

Management of Partial Mandiblectomy using Nylon Denture Base Material: A Case Report

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ABSTRACT

Background: Nylon flexible Dentures have been used in Prosthodontics for Rehabilitation of Kennedy's Class III and short span Kennedy's Class IV cases. More recently Cast Partial Denture combined with Nylon clasps have also been incorporated for enhanced aesthetics. The present article describes the rehabilitation of a partially edentulous Mandiblectomy [Cantor and Curtis class I] patient with continuity defect, using polyamide denture base material.

Keywords: Polyamide Denture Base Material, Partial Mandiblectomy, Rehabilitation, Partial Removable Dental Prosthesis.

INTRODUCTION

Rehabilitation of Mandiblectomy patients is one of the most challenging prosthodontic treatment scenarios. Mandible, because of its peculiar physiological as well as anatomical constraints, is a less favourable bone for graft placement and bone regeneration. In most instances of resection, the bony support of the abutment teeth as well as the denture bearing foundation may also be compromised. Fixed Dental prosthesis as well as cast partial denture may not be a treatment option due to poor bone support as well as need for extensive mouth preparation. Nylon as a Partial Removable Dental Prosthetic material was first suggested by Watt DM¹ due to its superior aesthetics and comfort. This clinical report describes the rehabilitation of Partial Mandiblectomy using Nylon Denture base material,

incorporating rest like extension into occlusal rest recess of prepared Abutment.

CASE REPORT

Patient named Premananth 57 years male OP 20578 reported to Department of Prosthodontics St Gregorios Dental College with chief complaint of inability of chewing food with left side of Lower jaw. History revealed partial Mandiblectomy of superior border of mandible 32,33,34,35, 36 regions along with extraction of teeth due to ameloblastoma mandible 2 years back. Intra oral examination revealed missing teeth 32, 33, 33,34,35,36 on the left side with flabby tissue over the residual ridge, with ridge defect siebert's Class III². As the patient is not willing for any further invasive procedures, ridge augmentation using Grafts could not be implemented.

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Fig 1: Preoperative Photographs.

OPG as well as IOPA revealed poor bone support surrounding abutment tooth. In account of Antes law, fixed Dental prosthetic options are completely excluded. Andrews Bridge System³ also cannot be implemented due to poor bony support as well as the long span extends along the curvature of mandible.

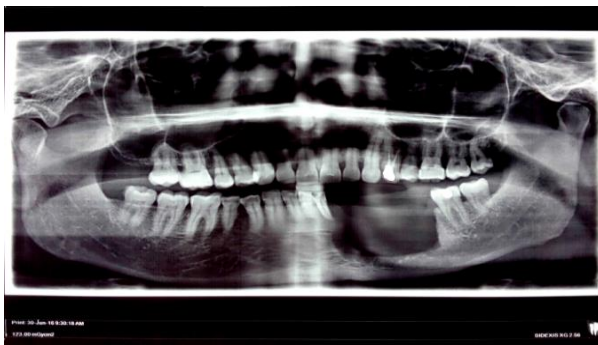


Fig 2: Orthopantomograph Showing Cantor And Curtis Class 1 Mandibular Defect.

Cast Partial denture treatment options are then considered for rehabilitation in this case. Extensive Mouth Preparation, chances of visible metallic clasp anteriorly, increased cost and increased time consumption, limits Cast Partial Denture as a treatment options for rehabilitation. Finally removable partial Dental Prosthesis with Nylon denture base Material is chosen as a treatment option for management.

I. Clinical Procedures

I.1) Preliminary impressions of Maxillary and Mandibular Arch were made using Irreversible hydrocolloid impression material.

I.2) Guide plane preparation is done by Enameloplasty on 31 and 37 using high speed rotary Japan as determined during surveying. This is followed by fluoride application.

I.3) occlusal rest seat preparation was done on 37, 38, 46 and, 47 using high speed rotary Japan as determined during surveying. This is also followed by fluoride application.

I.4) Secondary impressions were made using polyvinyl siloxane putty consistency and was lined using light bodied polyvinyl siloxane impression material.

