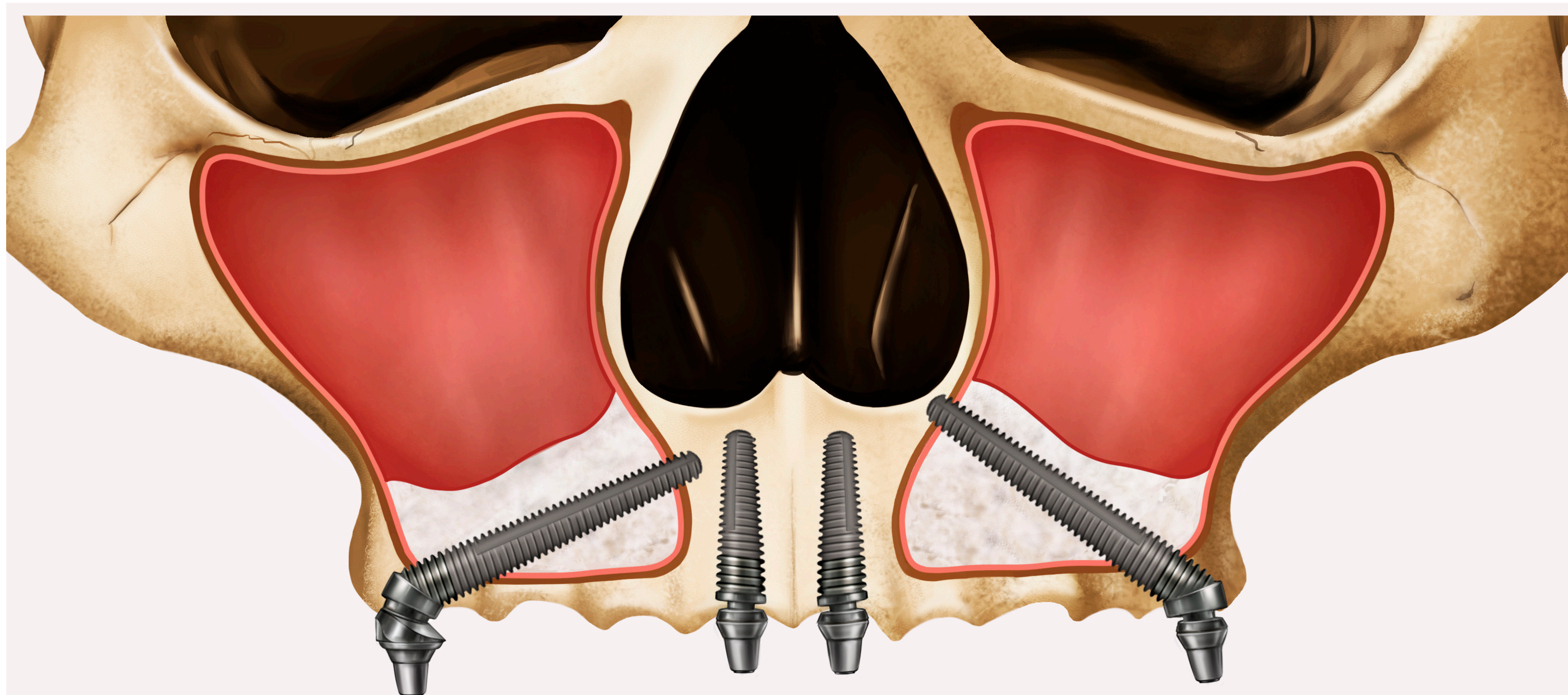


IMMEDIATE REHABILITATION OF THE SEVERELY ATROPHIC MAXILLA USING EXTENDED LENGTH SUBCRESTAL ANGULATED IMPLANTS

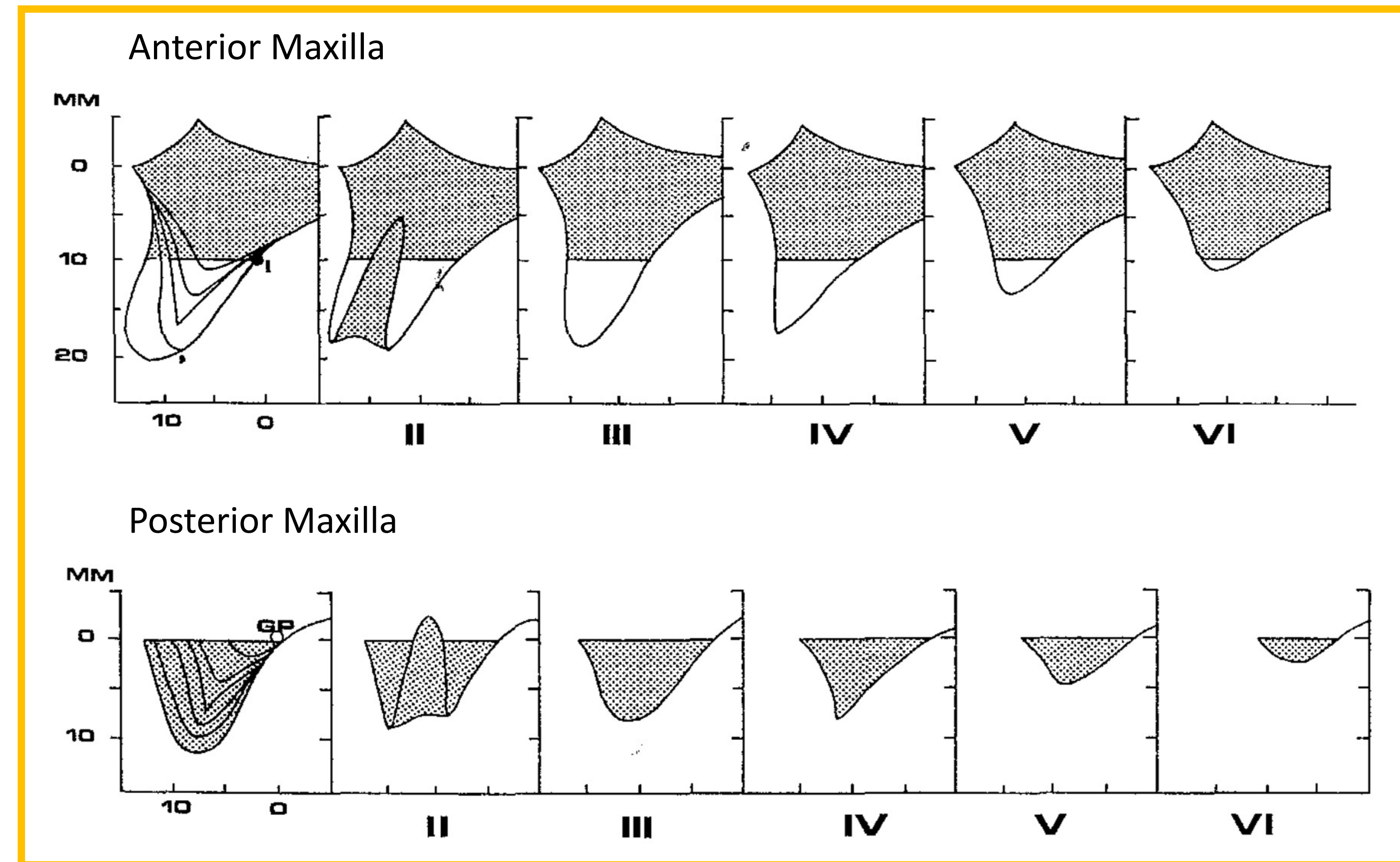


Clinical Outcome of Extended Length Sub-crestal Angulated (Nasal) Implants in Patients With a Severely Resorbed Maxilla: A 1-Year Retrospective Analysis of 187 Implants in 33 Patients

