

INTRODUCTION

Patients with atrophic posterior mandibles due to teeth missing for greater than 3-6 months and who desire dental implants to replace those teeth present a challenge for successful implant placement. In these cases, vertical and horizontal bone volume is reduced and subsequently there is a need for alveolar bone augmentation procedures to achieve enough bone volume for implant placement. Currently, there are a number of techniques used to increase alveolar bone height and width. However, each of them have potential complications and limitations. For the clinician, implant placement in the posterior mandible requires particular care because it is one of the most difficult sites for alveolar bone augmentation due to reduced blood supply and proximity to the inferior alveolar nerve (IAN).^{1,2} According to Daroz et al. 2013, only

in 28.33% of cases of posterior edentulous mandibles is it possible to place an implant buccal to the IAN.³ Recently, a customized alveolar ridge splitting (CARS) technique was introduced that results in increased width of the alveolar ridge and achieved sufficient horizontal bone for implant placement. Subsequently, more cases will be able to be done with implant placement lateral to the IAN. The purpose of this case series is to demonstrate the surgical technique and restorative considerations for implant placement lateral to the IAN in cases of atrophic edentulous posterior mandibles.

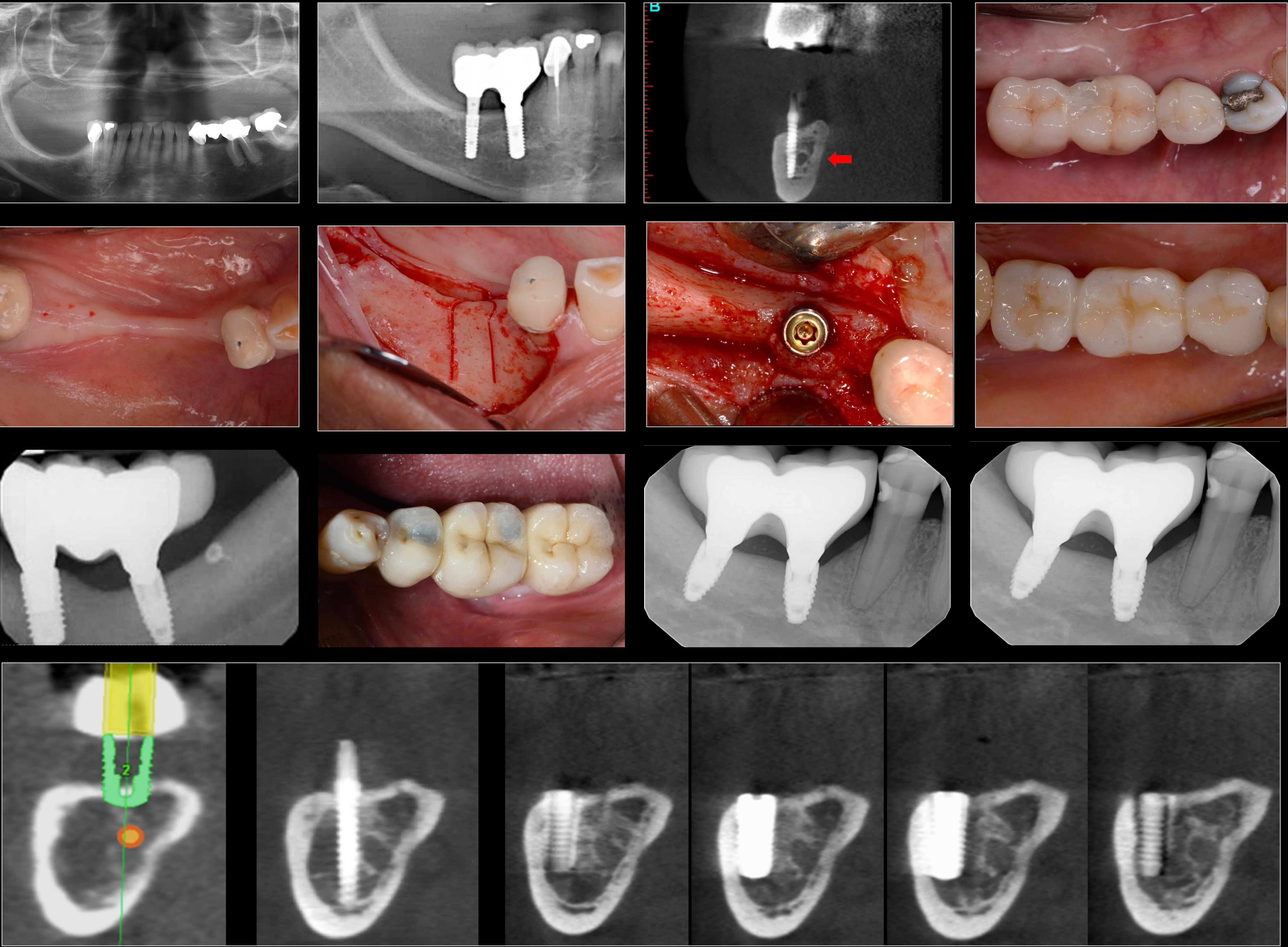
MATERIAL METHODS

Fourteen consecutive patients were selected for this treatment option. Selection criteria were patients who desired dental implants with a fixed prosthesis to replace their missing teeth and patient who had previous failed bone augmentation procedure or implant failure. Included patients were eight females and six males with a range age from 45 to 78 years old (mean age: 59 years old). In all cases implants were placed lateral to the IAN in a 2-stage approach and restored with screw retained fixed restoration. In 5 cases CARS technique was done 3 weeks before implant placement and in other 5 cases narrow implant was placed before.

