

Case report:

Sustaining an obturator prosthesis with zygomatic suspension wires in a case of subtotal maxillectomy and insufficient ridge supported retention: A case report

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Abstract:

Purpose: For making denture in maxillectomy cases is very difficult and challenging to get the retention to make the denture stable in its position during functioning. This case report describes a clinical condition in which patient was treated with a maxillary obturator with zygomatic suspension wiring due to insufficient retention in the palate. **Materials and Methods:** A 63-year-old patient had gone to a subtotal maxillectomy because following myofibroblastic sarcoma and was issued with bilateral circum-zygomatic wiring hooks immediately after surgery. The patient had less than a third of their alveolar ridge remaining and did not provide sufficient retention on its own. The wires were used for the retention because natural retention could not get due to inadequate maxillary ridge. While the denture was being fabricated, a temporary feeding plate was provisioned to the patient. Counter hooks were implemented on the definitive upper denture, posterior to molars, to attach to the zygomatic suspension hook. Final upper denture was further reinforced with denture adhesive on it. A lower denture was also fabricated for the said case following conventional protocols of jaw relation determination. **Results:** The obturator provided with adequate seal and leak proof phonetics. The zygomatic wiring coupled with denture adhesive were sufficient to provide adequate retention. **Conclusion:** Zygomatic suspension wires coupled with counter hooked obturator prosthesis provide rehabilitation of patients with palatal defects with inadequate maxillary arch for retention. However long-term repeated use of such wires might expose the patient to secondary infections and should be kept in consideration **Clinical Significance:** Circum-zygomatic suspension wiring provide sufficient retention to sustain the upper obturator prosthesis in place. However, the retention was still inadequate, so denture adhesives were used to make it more stable.

Keyword: Maxillary obturator, Zygomatic hook, Retention, suspension wiring, palatal tumor, maxillofacial defect.

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Introduction:

In the case of palatal defects, after the surgical procedure prosthetic rehabilitation can be done by maxillary obturator. The initial function of the

obturator is to separate the oral cavity from the nasal cavity which will prevent fluid leakage into the nasal and hyper-nasal speech. This will in turn improve patients' mastication, swallowing, speech as

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well as aesthetic facial contour.¹ Proper retention is critical for successful outcome of these cases. The retention of the prosthesis depends on the residual intact tissues, height of alveolar ridge, size contour and lining mucosa of the defect and remaining undercuts. However in some cases where natural anatomical support is difficult to obtain because of any congenital defect or surgical procedure like maxillectomy, now a days for gaining this kind of retention naturally, artificial hooks, splint and arch bar can be adapted with the prosthesis to make it stable during functioning.²

This case report describes the maxillary obturator with a hook with previously placed zygomatic wires in the zygomatic process of temporal bone in both sides.

Case Presentation:

A 63-years-old Malay patient attended clinic for the construction of upper complete denture with lower partial denture. The patient was a known case of low grade myofibroblastic sarcoma who was treated with subtotal maxillectomy. A feeding plate was anchored post surgically with bilateral circum-zygomatic suspension wire hooks to facilitate physiologic functions otherwise hindered by the large palatal defect. (Figure: 1A,1B). A special tray was fabricated following primary alginate impression of both arches. Subsequent final impression was made with monophasic silicon impression material for the maxillary arch and alginate material for the mandibular arch. (Figure 1C,1D)

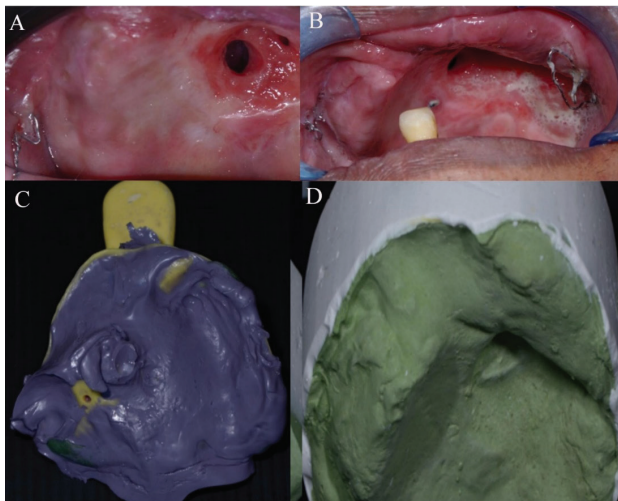


FIGURE 1:1A,1B Showing the intra oral condition of the patient along with the defects and circum-zygomatic wire and 1C,1D Showing primary impression with the diagnostic cast.