Presenters: Dr Michael Zaninovich & Dr Jan Dhaese

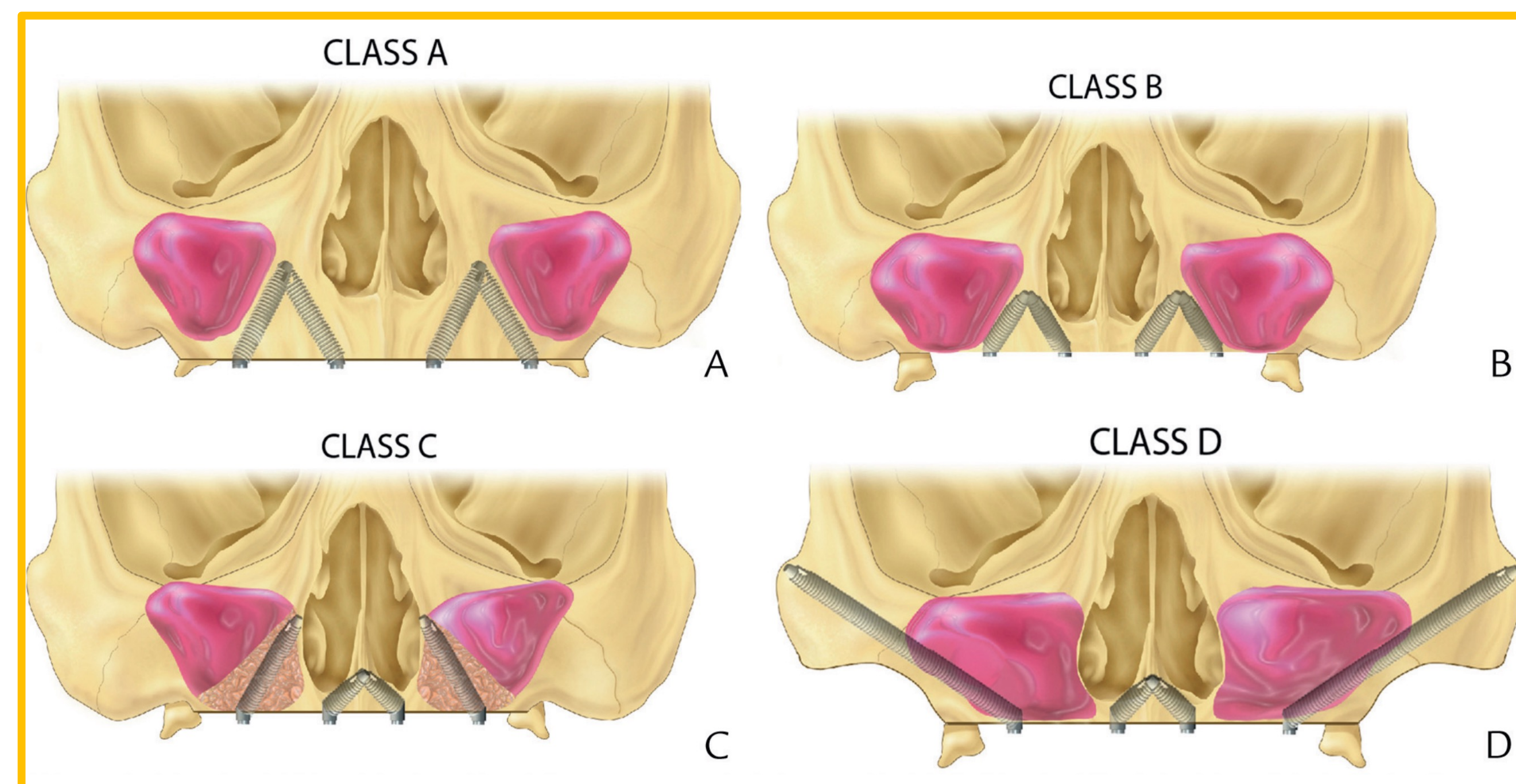
THE SEVERELY ATROPHIC MAXILLA

Cawood and Howell Classification. 1988



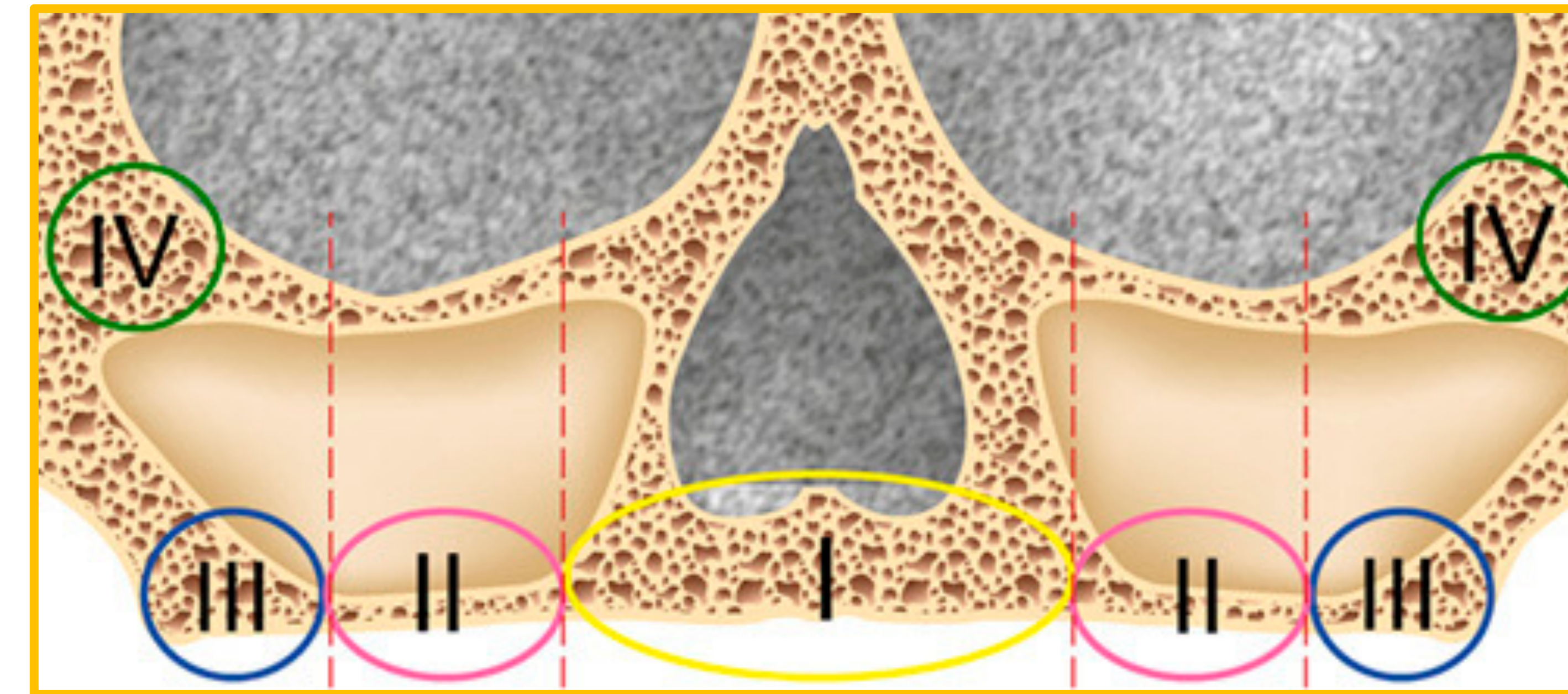
Composite diagrams of maxilla alveolar process shape changes

Jensen *et al*, Classification. 2015



Class C-prominent anterior sinus cavities, minimal bone posteriorly

Bedrossian Zone Classification, 1988



Zone I – premaxilla, Zone II – bicuspids, Zone III – molars, Zone IV – zygomatic process

ELSA Implants (Southern Implants, Irene)



Lengths: 18mm, 20mm, 22mm, 24mm, 26mm, 28mm.

