COBALT CHROME REMOVABLE PARTIAL MAXILLOFACIAL PROSTHESIS – A CASE REPORT.

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KEY WORDS: COBALT CHROME,MAXILLOFACIAL, PARTIAL, REMOVABLE, PROSTHESIS.

ABSTRACT

A maxillofacial dental prosthesis is a device constructed following a maxillofacial surgical procedure which leaves the patient partially or completely non-functional due to removal an integral part of their masticatory system. It aims at restoring function, esthetics and improve the overall social life of the patient to enable them live a healthful life even after surgery.

Such a prosthesis should achieve proper retention and stability despite the challenging anatomy after surgery if it is to be functional and comfortable. It therefore requires careful planning and execution.

INTRODUCTION

Presented in this report is the rehabilitation case of a young female patient who underwent a partial mandibulectomy for removal of an ossifying fibroma on her fourth quadrant.

Ossifying fibroma is a benign fibro-osseous lesion which presents as a painless, localized slow-growing, hard swelling of the jaw which radiographically is a well-defined radiolucency with a thin sclerotic margin containing irregular opaque masses.

It is diagnosed mainly in the third or fourth decades, mostly in the mandible and has a female predilection.

The surgery led to the patient losing the following teeth: 42,43,44,45,46,47 and 48. She had a plate and a graft from her iliac crest place in the area of surgery.

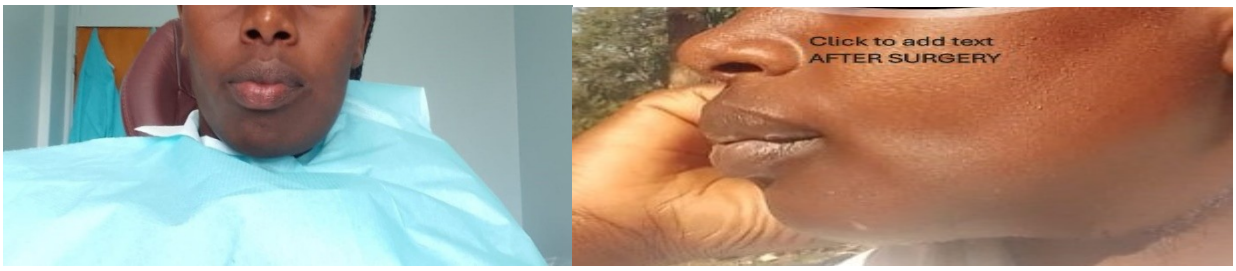

Fig 1: patient appearance before surgery (left) and after surgery (right)

FIG 2: patients OPG after removal of ossifying fibroma lesion on the fourth quadrant

This case posed a unique challenge of denture retention as the edentulous side had no alveolar ridge and no keratinized mucosa on which the denture base could sit without traumatizing the soft tissues.

TREATMENT PLAN AND EXECUTION

The patient had no any other restorative needs and we therefore proceeded to prosthetic treatment.

Fig 3: intraoral view of the patient after surgery

1. **PRIMARY IMPRESSION**

   Plastic perforated stock trays were disinfected with sodium hypochlorite. The patient was seated in an upright position and draped in a bib . Alginate was mixed in a rubber bowl with a

spatula to a medium consistency. The tray borders were adjusted with periphery wax to achieve a good periphery of the impression.

Maxillary impression - The tray was loaded and seated first at the postdam area then at the premaxilla area with medium finger pressure. The alginate was held in place with finger pressure while border moulding was done in the process. After setting , the impression was withdrawn carefully, washed under running water, disinfected and covered with a damp piece of gauze

