



LONG-TERM OUTCOMES OF FULL-ARCH REHABILITATIONS SUPPORTED BY ZYGOMATIC IMPLANTS: A RETROSPECTIVE ANALYSIS

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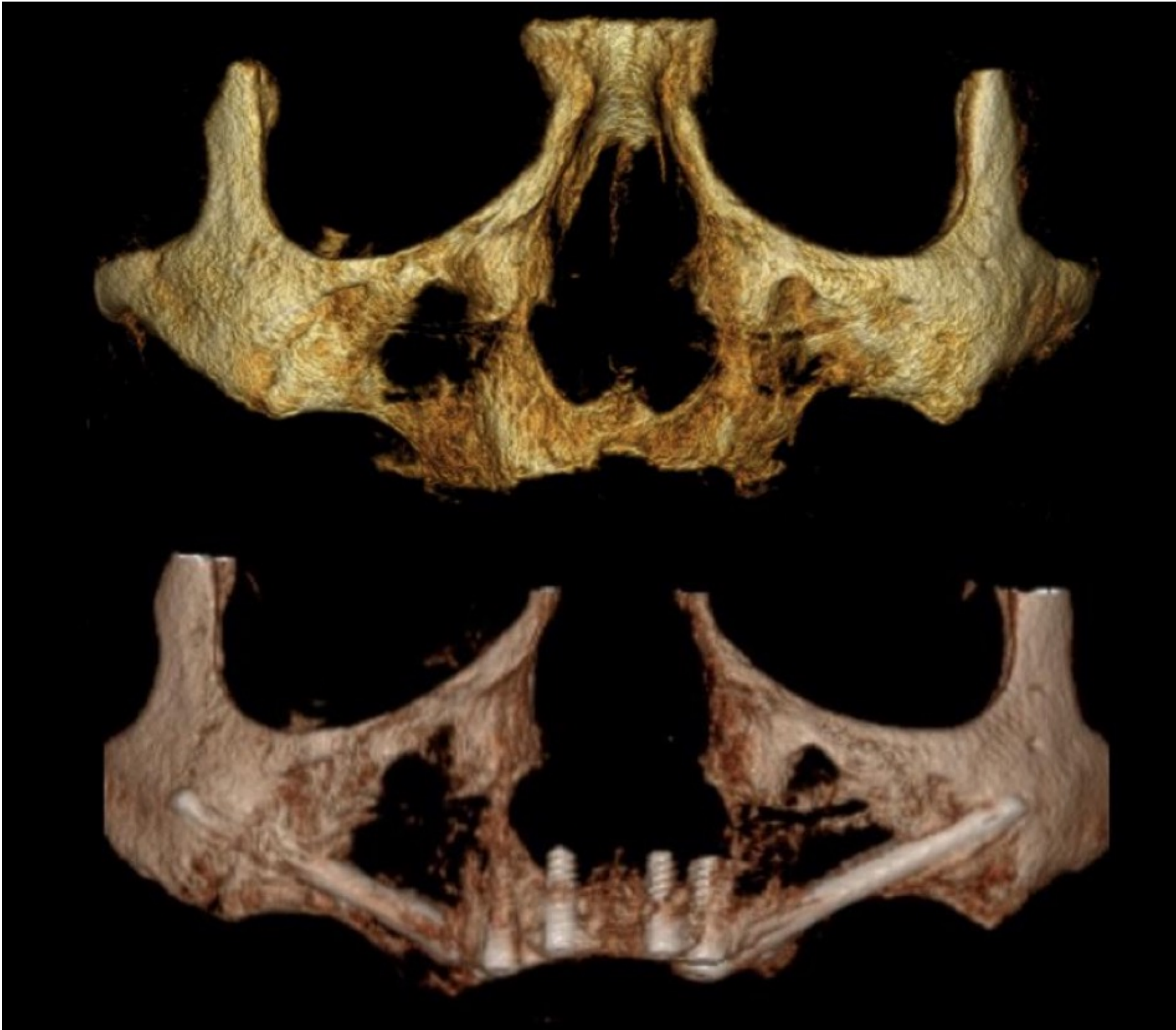
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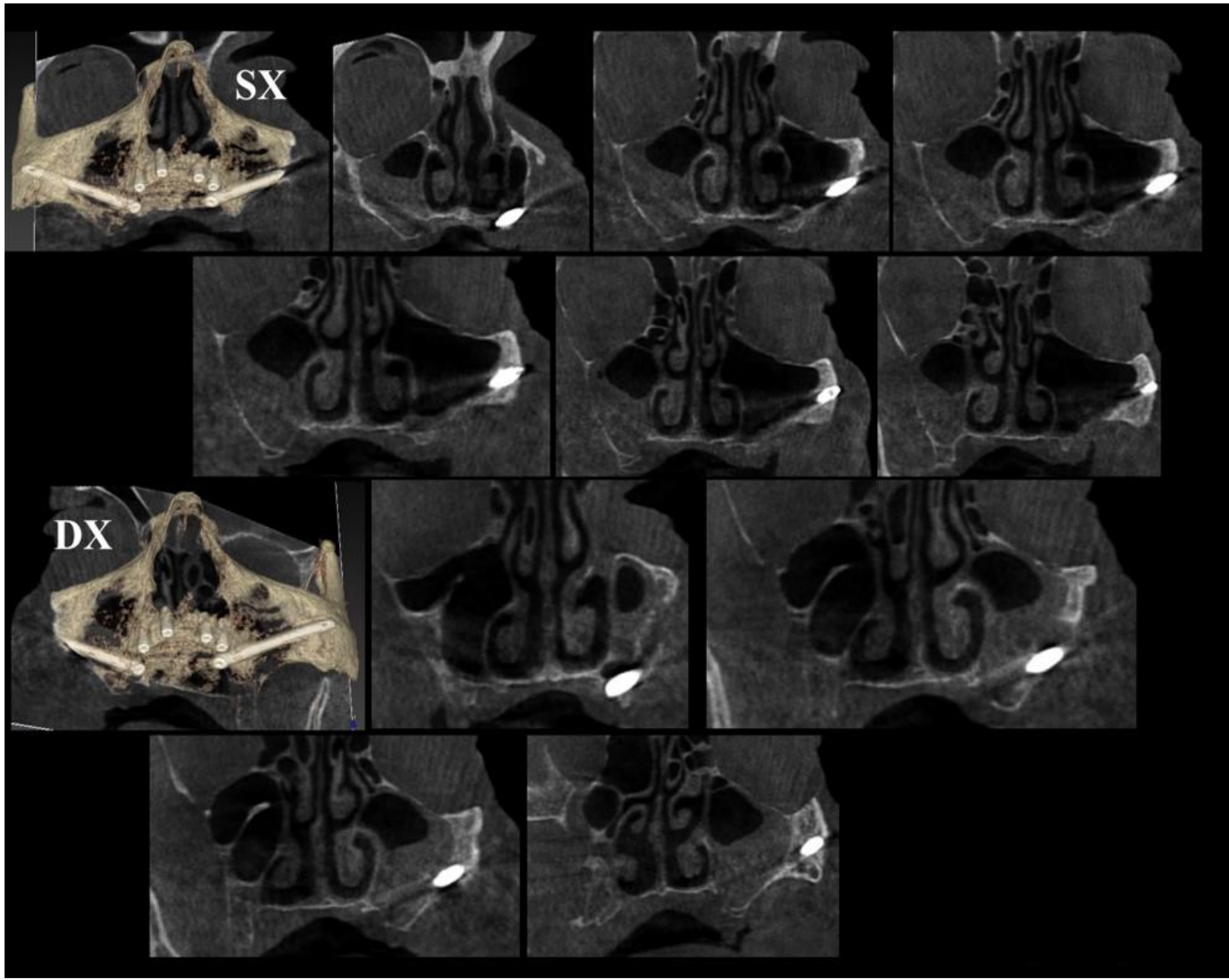
BACKGROUND