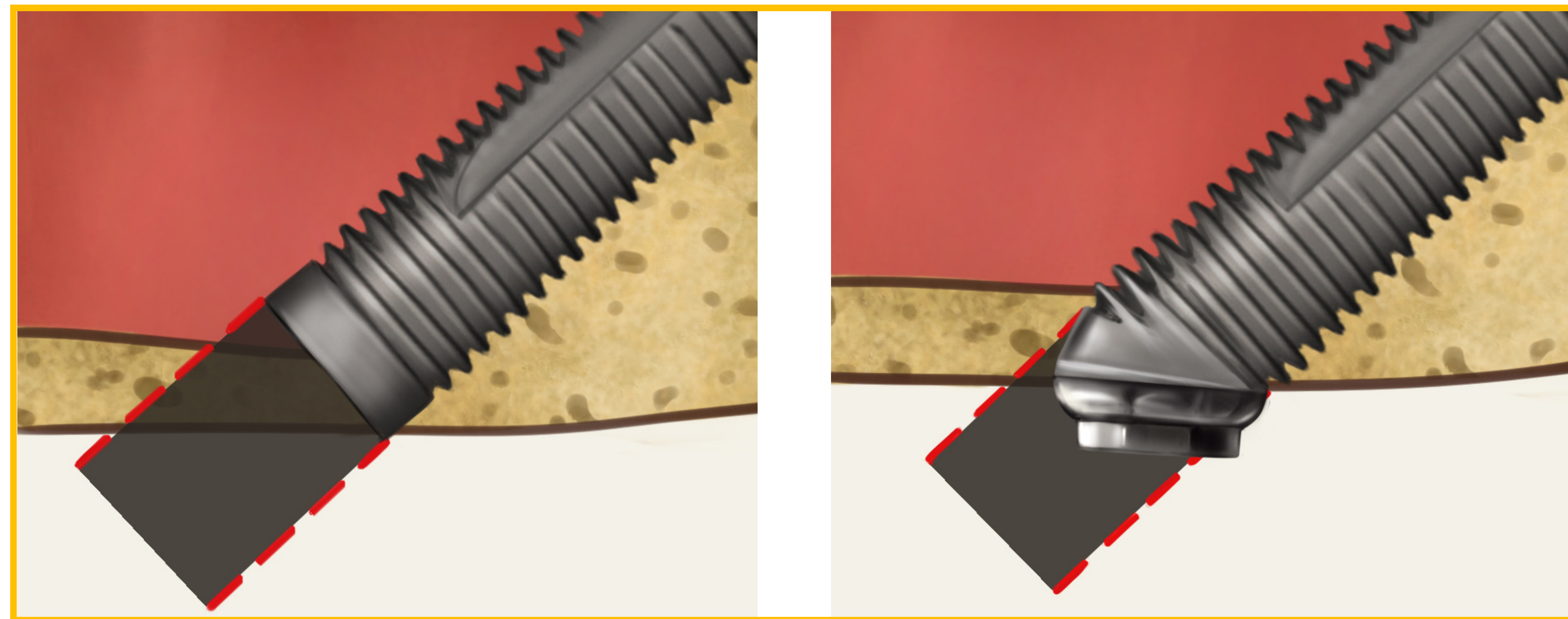
Subcrestal angle correction: 24° or 36°

Platform geometry: 3.25mm & 4mm diameter, 0.8mm height external hexagon

Extended Length Sub crestal Angulated (ELSA) Implants are an alternative to zygomatic and pterygoid implants for rehabilitation extending the use of tilted implants to immediately restore the severely atrophic maxilla.

(ELSA) EXTENDED LENGTH SUBCRESTAL ANGULATED IMPLANTS

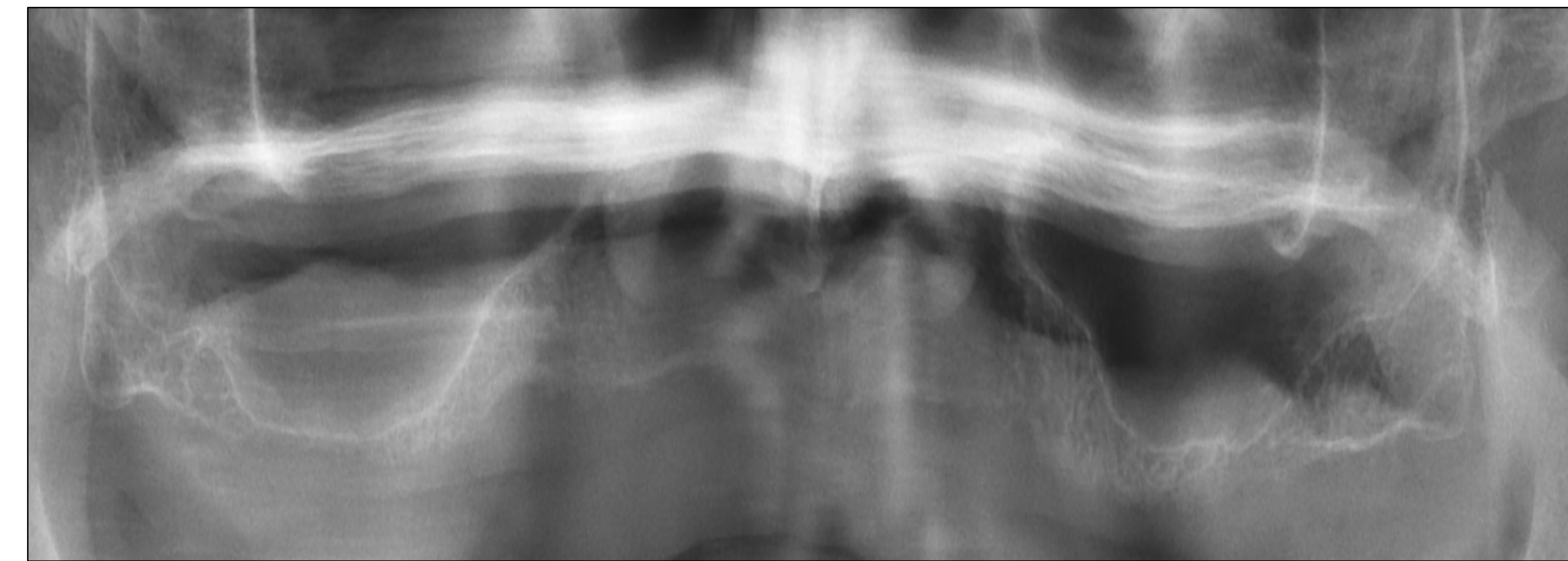
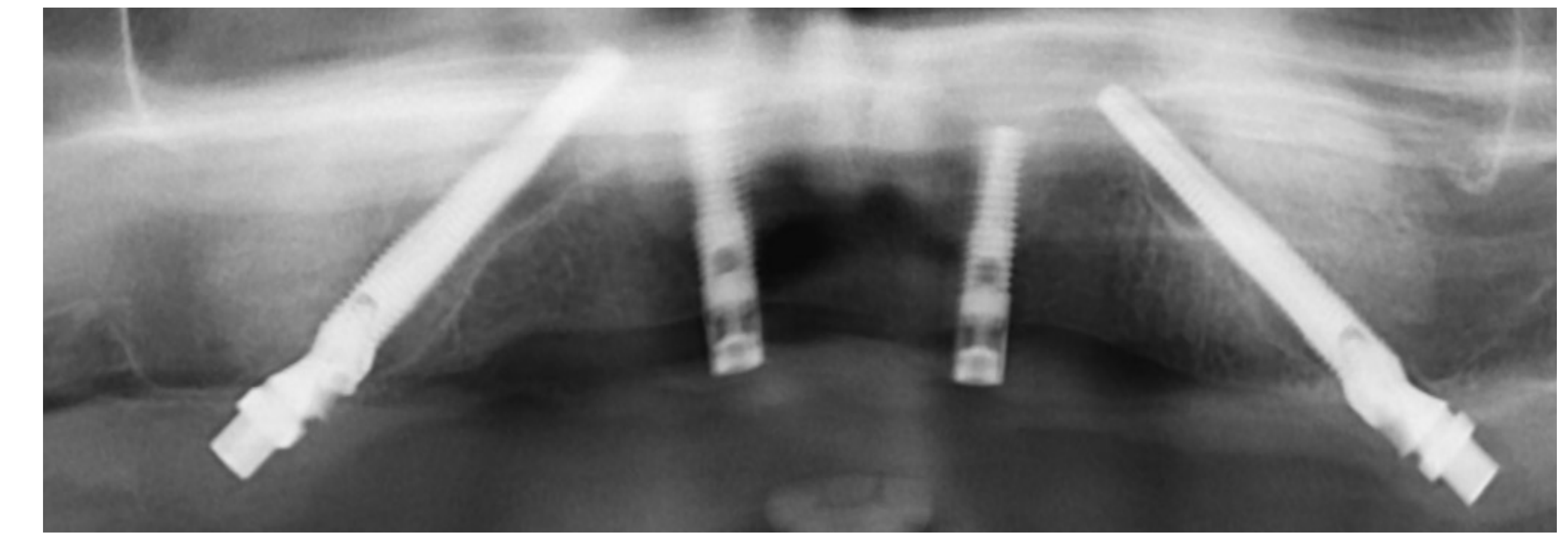
ELSA implants are specifically designed for distal tilting in full arch reconstruction and has superior benefits compared to tilting conventional implants



Subcrestal angle correction allows implant placement when crestal bone is 1mm thick

