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RESEARCH ARTICLE

REHABILITATING MAXILLARY DEFECT WITH CU-SIL HOLLOW BULB OBTURATOR: A CASE REPORT

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Abstract

The role of a prosthodontist is not only to rehabilitate the intra-oral and extra-oral structures but also to bestow with mastication, speech, deglutition, and esthetics. Preservation of what exists is more important than meticulous replacement of what is missing . Cu-Sil denture is a removable prosthesis which has holes lined by silicone material that accommodates one or few remaining teeth in dental arch. Retaining natural teeth preserves the bone, enhances retention and patient comfort is enhanced. Anatomical defects in oral cavity are rehabilitated using obturators. Hollow obturators benefit the patient by reducing the weight of the prosthesis thereby improving its retention. This case report describes a Cu-Sil hollow bulb obturator for rehabilitation of a maxillary defect.

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Introduction:-

Maxillary defects can be congenital or acquired.The defects of maxilla affect the speech, swallowing and mastication. The location and extent of the maxillary defect directly impact the degree of impairment and difficulty of prosthetic rehabilitation resulting in psychological and functional trauma to patients[1]. An obturator is a maxillofacial prosthesis used to close, cover, or maintain the integrity of the oral and nasal compartments resulting from a congenital, acquired, or developmental disease process. Depending on the nature of defect , patients requiring an obturator can be completely edentulous or partially edentulous. In patients with maxillary defect and few remaining teeth , care should be taken to fabricate an obturator by preserving the natural existing teeth thereby preserving the alveolar ridge. Cu-sil denture is a simple removable prosthesis a with holes that accommodate the remaining natural teeth to emerge through the denture. The holes are surrounded by the gasket of silicone rubber which clasps the neck of natural teeth, thus allowing a natural suction to form under the denture[2].A synergy of partial or complete edentulism and increased weight of the prosthesis lead to an end result of compromised retention, further amplified by the inability to utilize the defect undercuts for retention[1] .Hollow obturator significantly reduced the weight, from 6.55% to 33.06% depending on the size of the defect[3].This case report describes fabrication of Cu-Sil hollow bulb obturator for patient with maxillectomy.

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Case Report

A 72 year old male patient was self-referred to the Department of Prosthodontics and Crown &Bridge ,Government Dental College, Thiruvanathapuramwith a chief complaint of inability to chew food, difficulty in swallowing and regurgitation of fluids through the nose , speech difficulty, poor esthetics and wanted replacement of existing ill-fitting obturator.

Dental history reveals that patient was diagonosed with pleomorphic adenoma in maxillary anterior region and had undergone maxillary resection 35 years back. Patient was using a maxillary obturator since then , he was unsatisfied with his existing denture due to broken clasp. On examination , facial asymmetry with defective speech was noticed (Figure 1) .

Intra- oral examination revealed maxillary bone with alveoli and associated teeth had been surgically excisedresulting in Aramany Class VI maxillary defect with oro antral communication and one lone standing molar (26) in left maxillary quadrant. Mandibular dentition was intact with all teeth.

Treatment

The patient was determined to have a class 1 defect according to the Armany classification system[4](Figure 2). with a first molar tooth in left maxillary posterior region. Our basic treatment objective included preservation of remaining natural tooth which would preserve the alveolar ridge and improve the retention of prosthesis. and it was decided to fit him with a definitive acrylic hollow bulb obturator prosthesis. Metal framework fabrication was ruled out as there was no retentive undercut and retention with clasp or rest was not possible if the molar tooth requires extraction in future.

Procedures –

Preliminary impressionofthe defect was made conventionally with Type II impression compound and waslined with irreversible hydrocolloid to record dentulous are and a diagnostic cast was obtained.A custom tray was fabricated with autopolymerising acrylic resin for border molding and final impression was made with light body consistency addition silicon impression material.And an master cast was fabricated.Modelling Wax was adapted both on the maxillary cast to fabricate permanent denture base.A sheet of Modelling Wax was adapted both on the maxillary cast(in the base flask) and on the dewaxed plaster surface (in the counter flask).Three to five widely distributed rectangular windows (3 mm × 2 mm) were prepared in the adapted wax sheet in the base flask. A putty consistency addition silicone was placed into the space between the wax and the flask is thenclosed .The putty on setting is duplicated to obtain a wax bolus.