The use of zygomatic implants has become a valid and predictable solution to support full-arch rehabilitations in patients with severe maxillary atrophy. Indications for zygomatic implants include failure of grafting procedures and rehabilitation after tumor resection and trauma. recent systematic reviews have reported high survival rates of zygomatic implants, on the other hand there is still a lack of knowledge regarding the long-term outcomes of the implant-prosthetic rehabilitations.

Local ethical committee approval n° 22714

AIM

The aim of the present study is to evaluate implant-supported rehabilitations on zygomatic implants with a minimum follow-up of 4 years from the prosthetic delivery.



Systematic Review Success Rates of Zygomatic Implants for the Rehabilitation of Severely Atrophic Maxilla: A Systematic Review

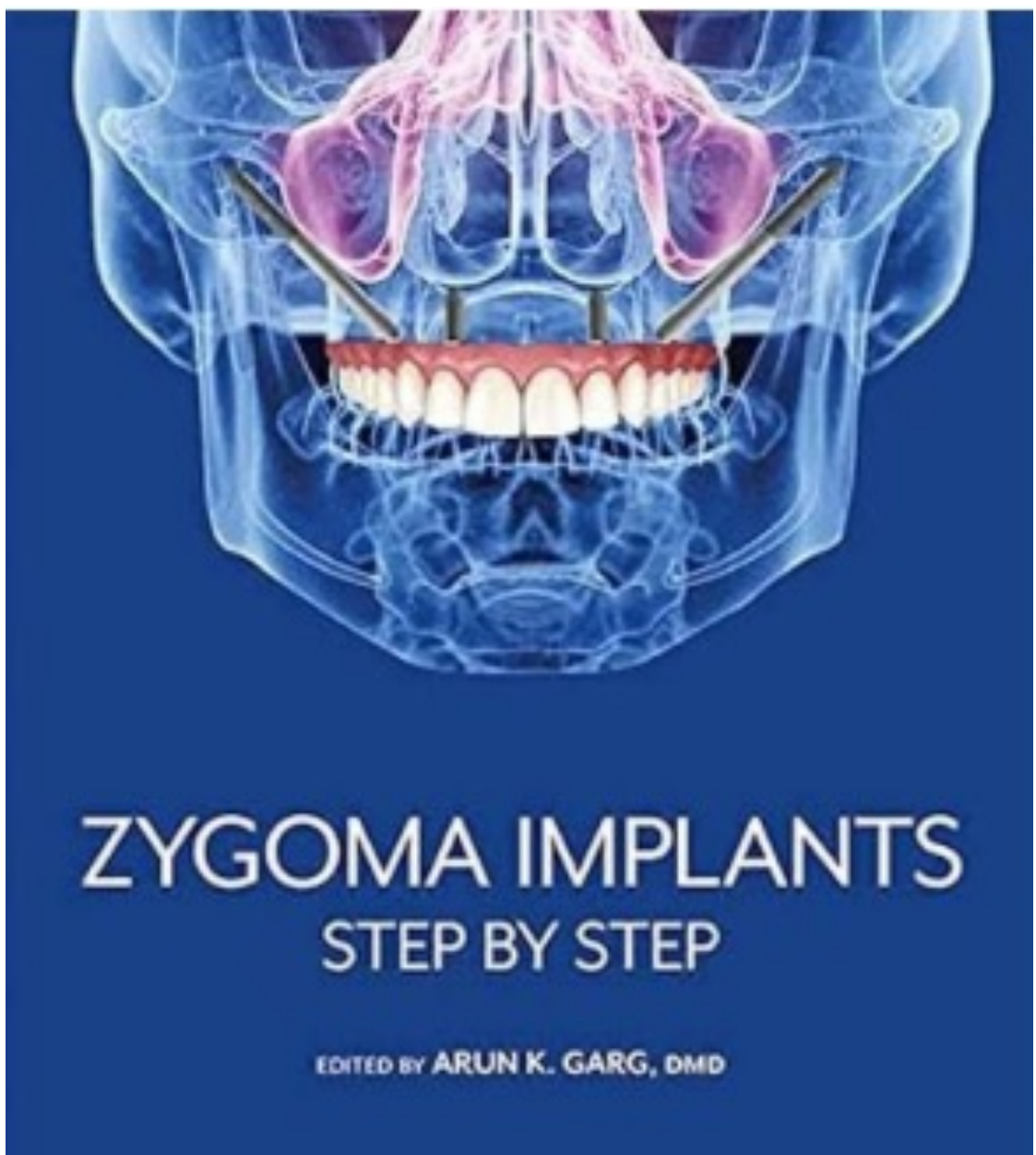
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Abstract: Zygomatic implants are a treatment solution for patients with severe maxillary atrophy. This treatment option allows delivering immediate fixed teeth within 24 h. Numerous peer-reviewed publications have reported different success rates, resulting in a disagreement on the topic. Therefore, the overall efficacy and predictability of this rehabilitation is still a matter of discussion. With this study, we aimed to identify the published literature on the use of zygomatic implants for the reconstruction of the severely atrophic maxilla and report the cumulative success rate (CSR) as a function of follow-up time. A systematic review of the literature on zygomatic implant for the treatment of severe maxillary atrophy was performed and 196 publications were included in the study. The cumulative success rate of zygomatic implants for the treatment of severe maxillary atrophy was 98.5% at less than 1 year, 97.5% between 1 and 3 years, 96.8% between 3 and 5 years and 96.1% after more than 5 years. The most commonly reported complications were soft tissue dehiscence, rhinosinusitis and prosthetic failure. The treatment of severe lack of bone in the upper maxilla with zygomatic implants is a safe procedure, reaching a cumulative success rate of 96.1% after more than 5 years.

