



The Long Journey to Avoid Removable Prosthesis in Edentulous Posterior Mandible

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INTRODUCTION

Dental implants have been documented as a highly successful option to support fixed restorations to replace single or multiple missing teeth in partially or fully edentulous patients.

However, patients with severely atrophic edentulous posterior mandibles with teeth missing for greater than 3-6 months, who desire dental implants to replace those teeth, present a challenge for successful implant placement. In these cases, vertical and horizontal bone is often deficient, and subsequently, there is a need for alveolar ridge augmentation procedures to achieve sufficient bone volume prior to dental implant placement. (4) These augmentation procedures include the use of bone and bone substitute grafts (autografts, allografts, xenografts or alloplastic graft materials), guided bone regeneration (GBR) techniques with the use of bone graft and barrier membranes, the use of biologics (Emdogain, Platelet-rich plasma (PRP), Platelet-derived growth factor (PDGF) and bone morphogenic protein (BMP)), onlay/inlay grafting, the alveolar ridge splitting/expansion technique, and distraction osteogenesis.

An additional treatment option for implant placement in these areas includes the transposition/lateralization of the IAN. However, this is a very complex technique that carries a high risk and potential complications.

An alternative treatment option is to place an implant lateral to the inferior alveolar nerve which may avoid alveolar ridge augmentation procedures. Presently, there are few studies regarding this alternative treatment option for the severely atrophic posterior mandible. Additionally, this option may require prior or concomitant bone augmentation procedures to enable the implant to be placed lateral to the IAN and Custom alveolar ridge splitting (CARS) technique.

The purpose of this report is to present and evaluate implant placement lateral to the IAN with CARS and robotic assisted surgery. The planning, technique, and limitations of using this protocol will also be discussed.

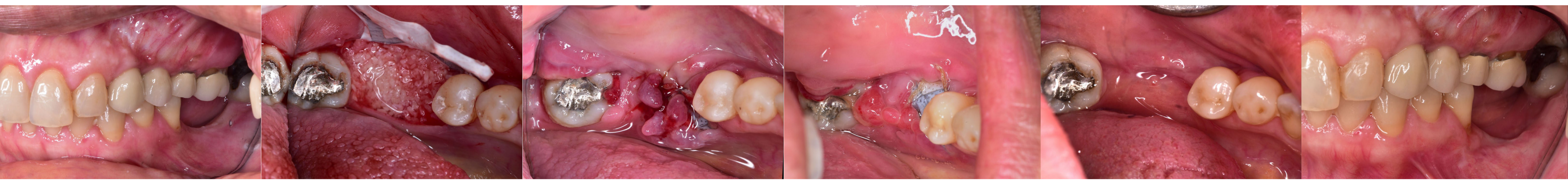
CASE REPORT

- Case 1. Conventional GBR and infection
- Case 2. Three stage ridge splitting technique
- Case 3. Implant placement lateral to inferior alveolar nerve (RPD to fixed restoration)
- Case 4. Custom alveolar ridge splitting (CARS) technique with xenograft

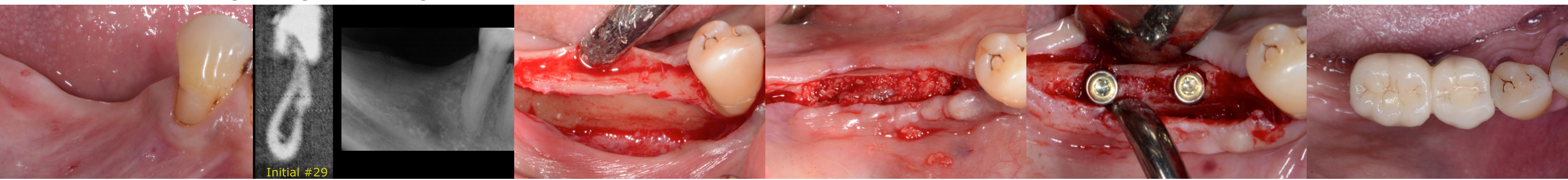
- Case 5. Implant placement lateral to inferior alveolar nerve with screw retained restoration
- Case 6. Implant placement lateral to inferior alveolar nerve with robotic assisted surgery