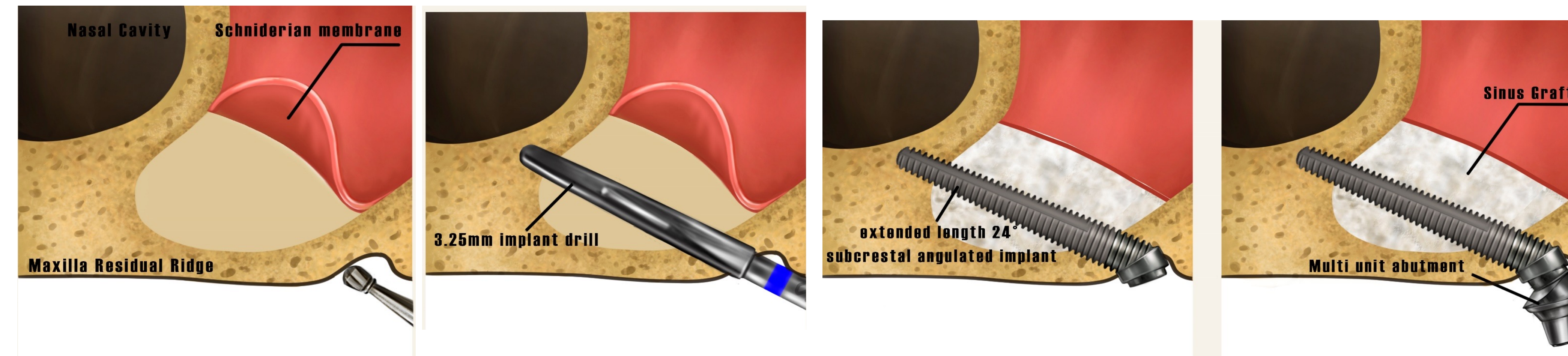
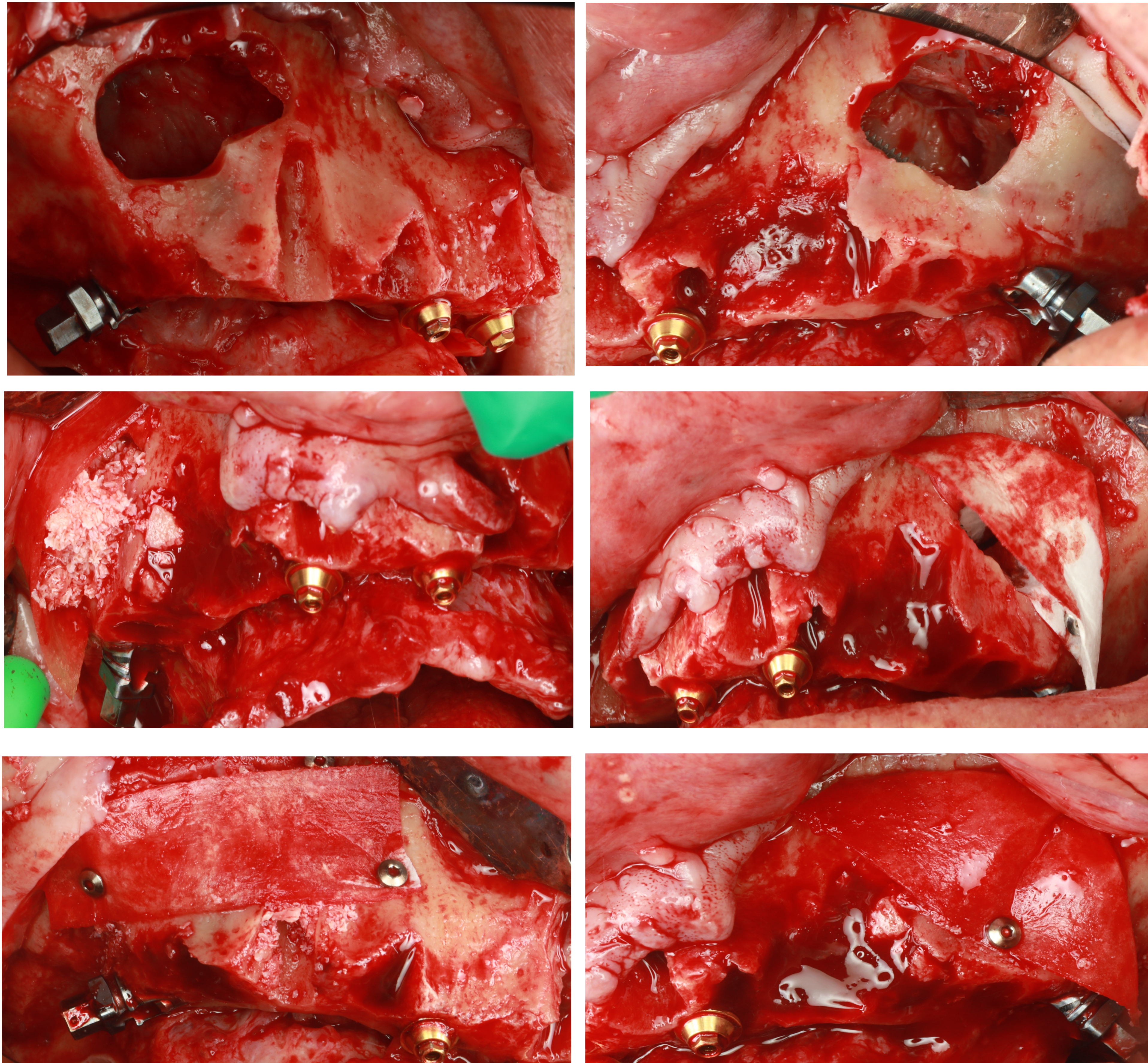
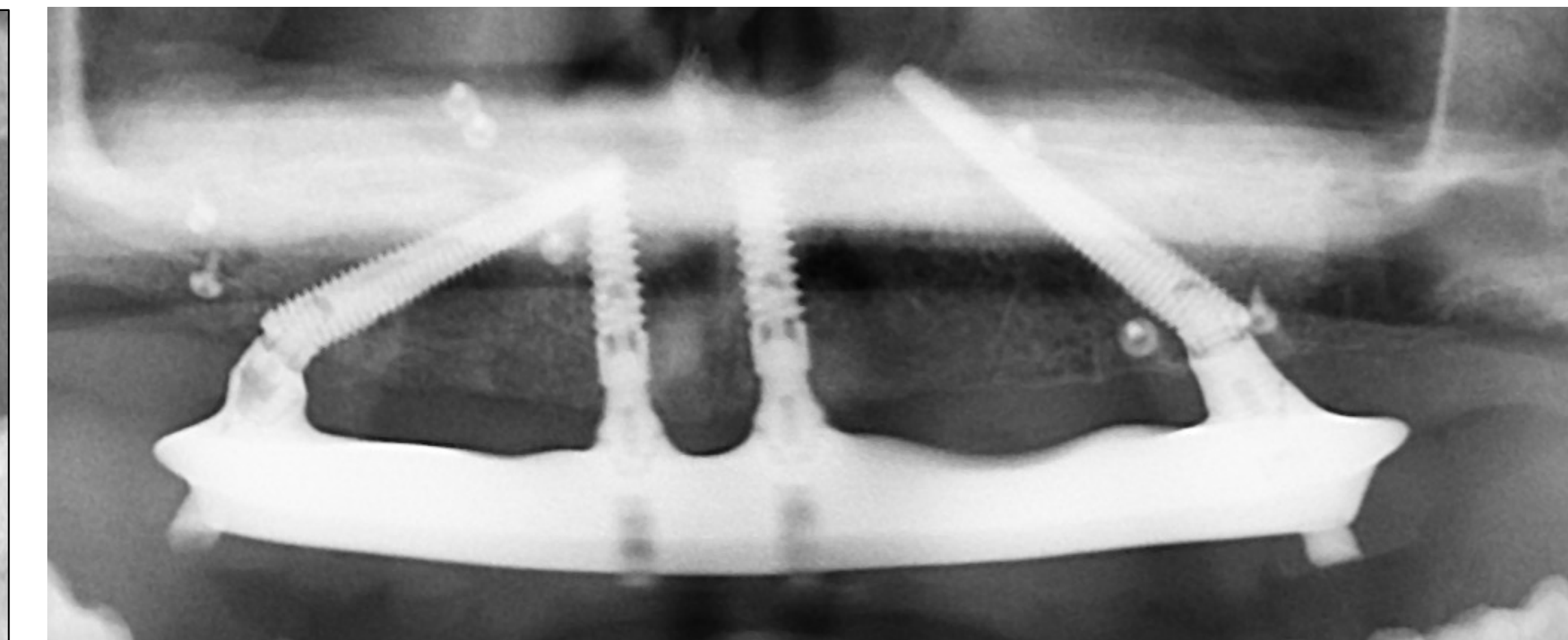
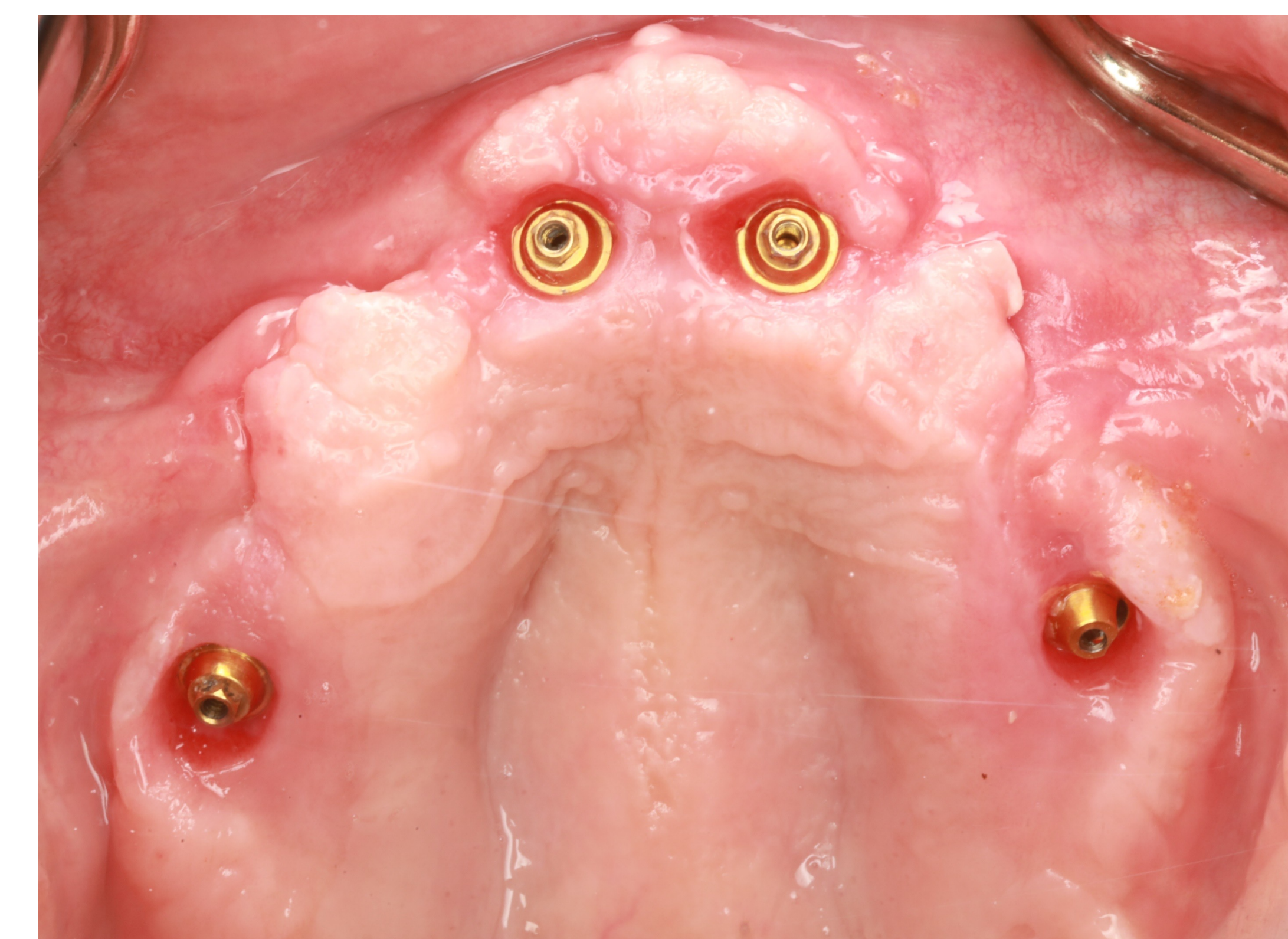
ELSA implants inclusion criteria:

- Pneumatization of maxillary sinus with extension into lateral incisor or canine region
- Inability to achieve adequate anteroposterior spread without grafting procedures



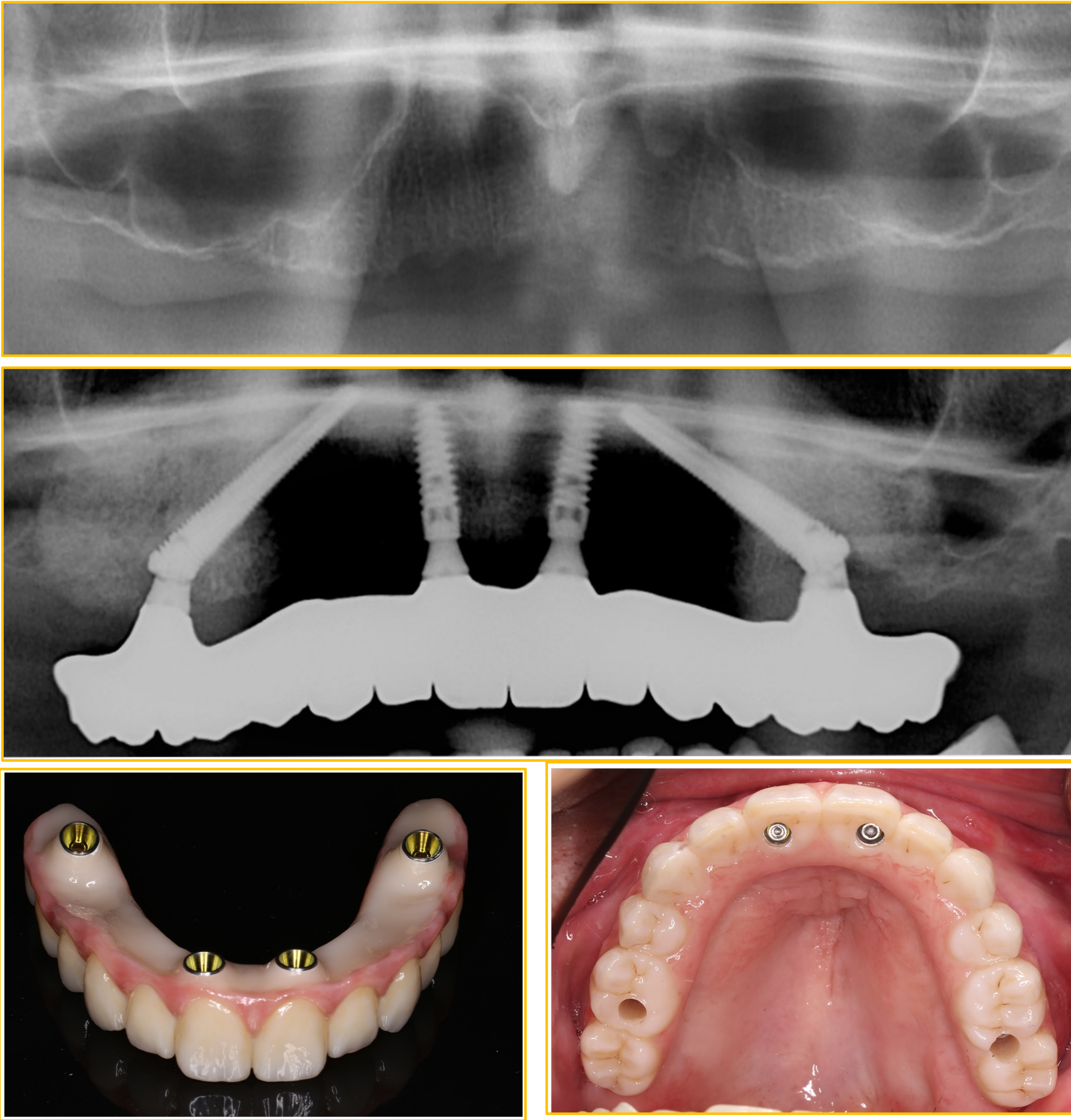
ELSA implants placed using trans-sinus approach engage posterior cortical crest, anterior maxilla alveolar process and nasal wall for tricortical anchorage for immediate loading