Subjects	Age	Gender	Implant Site	CARS	Narrow Implant	3D Printed Simulation	Implant Information	Loading Time	Complications
1	65	M	#19	Yes	No	Yes	Straumann BLT 3.3x8	6 months	No
2	45	M	#30	Yes	No	Yes	Straumann BLT 3.3x8	6 months	No
3	45	F	#30 #31	No	Yes	No	EBI BL 3.3x10 EBI BL 3.3x10	6 years	No
4	60	F	#30 #31	No	Yes	No	EBI BL 4.1x10 EBI BL 3.3x10	4 years	No
5	50	M	#29 #30	No	Yes	No	EBI BL 4.1x10 EBI BL 3.3x10	6 years	No
6	65	M	#27 #28 #31	Yes	No	Yes	EBI BL 3.3x10 EBI BL 4.1x10 EBI BL 3.3x10	3 months	No
7	45	M	#19 #20	Yes	No	No	EBI BL 3.3x10 EBI BL 3.3x10	3 years	No
8	60	F	#30 #31	No	No	Yes	Straumann BL 3.3x10 Straumann BL 3.3x10	2 years	No
9	55	F	#20	No	No	Yes	Straumann BL 3.3x10	2 years	No
10	60	F	#19 #20	No	No	No	EBI BL 3.3x10 EBI BL 3.3x10	3 years	No
11	76	F	#28 #29 #31	Yes	No	Yes	Straumann BLT 3.3x12 Straumann BLT 3.3x10 Straumann BLT 3.3x10	1 years	No
12	78	M	#30	No	Yes	No	Straumann BL 3.3x10	5 years	No
13	55	F	#19	No	Yes	Yes	Intra-Lock 2.5x10	N/A	Replaced due to numbness
14	70	F	#30	No	No	No	EBI BL 3.3x10	3 years	Temporary Numbness

RESULTS

Twenty-five implants were placed in the posterior edentulous mandibles lateral to the IAN, however one of the implants needed to be removed due to patient numbness. Twenty-four implants were survived with an uneventful healing period and were restored with screw retained fixed restorations and followed-up for 3 months to 6 years after being in function.



CONCLUSION

Implant placement lateral to the IAN is a viable treatment option in cases of severely atrophic posterior edentulous mandibles as a last opportunity for patients who desired dental implants with a fixed prosthesis. Moreover, when the alveolar ridge width is not sufficient, the CARS technique allows to place the implant lateral to the IAN in more cases. Nevertheless, more research is needed to validate these results.

REFERENCES

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