SEQUENCE OF PROCEDURE

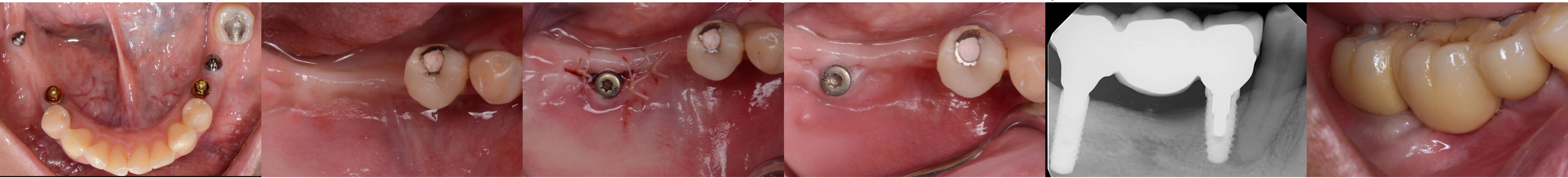
Case 1. Conventional GBR and infection



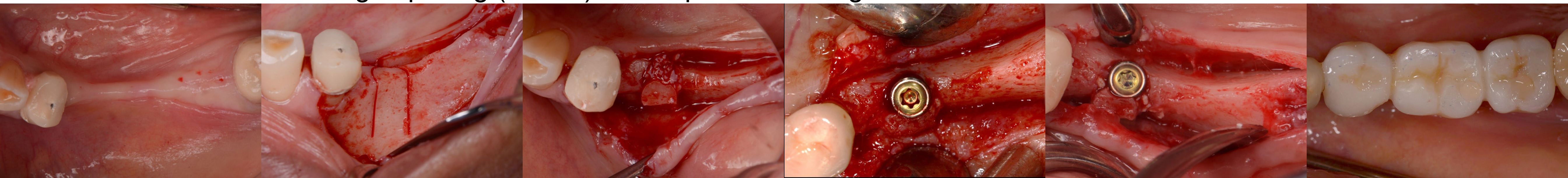
Case 2. Three stage ridge splitting technique



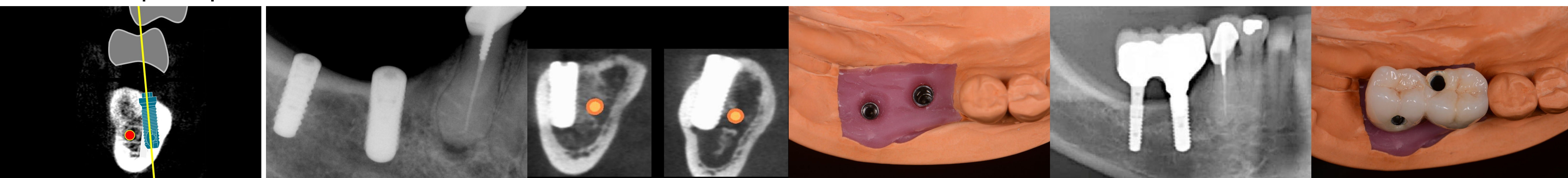
Case 3. Implant placement lateral to inferior alveolar nerve (RPD to fixed restoration)



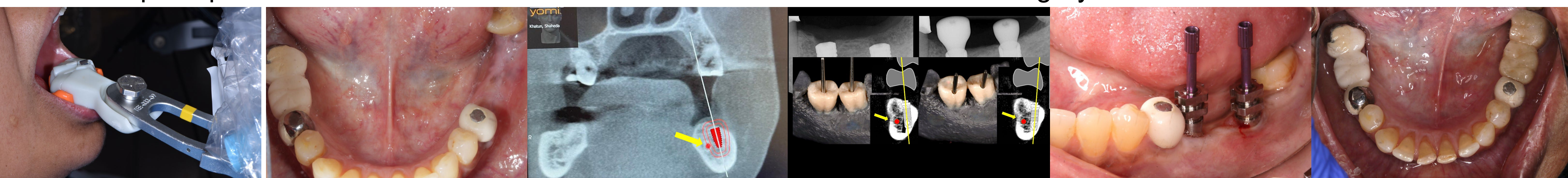
Case 4. Custom alveolar ridge splitting (CARS) technique with xenograft



Case 5. Implant placement lateral to inferior alveolar nerve with screw retained restoration



Case 6. Implant placement lateral to inferior alveolar nerve with robotic assisted surgery



CONCLUSION

The implant placement lateral to IAN technique is a viable treatment option in cases of severely atrophic posterior edentulous mandibles for patients who desired dental implants with a fixed prosthesis. The advantages of this technique include less trauma, surgical less time, implant placement without ridge augmentation (most of cases), and less postoperative complications. The limitations of the present technique include that the procedure is technique sensitive, an adequate thickness of the ridge is needed lateral to the inferior alveolar nerve prior to implant placement, and there is a risk of paresthesia. Where limited bone width existed, horizontal augmentation techniques (CARS technique and GBR) were used in this case series to increase bone volume lateral to the IAN. More research is needed to validate the results found in the current study and to compare the implant placement lateral to IAN procedure to others being used today.

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