Maxillomandibular jaw relationship of the master

cast was obtained with bite block registration. After vertical dimension was established, the final bite blocks were secured in place by exabite (bite registration material from GC) in centric occlusion. (Figure 2)



FIGURE 2: Trial denture in patient's mouth.

Both the upper and lower definitive dentures were made with acrylic resin and counter-hooks were placed in the 1st molar region bilaterally of the upper denture. Although the lower denture fit was satisfactory, due to issues in the placement position, the counter hooks on the upper denture were re-positioned posterior to the molar teeth. Both the upper and lower definitive dentures were made with acrylic resin and counter-hooks were placed in the 1st molar region bilaterally of the upper denture. Although the lower denture fit was satisfactory, (Figure 3A,3B,3D) due to issues in the placement position, the counter hooks on the upper denture were re-positioned posterior to the molar teeth. (Figure 3C)

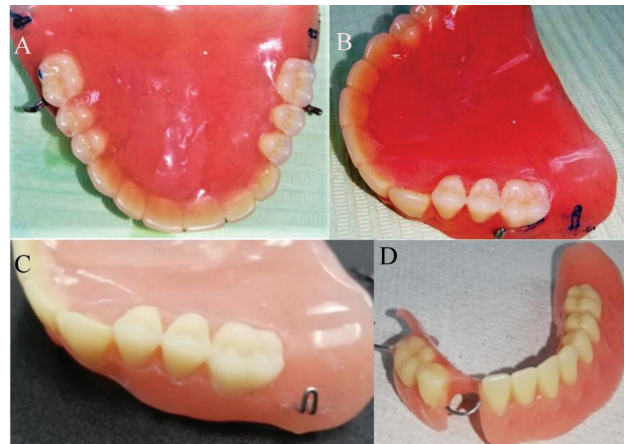


FIGURE 3:3A,3B Showing previous position of the hook and 3C Showing the reposition of the hook of upper acrylic denture with lower acrylic partial denture 3D.

Once satisfactory soft and hard tissue results were obtained, the patient was instructed to use denture adhesive for reinforced retention along with the zygomatic wiring. The patient was then kept under weekly follow-up which was later changed to monthly follow-ups. Patients before after picture is also showing his improvement of aesthetic. (FIGURE 4)



FIGURE 4: *The pictures showing clearly the utilization of the zygomatic wires and the before after condition of patient's aesthetic.*

Discussion:

Myofibroblast are spindle like mesenchymal cells which are found in the granulation tissues. These cells can also be found in granuloma, inflammatory pseudo tumors and many other benign and malignant soft tissue tumors.³ Sarcomas including myofibroblast can be high grade or low grade in nature

In this case report patient was previously treated with subtotal maxillectomy resulting in a large intra oral defect. For such cases, proper retention is not possible due to insufficient anatomical support to hold the prosthesis in place. Patient has potential inadequacy of retention and absence of soft tissue undercuts thus, bilateral circum-zygomatic suspension wires were placed. The method of suspension wiring has also been previously discussed for rehabilitation of huge defects.⁴ Taymour Shaker used mushroom like extension tag with the obturator for proper retention,⁵ while Pyne and Welton used latex rubber balloon with the denture.⁶ Other options like Metallic implants can also be constructed (Osseo integrated or Steinman pin) to serve the same purpose adequately.^{5, 7-9}

It must however be kept in consideration that suspension wiring is a surgical procedure and still

does not guarantee complete retention. It is also prone to long term infection in the events that the patient should have good oral hygiene.¹⁰ Aside from the obvious reasons, the feeding plate is necessary to keep food ingress into the antrum to a minimum so as to prevent secondary infections to a case already prone to infection around the zygomatic suspension wiring.⁵ Since even suspension wiring was not adequate and the obturator prosthesis was moving, adhesive was also prescribed for palatal application.¹¹

Upon two months follow up, patient's aesthetic and speech were excellent, and the patient adjusted to their new denture adequately. The patient is still under monthly follow-up with no further changes.

Conclusion:

Zygomatic suspension wires coupled with counter hooked obturator prosthesis provide a suitable option for rehabilitation for patients with palatal obturator defects with inadequate maxillary arch for retention. The clinician should however keep potential secondary infections in consideration. Palatal feeding plates should be provisioned prior to the delivery of definitive obturators. Denture adhesive should also be considered if retention is still inadequate.

Conflict of Interest : None

Author Contributions:

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