Then remove the adapted wax sheets from both the flasks. Mix the heat polymerizing acrylic resin and pack it into the base flask.Orient the wax-bolus according to the guide-markings and press on the packed acrylic resin .Place the mixed acrylic resin in the counter flask and close with base flask under the mechanical clamp. And curing is completed.

Now remove remaining portion of the wax-bolus by forceful cleaning with hot water injected using a 10 ml syringe (Figure 3).Finish and polish the processed hollow obturator record base.The space in maxillary partial denture around the remaining teeth was widened to give clearance of 4-5mm around the teeth.

Silicon adhesive was then applied onto the acrylic edge of the record base in the space created around the tooth and mixing of silicone soft liner base and catalyst was done and placed around the tooth to occupy space between record base and natural teeth. Then the prosthesis was inserted into the patient's mouth and held in position until it sets(Figure 4).On completing the setting of the soft liner material, the prosthesis was removed. The excess liner material was trimmed and finished and it was finally inserted in patient's mouth .Jaw relation was recorded and and teeth arrangement was done limiting the number of teeth to premolars so as to reduce the occlusal leverage forces and weightof theobturator**.** And conventional processing was done to obtain a hollow bulb cusil obturator which was then finshed and polished(Figure 5).The prosthesis was then inserted in patients mouth and occlusal contacts were verified.The silicone liner around the molar tooth has enhanced the retention of prosthesis as well. Esthetics ,phonetics and function seemed to be improvised by the prosthesis to a greater extent.Finally the prosthesis was delivered to the patient(Figure 6).

Outcome And Follow-Up
Atregular intervals of one day, three days, one week, one month follow-up appointments were carried out. It was found that patient had good compliance .Moreover patient was very much satisfied and practicing good hygiene measures**.**