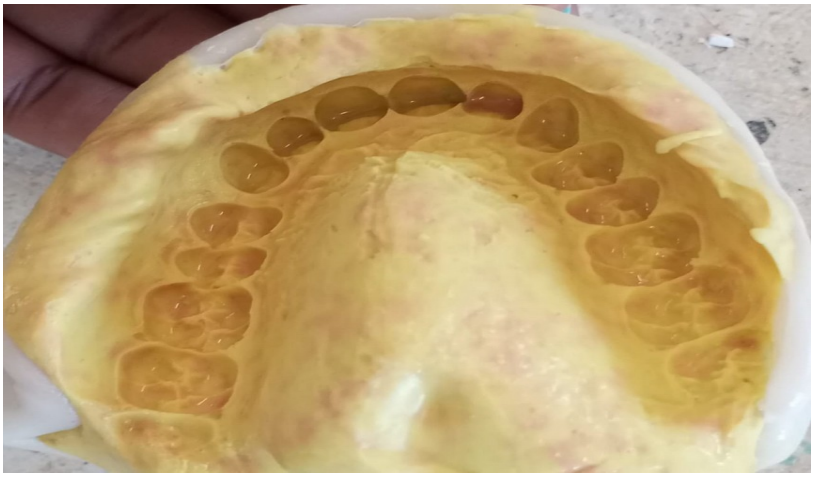

Fig :4 Maxillary primary impression taken in alginate.

Mandibular primary impression- The tray was loaded , seated and held in place with finger pressure. Border moulding was done on the facial side by the clinician while the patient was asked to mould the lingual border by moving her tongue from side to side. After setting, the tray was withdrawn and the impression washed under running water, disinfected and covered in a damp piece of gauze.

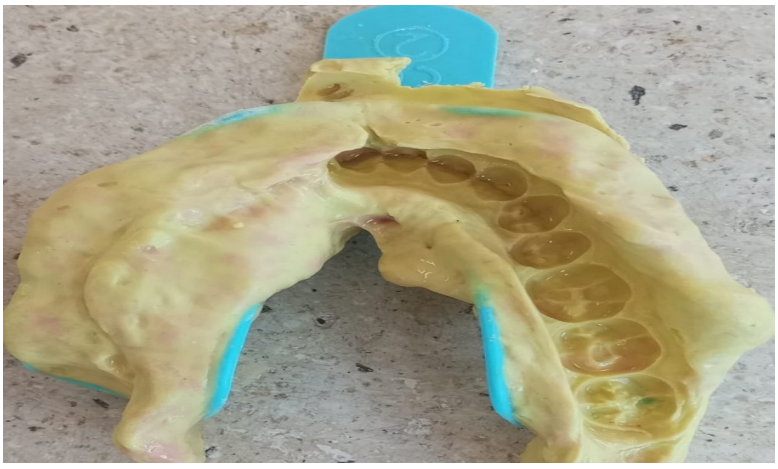

Fig 5: Mandibular primary impression taken in alginate.

2. **PRIMARY/DIAGNOSTIC CASTS**.

The impressions were poured in stone. The stone powder was mixed with water to a light consistency and poured into the impression placed on a vibrator to remove air bubbles. A thicker mix was used to base the cast. It was left to set for about two hours after which they were withdrawn and trimmed off.

Fig 6: Primary casts poured in stone.

3. SPECIAL TRAY FABRICATION

A special tray was done for the mandible only.
One sheet thickness of wax was placed on the edentulous area and two sheet thickness of wax was placed on the dentulous area. Undercuts were blocked with wax also.

Fig 7: Spacer wax on primary cast.

Cold cure acrylic polymer was mixed with its monomer until it was sandy. It was then allowed to mature through its sticky and stringy stages. At its doughy stage , it was rolled into a flat sheet and adapted onto the cast. The excess was used to make the handle. After setting, it was withdrawn and its periphery trimmed off 2mm from the depth of the sulcus on the cast.
It was then perforated to enable retention of the impression material.