Keywords: dental implants; zygomatic implants; atrophic maxilla; cumulative success rate



LITERATURE REVIEW

Zygomatic Implants/Fixture: A Systematic Review

Ashu Sharma, MDS*
G. R. Rahul, MDS

Patients with moderate to severe atrophy challenge the surgeon to discover alternative ways to use existing bone or resort to augmenting the patient with autogenous or alloplastic bone materials. Many procedures have been suggested for these atrophied maxillae before implant placement, which include Le Fort I maxillary downfracture, onlay bone grafts and maxillary sinus graft procedures. A zygomatic implant can be an effective device for rehabilitation of the severely resorbed maxilla. If zygomatic implants are used, onlay bone grafting or sinus augmentation would likely not be necessary. The purpose of this article is to review the developments that have taken place in zygomatic implant treatment over years, including anatomic information for installing the zygomatic implants, implant placement techniques, stabilization, and prosthodontic procedures.

Key Words: zygomatic bone, zygomatic implants, severely resorbed maxilla, zygomatic fixtures, maxillary sinus

REVIEW

Open Access



Zygomatic implants placed in atrophic maxilla: an overview of current systematic reviews and meta-analysis

Shaqayeq Ramezanzade¹, Julian Yates², Frank J. Turninelli³, Seied Omid Keyhan^{4,5}, Parisa Yousefi⁶ and Jose Lopez-Lopez^{7*}

Abstract: Zygomatic implants are a treatment option for severely atrophic maxilla.

Background: This study aimed to summarize and evaluate systematic reviews assessing the clinical outcomes of zygomatic implants including survival/failure rate and complications. PubMed-MEDLINE, Google Scholar, LILACS, and the Cochrane Database were searched up to April 2020. Risk of bias assessment was conducted by the AMSTAR tool. Initial searches yielded 175 studies. These were assessed, and following title abstract and full-text evaluation, 7 studies (2 meta-analyses) were included in the final review. According to the AMSTAR tool, 1 was deemed high quality, 4 were classified as medium, and 2 as low quality. The mean AMSTAR score (±SD) was 5.28 of 9 (±2.36) ranging from 2/9 to 9/9. The reported survival rates ranged from 95.2 to 100% except for resected maxillas, which established higher failure rates up to 21.43%. Concerning the complications with the zygomatic implants, various surgical and prosthetic complications were reported with sinusitis being the most frequently observed complication. Zygomatic implants appears to offer a promising alternative to formal bone grafting techniques with lower costs, less complications, less morbidity, shorter treatment times, and comparably high survival rates.

Conclusion: Complications were rare and usually easy to manage. However, the treatment should be directed by appropriately trained clinicians with noticeable surgical experience.