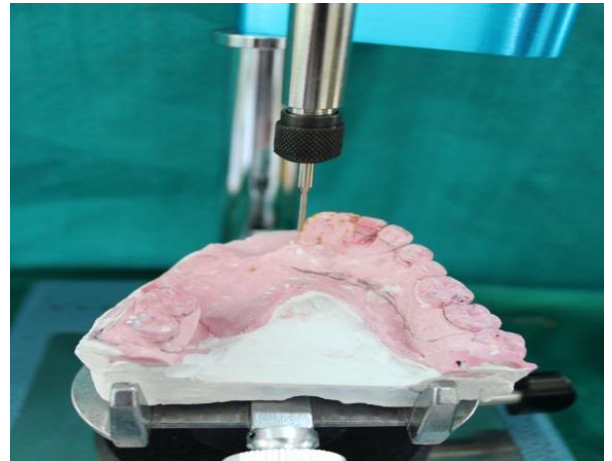


Fig 3: surveying of cast.

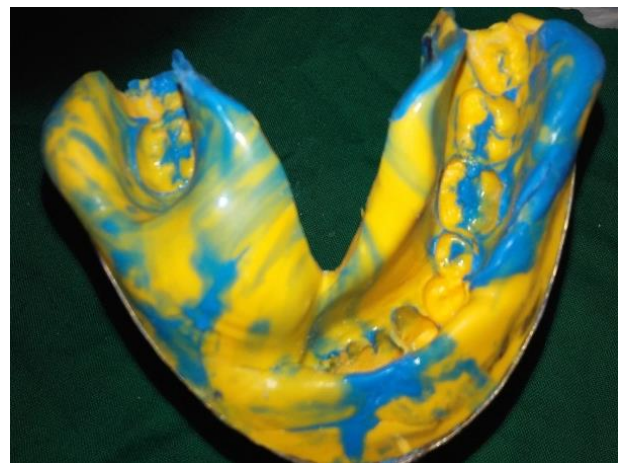


Fig 4: Final impression after prosthetic mouth preparation.

I.5) Face bow transfer was done and occlusal records were registered on temporary record base, and was transferred to Hanau Wide View articulator. Teeth selection was done.

I.6) Teeth arrangement and try in were completed waxed and processed. All interceptive occlusal contacts were eliminated.

I.7) Denture insertion was done, occlusal high points were marked and corrected accordingly. Post-operative oral hygiene instructions were given to the patient, patient reviewed after 24 hours.

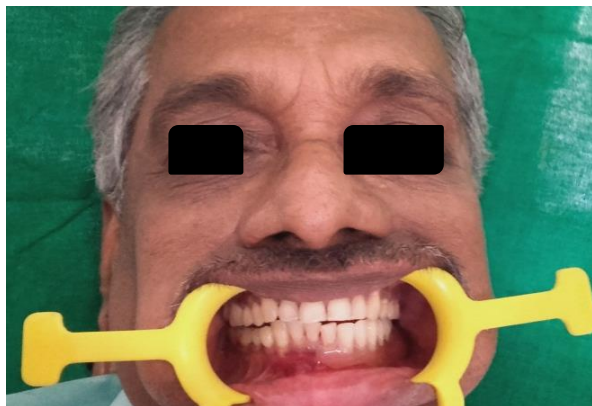


Fig 5a, b and c: Post-Operative Nylon Final Prosthesis.

II. Lab Procedures:

II. 1 Primary cast were articulated in Hanau Wide Vue Articulator and occlusal patterns were analysed.

II. 2 Primary Cast surveyed using Wills surveyor. Extension of the denture planned rest seat and guiding planes were determined. Tripoding done.

II. 3 Secondary Cast were tripoded in surveyor to reevaluate the prosthetic mouth preparation.

II. 4 Temporary Record bases were fabricated using Auto- polymerizing acrylic resin after application of Separating medium. Occlusal rims were fabricated using wax.

II. 5 Master Cast were articulated in Hanau wide Vue Articulator after transferring the occlusal registration. Teeth arrangements were done, extrinsic movements were replicated; Balancing contacts in affected side were totally eliminated.

II. 6 Trial Denture sent to lab for processing using polyamide Denture base material by incorporating rest extensions.

DISCUSSION

Polyamide Denture Base Material is one of the most promising Aesthetic Material, especially in Siebert Class III ridge defect and questionable abutment where surgical interventions are contraindicated. Nylon is extremely resistant to solvents, high heat resistance and high strength⁴. This material can be used in cases where denture show unexplained repeated fracture and allergy⁵. Nylon has got sufficient strength⁶ so that it can be used in compromised clinical scenario and rehabilitation of mandibular defects where other prosthetic options are contraindicated. Use of nylon also limits extensive mouth preparation, long clinical procedures without compromising aesthetics.

SUMMARY

Flexible dentures were found to be significantly better when compared to the conventional acrylic removable partial denture base material.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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