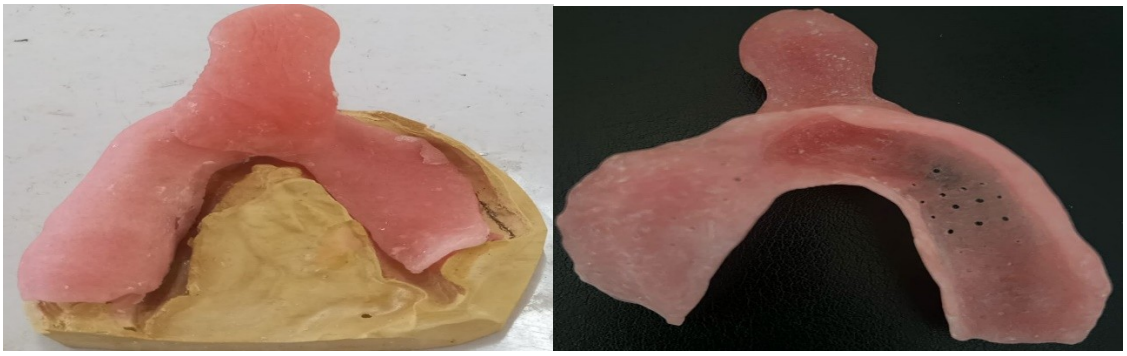

Fig 8: Special tray fit on primary cast (left). special tray after trimming off the periphery and perforation (right).

4. MOUTH PREPARATION FOR SECONDARY IMPRESSION.

Because of the challenge of retention on the edentulous side, the treatment plan involved aggressive clasping on the dentulous side so as to dissipate as much masticatory force as possible to the dentulous side.

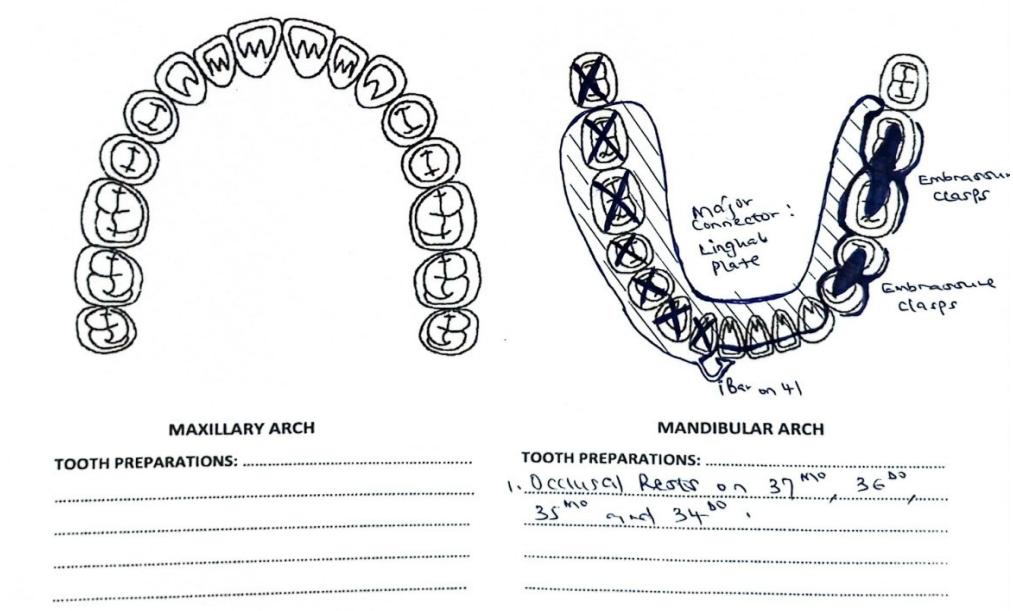

Fig 9: Partial denture design.

The rest seats were prepared on the 37 mesio-occlusal, 36 disto-occlusal, 35 mesio-occlusal and 34 disto-occlusal. These was done using a round carbide bur. The marginal ridges were lowered first , then the outlines were established. The rests prepared were saucer shaped.
Unlike conventional rest seats which cover 1/3 – 1/2 of the mesio-distal width of the tooth, the rest seats in this case covered about 3/4 of the mesio-distal width of the tooth in order to achieve maximum retention.

Fig 10: Rest seat preparation.

5. **SECONDARY IMPRESSION**.

The mandibular secondary impression was taken using condensation cured silicone using the simultaneous dual viscosity technique:

This procedure required use on non-latex gloves as latex would interfere with the setting of silicone.

The teeth were dried using a stream of air and dry cotton.

Light body silicone material was syringed around the teeth on which rest seats were prepared.

The putty was mixed with the catalyst and loaded quickly onto the special tray. The special tray was then seated over the light body and pressed with finger pressure and held in place for ten minutes to allow setting.

Failure to hold the impression in place with finger pressure during setting would result in a snap set that would cause inaccuracies.

