cases may sometimes cause facial disfigurement and consequently psychological disturbances. The involvement of facial organs causes great difficulties in terms of social relationship and economic consequences. In such circumstances a facial prostheses could serve as a viable definitive treatment.

A facial impression is the first step towards making a facial prostheses and alginate is the material often used. In patients with incompetent lips who cannot hold breathing tubes due to surgical excision, the unsupported impression material can slip inside and cause respiratory distress, making the procedure an impossible task.

This clinical report describes a technique of making a facial prosthesis, for a patient with facial deformity that resulted from surgical treatment for hemangiopericytoma.

Clinical report

A 40-year old woman who was treated for hemangiopericytoma in the department of oral and
Maxillofacial surgery was referred to the department of oral and maxillofacial prostheses Meenakshi University for facial rehabilitation. Numerous surgical excisions in the course of treatment resulted in the removal of the entire maxilla, right orbit and its contents and the left half of the upper lip. (fig 1)

The patient desired a prosthetic solution for esthetics. She was made aware of the functional limitations of prostheses with regard to speech, mastication and vision. The first stage of prostheses fabrication was obtaining a working cast. The working cast was prepared from an impression of the normal tissues surrounding the defect and of the defect itself.

The patient was prepared for the impression procedure both physically and mentally. The patient was prepared with hospital drapes and a dressing gown and was positioned half way between the upright and supine position.

The next step was to allow the patient to practice breathing through the evacuator tubes. Since the patient lost her lips, holding the breathing / evacuator tube was not possible. Hence stabilizing this tube before proceeding to the next step was essential. Two breathing tubes were held together with the help of cyanoacrylate so that the ventilation would be adequate. Once the breathing tubes were united, it was held in place by the operator and stabilized in place with the help of addition silicone of putty consistency. The base and catalyst of the putty material was mixed and adapted from the corners of the mouth especially from the lower lip. It was then slowly adapted towards the centre of the mouth opening. At the centre, the breathing tubes were held in position by the operator and the putty material was extended surrounding it. The material outside the mouth supported the material placed at the centre which in turn held the breathing tubes. Once the material was set, it was removed from the patient’s face and the positioning placement of the breathing tubes was confirmed. The whole set up was placed back on the patient's face and the patient was asked to breathe through it. (fig 2)

When the patient was able to breathe comfortably with the above mentioned set up, we proceeded with the next step of taking a complete facial impression. Alginate was mixed with double the quantity of water required. The material was then applied to the skin surface with care to avoid air entrapment. (fig 3)

A smooth, thin layer was applied over the entire impression area and was covered with gauze squares to give mechanical retention for the plaster backing which was done following the initial set of alginate. (fig 4)

Once the plaster was set, the impression was grasped on both sides and lifted gently. The impression should be removed from the patient’s face as a single unit. The impression was taken to the laboratory and a cast was poured with dental stone (fig 5). The facial cast with the defect was thus obtained.

The eye part was contoured with stock eye shell and wax. A person with the matching nose size was selected and an alginate impression of the nose was made. A layer of wax was poured into the impression and a wax nose was obtained, which was recontoured to match the patient’s face. Then the cheek and remaining
facial parts were contoured. The wax pattern was tried on the patients face and necessary corrections were carried out (fig 6).

The finalized wax pattern was invested with the help of putty polyvinyl siloxane impression material [Provil novo, Heraeus Kulzer, Hanau Germany]. Shade matching was done with the help of customized acrylic shade guide. The selected shade of oil color was mixed with the monomer of the autopolymerising acrylic resin. A small quantity of colored monomer and polymer was mixed and taken in a cellophane sheet to check the shade matching with the patient’s face. The necessary adjustment in proportions of the color was carried out to match the patient’s skin color. In the same proportion the polymer and the coloured monomer was mixed and poured into the putty mould with 50 psi to get the thin shell of acrylic facial prosthesis.

The portion of the acrylic in the eye region of the prosthesis was trimmed and the stock eye shell was fixed. Eyelid and eyebrow were attached to the prosthesis with the help of the adhesive. The acrylic prosthesis was held in position in the patient’s face and attached to the spectacles with an adhesive. The prosthesis was removed with the spectacles and reinforced with the help of autopolymerising acrylic for retention (fig 7).

The patient was instructed on postinsertion care and was instructed to come for regular checkup. The case was followed up for the last three years (fig 8).

**Discussion**

Hemangiopericytomas are unusual vascular tumors that were first described by Stout and Murray in 1942\(^1\). These tumors originate in extravascular cells called pericytes, which presumably are modified contractile smooth muscle cells found on the external surface of capillaries and post capillary venules.\(^2\) Approximately 15-30 % of all hemangiopericytomas occur in the head and neck region. Although its etiology remains unknown, it has been associated with trauma, long-term steroid use, pregnancy and hypertension. Diagnosis is done with careful histological examination and reticulum staining\(^3\). Biopsies should be performed carefully because of the high risk of bleeding\(^4\). The symptoms include painless swelling or lump, soreness, limping and hypoglycemia. The treatment is surgical correction followed by radiation and chemotherapy. The postoperative care and the rehabilitation of these patients are much more important so that they return to their normal life.

The rehabilitation of these patients is much more difficult when it comes to restoring their facial superstructures. The first step in restoring the facial parts is impression making. During the facial impression holding of the breathing tubes is an essential step to prevent respiratory distress. The absence of the lips due to surgical excision in this patient was of serious concern, since it prevented the patient from holding the breathing tubes. In order to avoid respiratory distress due to slippage of irreversible hydrocolloid material and to hold the breathing tubes for proper ventilation, a two stage impression procedure was followed. The first step is to record the area below the nostrils at the same time stabilize the breathing tubes. The second step is to record all other areas using irreversible hydrocolloid material. This impression technique prevents the flow of irreversible hydrocolloid material into oral and nasal cavities. The next advantage of this technique is retaining the wax pattern. Wax pattern can be retained without damage to repeat the prosthesis any number of times.

Usually the material of choice for the maxillofacial prosthesis is medical grade silicones. Due to the procedural inconvenience in buying the material especially the adhesive and the cost involved in it we chose to restore the patient with selfcure acrylic resin. To overcome the problem of monomer shrinkage and to avoid the presence of free monomer the prosthesis was cured at 50 psi in a pressure pot.

**Summary**

This clinical report describes an innovative facial impression procedure for making facial prosthesis using alginate and putty for patients with incompetent lips developed due to the surgical excision of a hemangiopericytoma lesion.

**Reference**