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Unleashing the power of magnets: A two piece obturator

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Abstract

Over the years, many unconventional processes and materials have been used in maxillofacial prosthodontics in order to obtain promising outcomes and advancements in rehabilitation and reconstruction with optimum and, at times, far superior aesthetics and function. In this report, a two-piece sectional obturator was used to successfully repair an acquired maxillary deformity. The cast made after the impression has been produced and is duplicated twice so that the component for the defective area and the palatal base-plate component can both be made separately. With the help of a pair of magnets, both components were positioned and joined. In a limited mouth opening circumstance, This magnet-retained obturator enables it to be much simpler to insert and remove the prosthesis in two pieces.

Keywords: Maxillectomy, two piece obturator, magnets

Introduction

Deformities of the jaw, and face can be congenital or acquired as a consequence of trauma or the disease. The rehabilitation of these impairments is difficult because it necessitates a multidisciplinary approach that includes surgical, prosthodontic, psychological counselling, and speech therapy rehabilitation for the patient's overall well-being. ^[1, 2]. Many times communication occurs between the oral-nasal cavity and the antrum. Exact compartment separation is required for rehabilitation of this condition, which removes nasal cavity regurgitation, pre-nasal speech, and decreased functionality of the surgically excised maxillary region. The rehabilitation a goal is to restore speech, mastication, and occlusion, as well as to focus on providing soft tissue support to restore the midfacial form and provide a satisfactory aesthetic outcome that improves both the patient's physical and psychological well-being ^[3]. This article discusses technique to fabricate a two-piece magnet retained definitive obturator.

Case report



Fig 1: Pre-operative profile

**Fig 2:** Frontal view**Fig 3:** Occlusal view of maxilla**Fig 4:** Occlusal view of mandible

A 60 year old male patient visited the Department of Prosthodontics, Navodaya Dental College, Raichur for rehabilitation of 1 year old maxillary defect after hemimaxillectomy due to mucormycosis. The patient desired for improvements to his speaking, deglutition, and masticatory function. Following the subsequent oral examination The left suborbital region, left nasal alar area, and left angle of the mouth are all depressed, restricting his mouth opening and causing his left eye to close permanently. A partial excision of the left maxilla extending from the pre-maxilla to the anterior edge of the soft palate was noticed during an intra-oral examination. Teeth remaining in the maxillary arch are 11,12,13,14,15,16,17, while teeth present in the mandibular arch are 31, 32, 33, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, and 47. Primary impression was made by wax cone technique using alginate impression material. Followed by secondary impression using elastomeric impression (fig. 5) with special tray. Two casts were reproduced from the final casts for processing the Obturator in heat polymerizing acrylic resin (DPI Heat cure; Dental Products of India, Mumbai, India). use one duplicated cast for the defect (or bulb component) and another duplicated cast for the normal palatal component. To decrease the weight of the intraoral obturator defect component, a salt pouch was employed. (Lost salt technique) (fig 8). After deflasking, the cured internal piece (bulb) was removed, and the salt was removed by drilling 2mm holes in the lid portion. Curing operations were carried out in accordance with the manufacturer's instructions (figs. 6 and 10). Process, finish, and polish both obturator components. On the final cast, verify both components. Perform separate

and simultaneous try-ins of each part to confirm their adaptation to oral tissues. A suitable pair of magnets (neodymium) and each magnet with a magnetic force of 600 gm, 0.7 mm height, and 4 mm diameter were selected for joining two components of the obturator (fig 11). Make room for two magnets in each component. Simultaneously mix auto polymerizing resin and attach magnet to bulb and plate components. The palatal plate component of the intraoral obturator is placed in the mouth to record the centric relation of the teeth. Try it in the patient's mouth with both the bulb and the palatal plate components of the obturator. (fig. 12, 13).

Following the wax try-in, the continuous clasps (fig. 9) were constructed using a 19-gauge wire to help with further retention and stability of the prosthesis on the intact teeth. The heat cure acrylic resin was flaked, dewaxed, packed, and cured according to standard laboratory procedures. The prosthesis was trimmed and polished, and any alterations needed to fit the prosthetic intra-orally were made. (fig. 14, 15, 16, 18). All instructions for placement and removal, as well as hygiene of the prosthesis, were given to the patient. The patient was evaluated at three-month, six-month, and one-year intervals. There was no issue with speaking, mastication, or aesthetics, and the patient was able to continue on with his normal life.

**Fig 5:** Secondary impression**Fig 6:** Flaking of bulb**Fig 7:** Secondary cast



Fig 8: Lost salt technique



Fig 9: Continuous clasp



Fig 10: Bulb components



Fig 11: Components of obturator with magnets



Fig 12: Try in – frontal view



Fig 13: Try in – left lateral



Fig 14: Final prosthesis



Fig 15: Denture insertion right lateral view



Fig 16: Left lateral view



Fig 17: Occlusal view of maxilla with the 2 component obturate



Fig 17: Post operative profile

Discussion

Obturator are categorised into three types: surgical obturators, intermediate obturators, and definitive obturators.⁶ A patient who had a maxillectomy can have limited mouth opening. Taking an appropriate impression is an essential step in this process. We compromise the retention of the prosthesis if we make errors in recording every detail of the defect in and around it. The defect must be adequately closed to prevent air, fluids, and food from passing between the nasal and oral cavities in order to re-establish functioning. A two-piece hollow obturator has the benefit of being simple to use. A hollow bulb obturator permits the fabrication of a weightless prosthesis that is both acceptable to the patient and extends into the defective regions. A two-piece obturator is used when the maxillary defect is significant and has favourable undercuts. A hollow obturator is lighter, more sterile, and easier to fabricate, which improves speech intelligibility; also, a closed hollow obturator intercepts food and fluid accumulation, decreases air space, and allows for more coverage and comfort than a single-piece obturator^[7]. In contrast, an open bulb is uncomfortable, difficult, and distressing for the patient. Although there are several methods for creating hollow bulb obturators, silicon putty, salt, alum, wax, polyurethane foam, and cellophane-wrapped asbestos are the most commonly used⁵. Magnets aid in the retention of the prosthesis and in positioning the components in the proper place. Though enhancing the quality of life for hemimaxillectomy patients is more challenging than for people with typical prosthesis, it is possible with skills, knowledge, and experience of professionals. With the continuous advancement of technology, there is coordinated Prosthetic quality and clinical serviceability have improved.

Conflict of Interest

None

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