The impression was withdrawn and inspected for details. It was then put in a safe container and sent for pouring.

A new maxillary impression was taken in alginate using a stock tray.

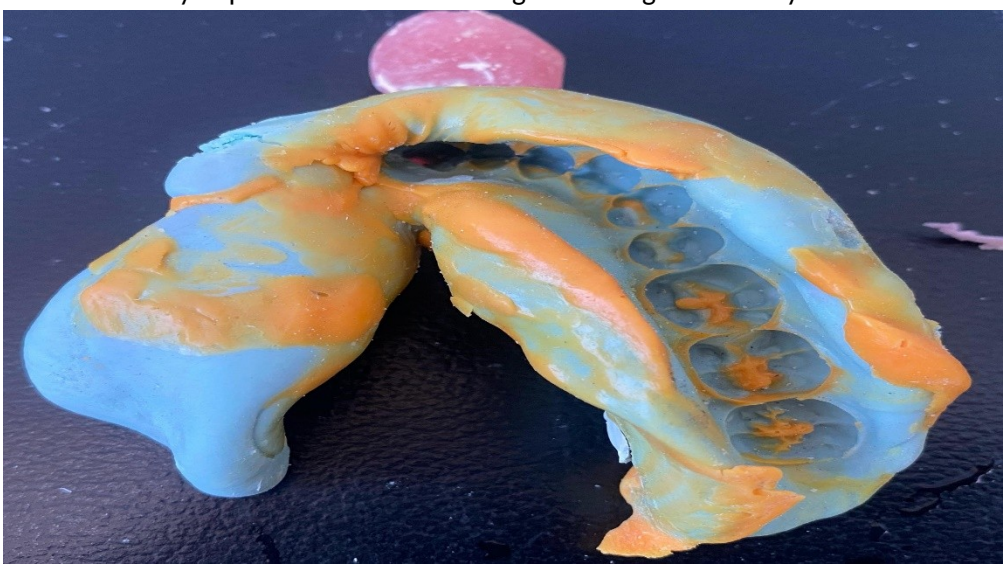

Fig 11: Secondary impression material taken in condensation cured silicone.

6. **SECONDARY CAST.**

The impressions were poured in dental stone .

Fig 12: maxillary secondary cast(left). mandibular secondary cast. Note the rest seats 34,35,36,37 (right)

7. WAX UP AND METAL CASTING

An outside dental laboratory was outsourced to process the denture.

8. METAL FRAMEWORK TRY IN.

The framework was tried in the patients mouth and it an accurate fit was established. The rests were adjusted by grinding with a football bur on a high speed handpiece to achieve proper centric occlusion on the dentate side as they raised the patients bit slightly.

Fig 13: Metal framework try in.

9. **BITE REGISTRATION RECORDS.**

The edentulous area was fitted with an occlusal rim and the patient was instructed to bite onto the wax to establish her occlusal records. The framework was then withdrawn and sent for setting of teeth. Shade A2 was chosen.

FIG 14: Bite registration record.

FIG 15: bite registration. Note the bite imprints on the wax

10. DENTURE TRY IN

After setting of teeth, the processed denture was tried both on the cast and in the mouth to check for accuracy of occlusion and ensure patient satisfaction.

Fig 16: denture try in on the cast

Fig 17s: denture try in, in the mouth

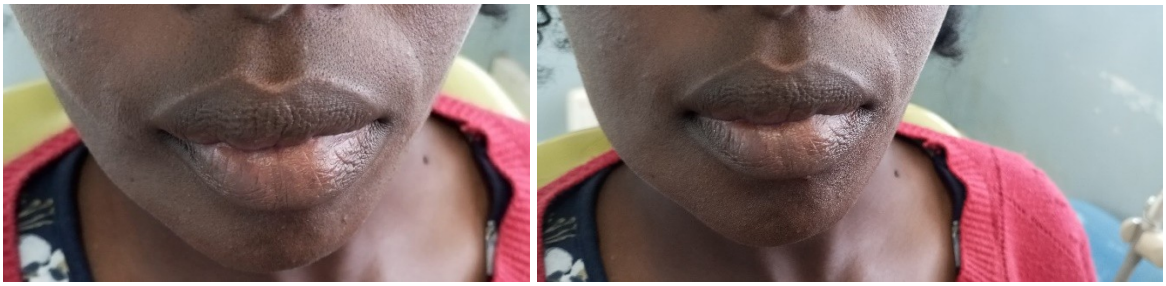

Fig 19: patient without denture (left) – note the deficiency of buccal fullness on her right side. patient with denture (right) – note the depression on her cheek disappears restoring her buccal fullness.