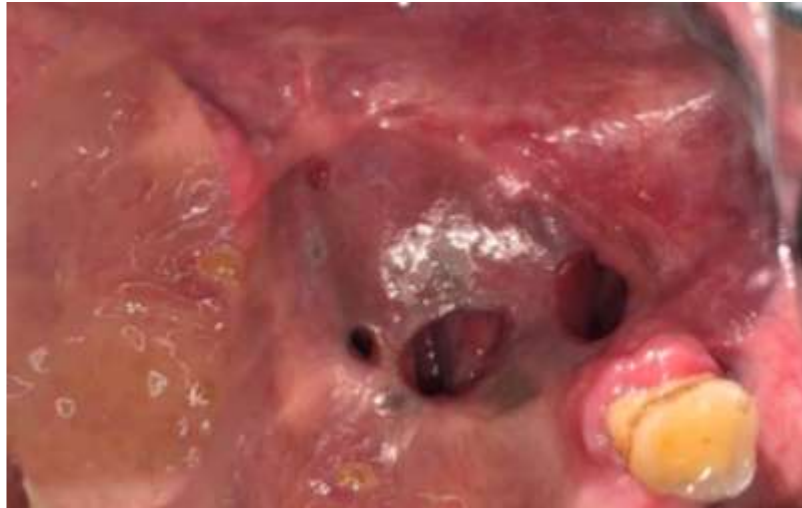
Discussion:-

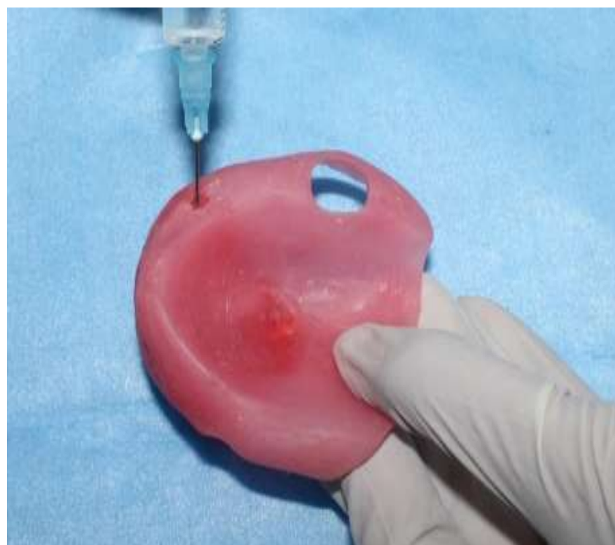
An obturator is defined as a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar/soft tissue structures (GPT-7); This prostheses is used for the rehabilitation of patients with any orofacial defects. The bulb, or part of prosthesis that extend into the defect are usuallymade hollow to reduce the weight of the prosthesis[5].There are various techniques to fabricate hollow bulb with incorporation of different materials, such as sugar, salt or ice, into the resin during the packing stage to produce a hollow bulb obturator [5].Cusil denture is indicated in cases with single standing or isolated teeth present in the dental arch which is meant to be preserved. They are not indicated for patients with large number of teeth evenly distributed across the dental arch. The silicone gasket has immense effect on retention and stability of dentures. In addition to this it gives the patient psychologic reassuarance of retaining the natural teeth as they were. Bone volume, vertical dimension and proprioception is maintained by retained natural teeth[2].Teeth arrangement was limited upto premolar region of tooth to eliminate deflective forces and enhance retention. The functional duration of soft liner used is short and is mostly for 3years. It needs frequent corrections if indicated . Cu-Sil obturator not only restores both function andesthetics but also enhanced self confidence in patient. Moreover it evaded the existing social stigma of the patients.

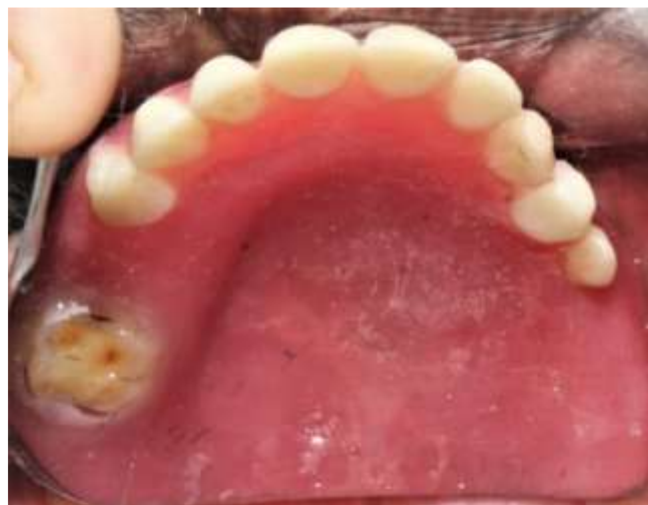
Conclusion:-

Cu-Sil denture retain natural teeth and maintain esthetics which is a boon for patients . Retaining natural teeth retains the bone and eliminate residual ridge resorption .Cu-Sil obturator contributes towards overall quality of life of the patient.

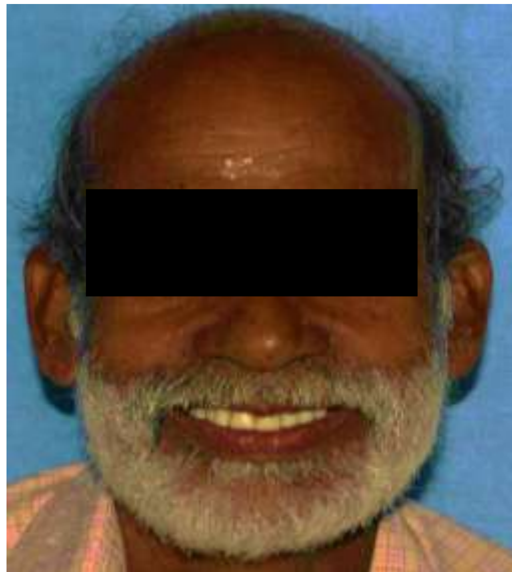
(**Figure 1:-** Pre Op Picture).


(**Figure 2:-** Intraoral Picture.)


(**Figure 3:-** Injecting hot waterinto obturator.)


(**Figure 4:-** Obtrurator in- situ.)

(**Figure 5:-** Hollow Cu-Sil obturator.)



(**Figure 6:-** Post Op Picture.)

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