ELSA IMPLANTS + TRANS-SINUS NASAL PROTOCOL

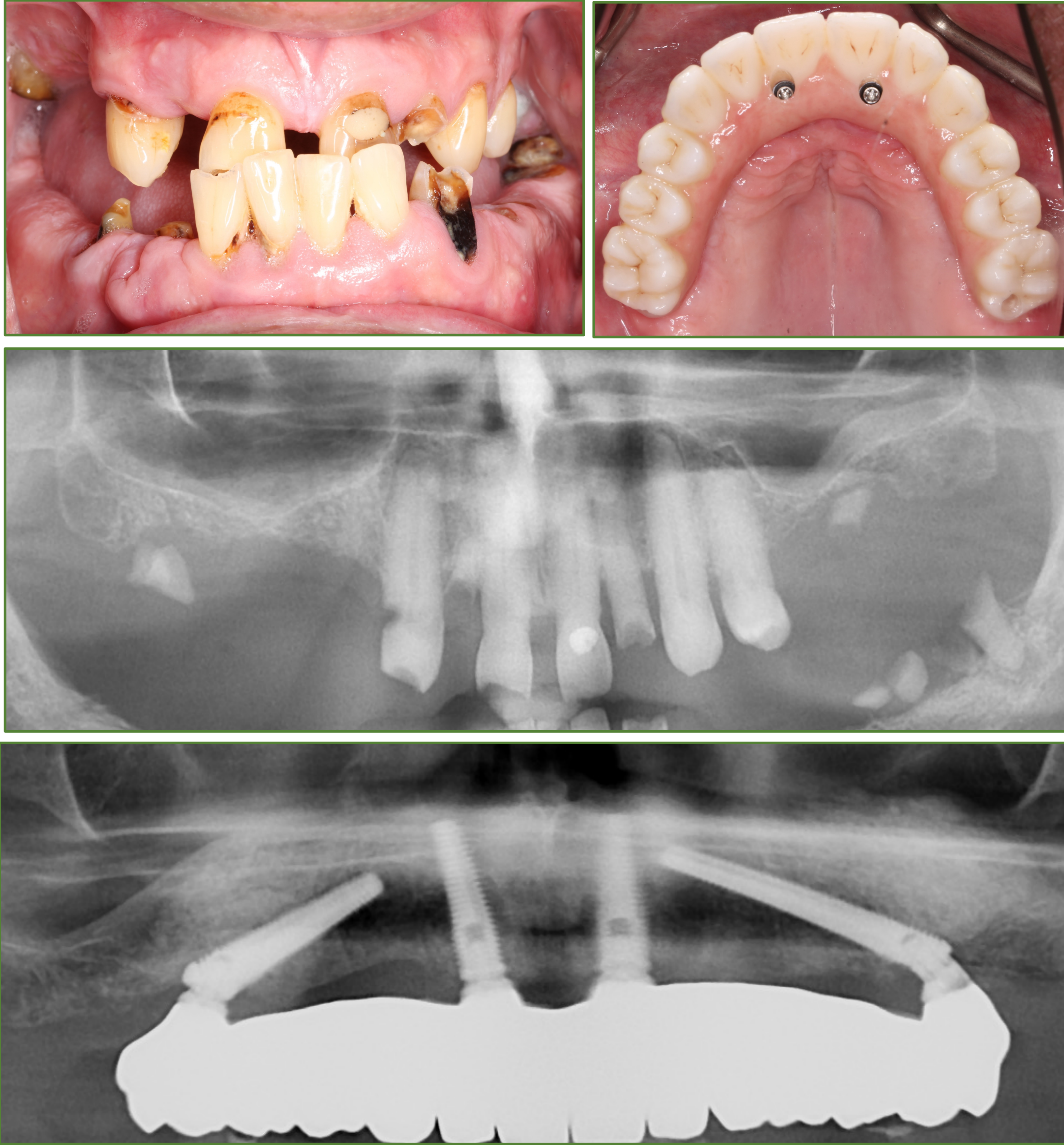


REHABILITATION OF SEVERELY ATROPHIC MAXILLA + ELSA IMPLANTS

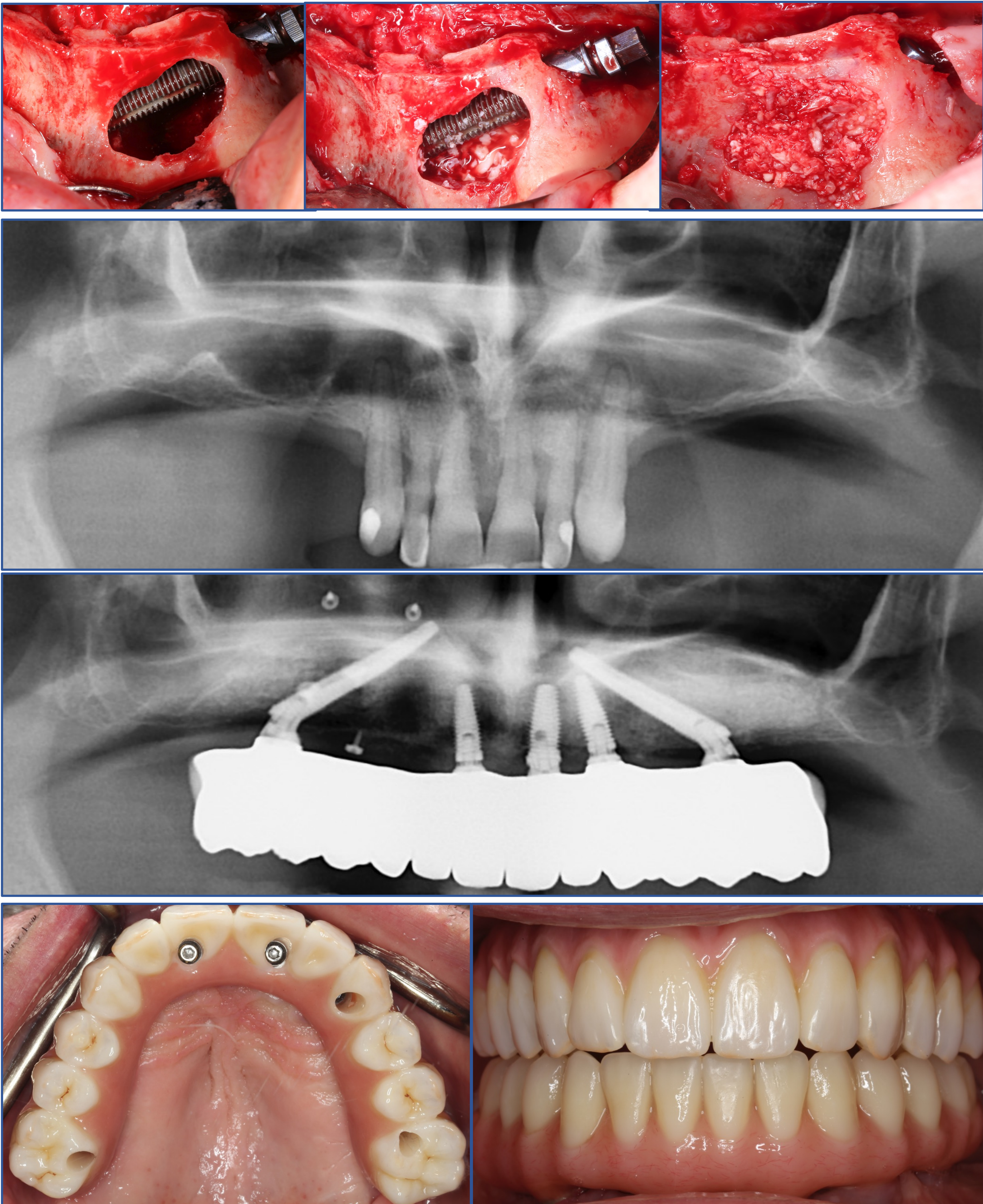
Case 1



Case 2



Case 3



References

1. Jensen OT, Complete arch site classification for all-on-4 immediate function. Journal of Prosthetic Dentistry, 2014. 112: p. 741-751.
2. Cawood JJ and H. RA., A classification of the edentulous jaws. Int J Oral Maxillofac Surg, 1988. 17: p. 232-6.
3. Jensen OT, et al., Trans-sinus dental implants, bone morphogenetic protein 2, and immediate function for All-on-4 treatment of severe maxillary atrophy. . J Oral Maxillofac Surg, 2012. 70: p. 141-148.

Clinical Outcome of Extended Length Subcrestal Angulated (ELSA) Implants in Patients With a Severely Resorbed Maxilla: A 1-Year Retrospective Analysis of 187 Implants in 33 Patients

Table 3. Total number of implants per patient (N) at the different follow-up periods including the average number per patient (N) with its standard deviation (SD).