11. SOFT TISSUE RELINE

Since the patient has no ridge or keratinized mucosa to withtstand all the friction from the tissue surface of the denture, it was necessary to do a soft tissue reline on the fitting surface of the denture. This necessitated taking an impression using the Mclean and Hindel impression method in order to capture the tissues in their functional form.

The tissue surface of the acrylic part of the denture was covered with zinc oxide eugenol impression paste (base and catalyst mixed together) and the denture inserted and the patient was asked to bite for ten minutes. A stock tray was then used to take an impression over the denture using condensation cured silicone and allowed to set under finger pressure for ten minutes. The two were then withdrawn as a unit and sent for pouring.

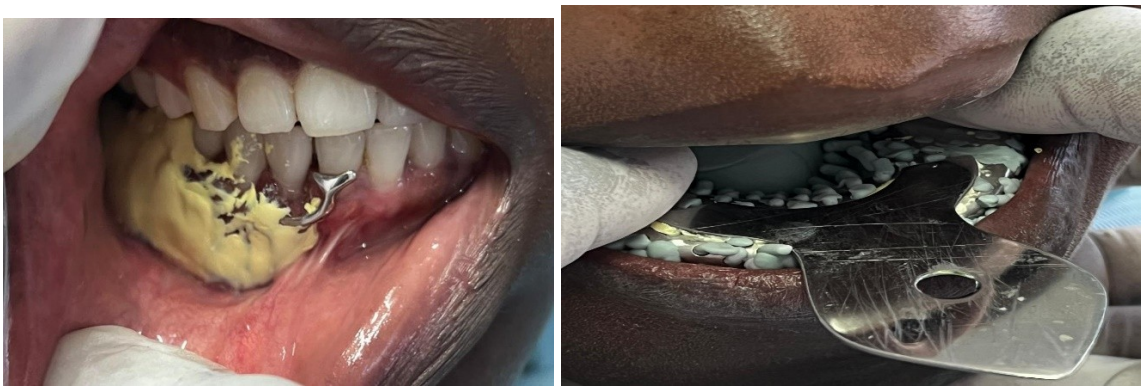

Fig 20: impression taken in zinc oxide eugenol using denture (left). An over impression taken in a stock tray using condensation cured silicone (right).

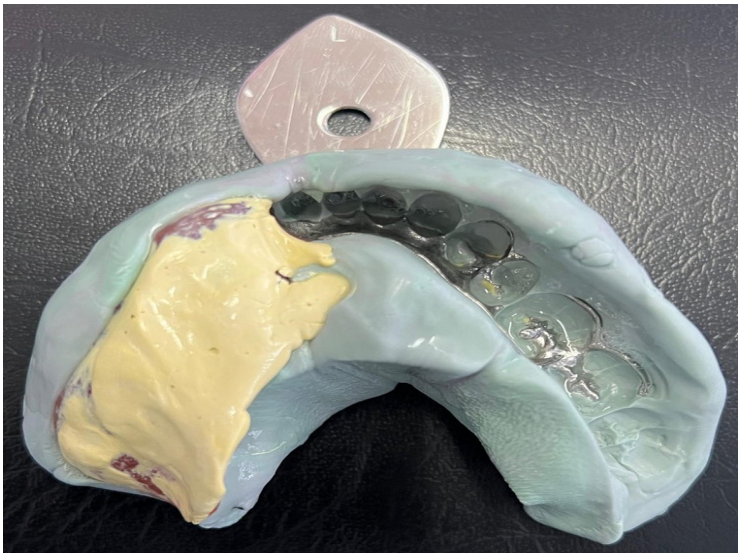

Fig 21: denture withdrawn together with silicone impression .