	Total	Conventional	ELSA (total)
Number of implants			
- 12 months	187	61.0% (114)	39.0% (73)
- 24 months	73	54.8% (40)	45.2% (33)
- 36 months	49	57.1% (28)	42.9% (21)

Table 4. Loading protocols [immediate/early/conventional/delayed] used for the implants after placement (%/Ntotal implants)

	Total number of implants (N=187)	Conventional implants (N=114)	ELSA implants (N=73)
Immediate loading <72h	84 (44.9%/187)	52 (45.6%/114)	32 (43.8%/73)
Early loading 72h-2 months	53 (28.3%/187)	33 (28.9%/114)	20 (27.4%/73)
Conventional loading 2-4 months	19 (10.2%/187)	14 (12.3%/114)	5 (6.8%/73)
Delayed loading >4 months	31 (16.6%/187)	24 (21.1%/114)	7 (9.6%/73)

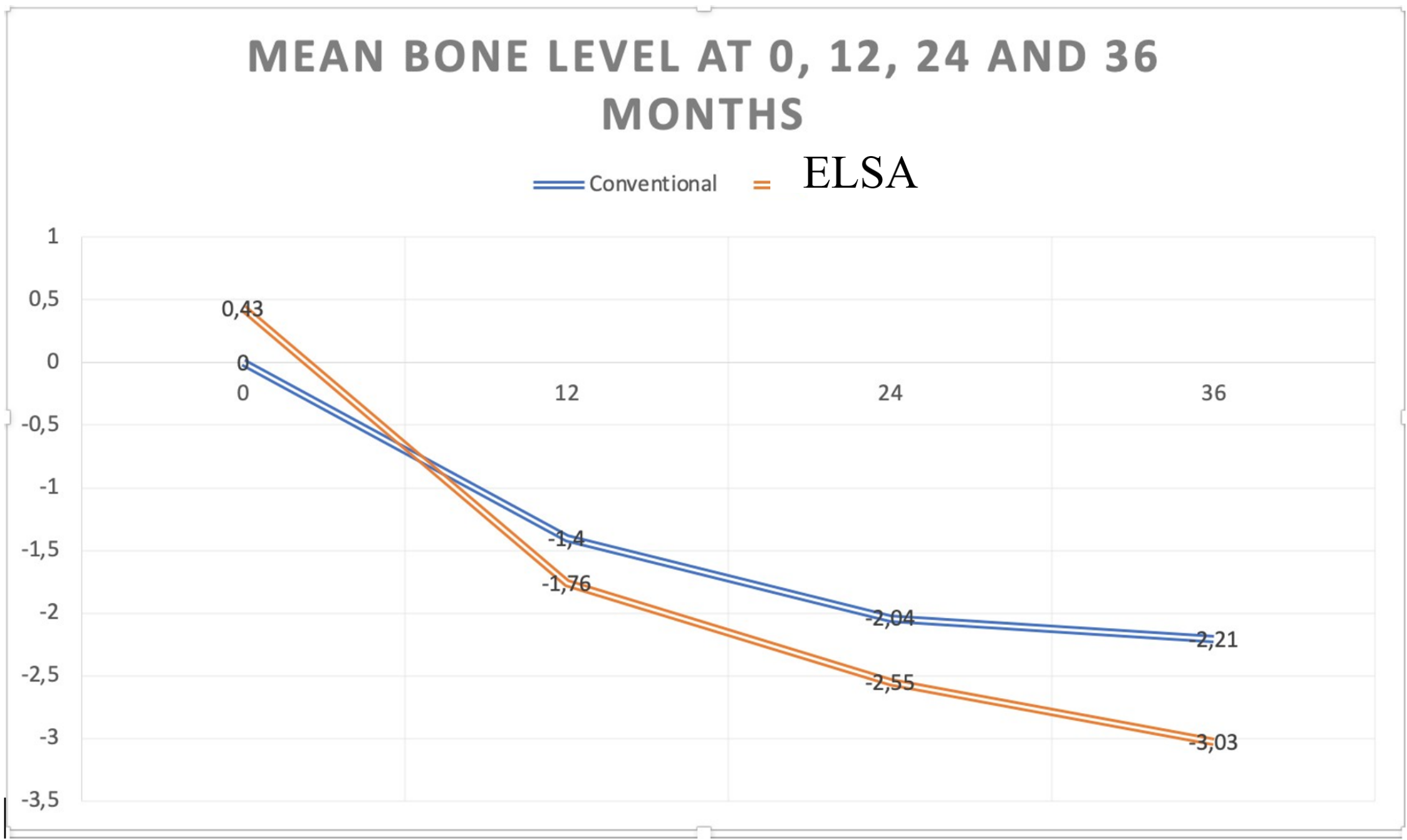


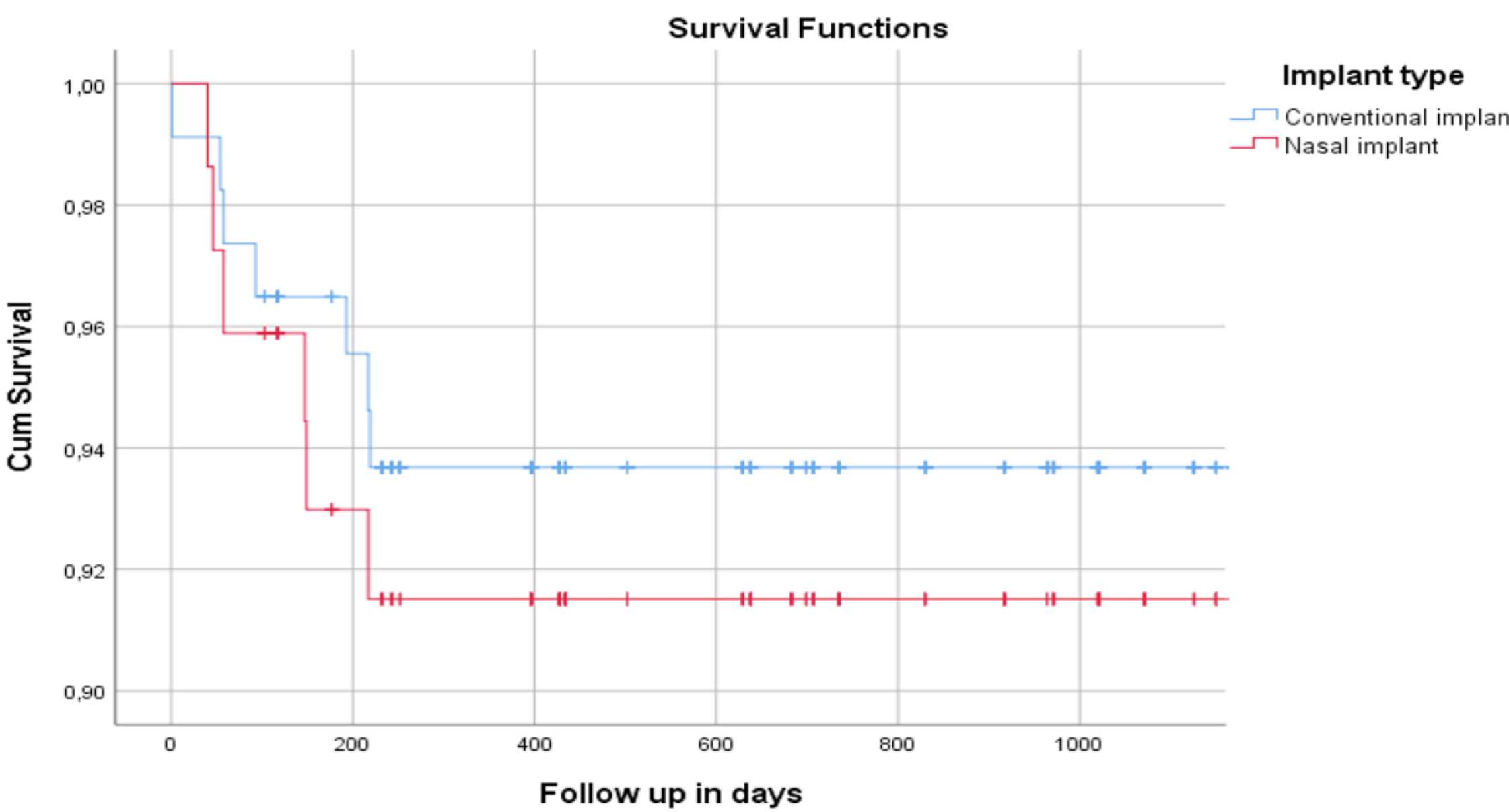
Figure 12. Mean bone level of the conventional implants and nasalus implants 0, 12, 24 and 36 months.

Table 5. Representation of the total number of implants placed per subgroup including the survival rate at 12 months. ELSA values are marked with a *.

	Implant placed	Implant failure	Survival rate (%)
12 months			
Total implants	187	13	93.0
- Conventional	114	7	93.9
- Nasalus	73	6	91.8
Region			
- Anterior	94	5	94.7
- Posterior	93	8	91.4
Original implants	176	9	94.9*
Replaced implants	11	4	63.6*
Loading protocol			
- Immediate	84	7	91.7
- Early	53	3	94.3
- Conventional	19	2	89.5
- Delayed	31	1	96.8
Gender			
- Male	128	12	90.6*
- Female	59	1	98.3*
Smoking			
- Yes	52	4	92.3
- No	95	6	93.7
- Ex-smoking	40	3	92.5
Bruxism			
- Yes	89	9	89.9*
- No	72	1	98.6*
- Unknown	26	3	88.5*
Diabetes			
- Yes	33	4	84.9
- No	154	9	94.2
History of periodontitis			
- Yes	129	9	93.0
- No	5	0	100
- Unknown	53	4	92.5

3.2.4 Kaplan Meier

Figure 10. Kaplan Meier presentation of the cumulative survival of the conventional and nasalus implants during a total follow up of 36 months.



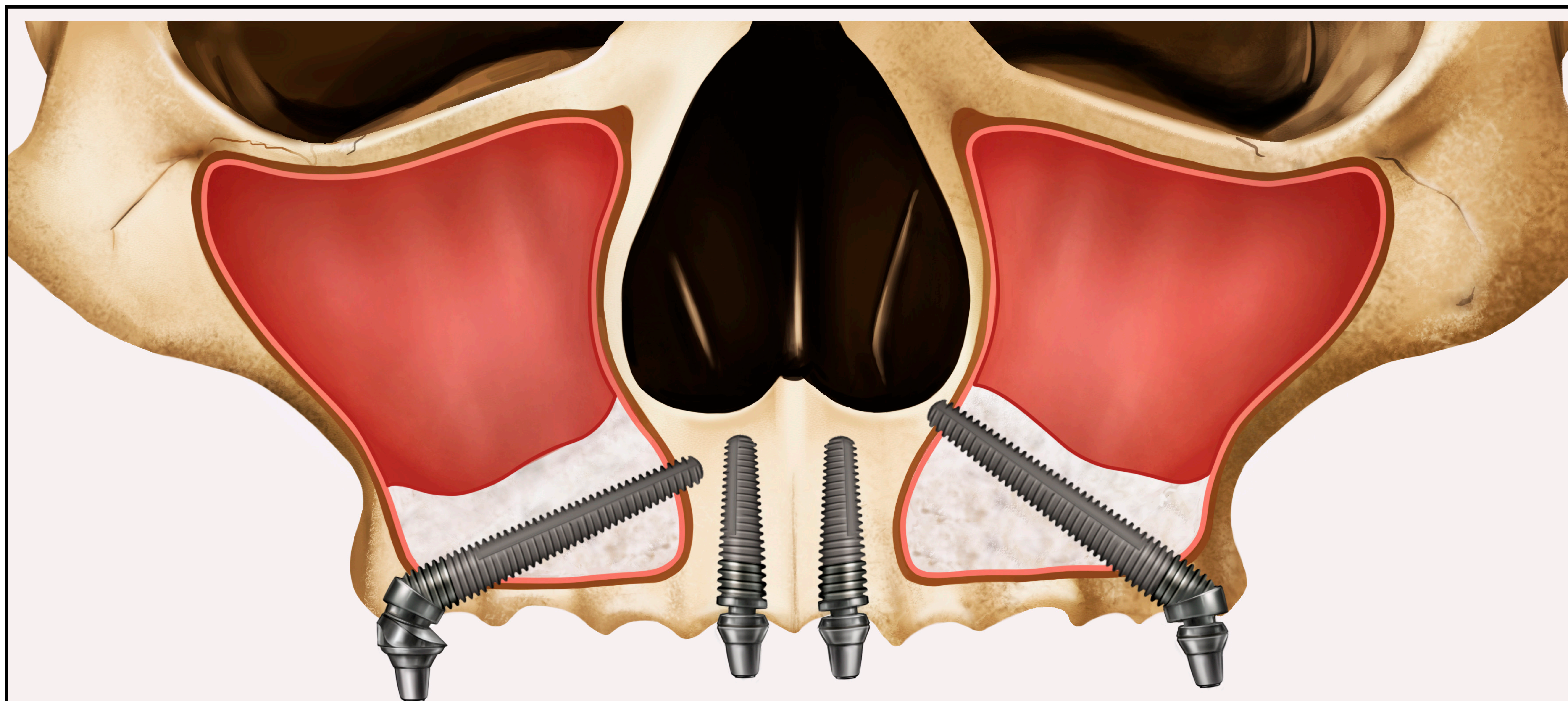
Mean bone levels comparable to study; Maló *et al.* (2007) & Jensen OT *et al* (2016)

Cumulative survival rate of 93% at 12 months

ELSA implants cumulative survival rate and clinical outcomes similar to zygoma implants studies.

[Yalçin, *et al.*(2020) Atala Belir *et al.* (2017) Becktor, Jonas P *et al* (2005) Mats *et al.* Widmark, G *et al* (1998)]

THANKYOU FOR YOUR ATTENTION



Clinical Outcome of Extended Length Subcrestal Angulated (ELSA) Implants in Patients With a Severely Resorbed Maxilla: A 1-Year Retrospective Analysis of 187 Implants in 33 Patients

- RESULTS
- Implant failure and survival rates
- All the failures that occurred were documented within the first 12 months after implant placement. The failures occurred in six patients. Of these patients, one patient (16.7%) had one risk factor (16.7%), three patients (50.0%) had two risk factors (50.0%), and two patients (33.3%) had three risk factors (33.3%).
 - A total of 13 implants failed (7.0%), all because of peri-implantitis.
 - The total survival rate of the implants at 24 months was therefore 91.1%. The survival rate of the nasal implants was 91.7% and for the conventional implants it was 90.6%.
 - No implants had failed in the nine patients that had a follow-up period of 36 months; therefore the implant survival rate at 36 months was 100%
 - only patients with extreme maxillary atrophy were included that would normally receive bone-augmentation, zygomatic implants or short implants
 - Mean Bone level (MBL) of our study is comparable to Maló *et al.* (2007)
- Total survival rate
- In this study, the total survival rate was determined by the number of implants in situ at the time of the checkup. There were 13 failures of the implants in total, and they all occurred in six patients.
 - All these six patients had risk factors. Three patients had three implants lost in a short period of time. Two of them were smokers (66.7%), had a history of periodontal disease (66.7%), were bruxers (66.7%) or were diabetic (33.3%).
- Conclusion
- All patients that were treated in this study would conventionally have been treated with zygomatic implants or for example bone augmentation.
 - Yalçın, *et al.* conducted a retrospective analysis on zygoma implants for which he found a survival rate of 94.3% after 17.2 months of follow-up¹⁵. Atalay, Belir *et al.* described an implant survival rate of 93.7% after 28±22 months¹⁶. Becktor, J. et al. reported a survival rate of 90.3% for zygomatic implants of 90.3%³¹.

1. Maló P, Nobre M, Rangert B. Implants placed in immediate function in periodontally compromised sites: a five-year retrospective and one-year prospective study. J Prosthet Dent 2007; 97:S86–S95.

Clinical Outcome of Extended Length Subcrestal Angulated (ELSA) Implants in Patients With a Severely Resorbed Maxilla: A 1-Year Retrospective Analysis of 187 Implants in 33 Patients

Materials and methods

Participants: Fully or partially edentulous patients with risk factors such as smoking, (controlled) diabetes, bruxism and periodontal history included.

Surgical procedure:

From 2017 to 2019, one practitioner placed implants in the maxilla for an immediately placed fixed bridge construction following the trans-sinus nasal protocol. extended-length subcrestal angulated implants (Nazalus Implants®) were placed in the posterior molar region All implants were fabricated by Southern Implants.

Statistical analysis

Implant survival rates were calculated using the Kaplan-Meier analyses.

Mean bone level was calculated including its standard deviation (SD). To determine the significance between the groups, the Chi-square test was used with $\alpha = 0,05$ [5%] for two categorial variances. The Independent T-test ($\alpha = 0,05$ [5%]) was used to test the means between the bone levels. When more subgroups needed to be evaluated, the ANOVA test ($\alpha = 0,05$ [5%]) was used. The interobserver variability was calculated by applying the Pearson Correlation Test. A p -value of ≤ 0.05 was considered to indicate a statistical significance.

Results

Demographics

- Initial group of 38 patients, five patients did not show up on their follow-up frequently enough so their data could not be included in the study.
- This resulted in a patient group of 33 patients (86.8%) with a follow-up period of 12 months.
- A total of thirteen patients had a follow-up period of more than 24 months (39.4%) and nine patients had a total follow-up of 36 months (27.3%).

Sample description

- Table 2 gives an overview of the sociodemographic distribution of the study population at 12, 24 and 36 months of follow up.
- The mean age of the study population with a follow up period of 12 months was 62.6 ± 8.4 years old.
- Initial group of 38 patients, five patients did not show up on their follow-up frequently enough so their data could not be included in the study.
- This resulted in a patient group of 33 patients (86.8%) with a follow-up period of 12 months.