Keywords: Umbrella review, Zygomatic implant, Atrophic, Zygomatic

ORIS Criteria of Success for the Zygoma-Related Rehabilitation: The (Revisited) Zygoma Success Code

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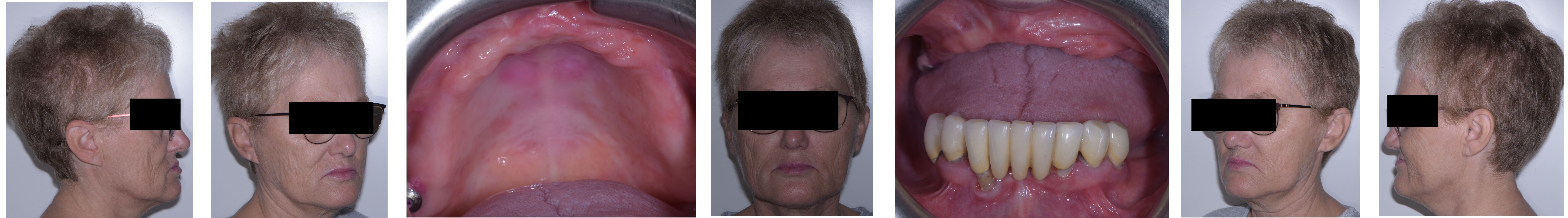
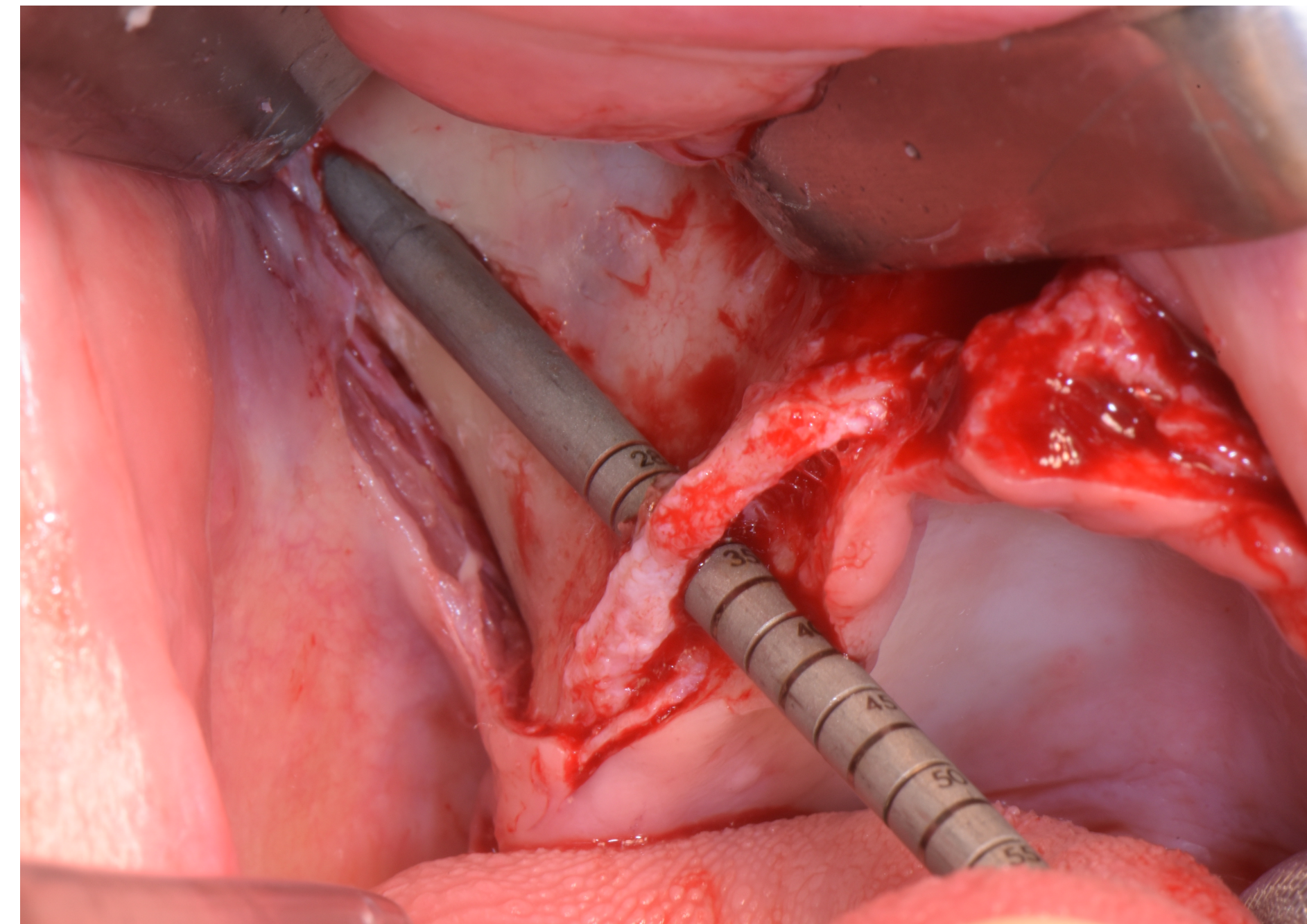
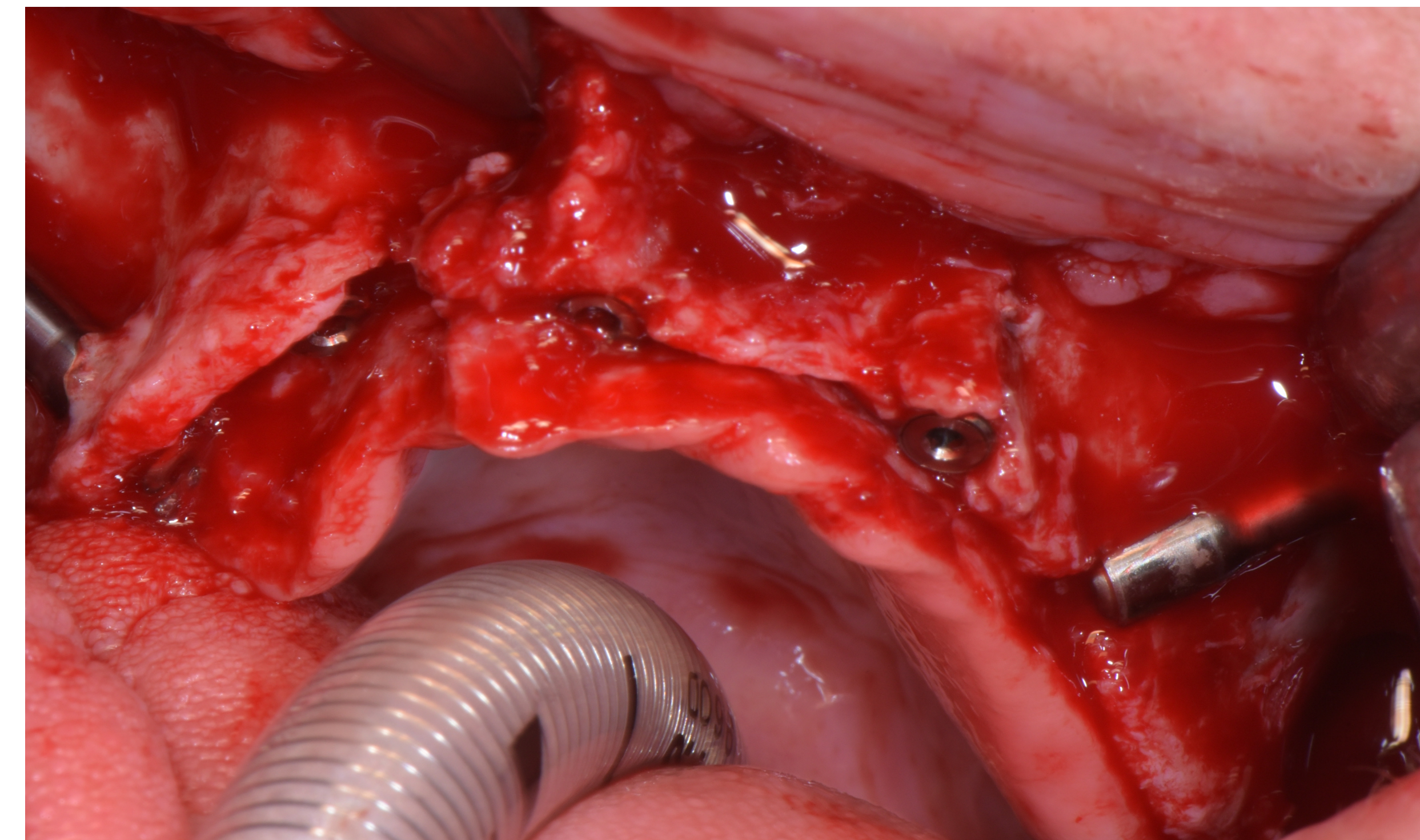
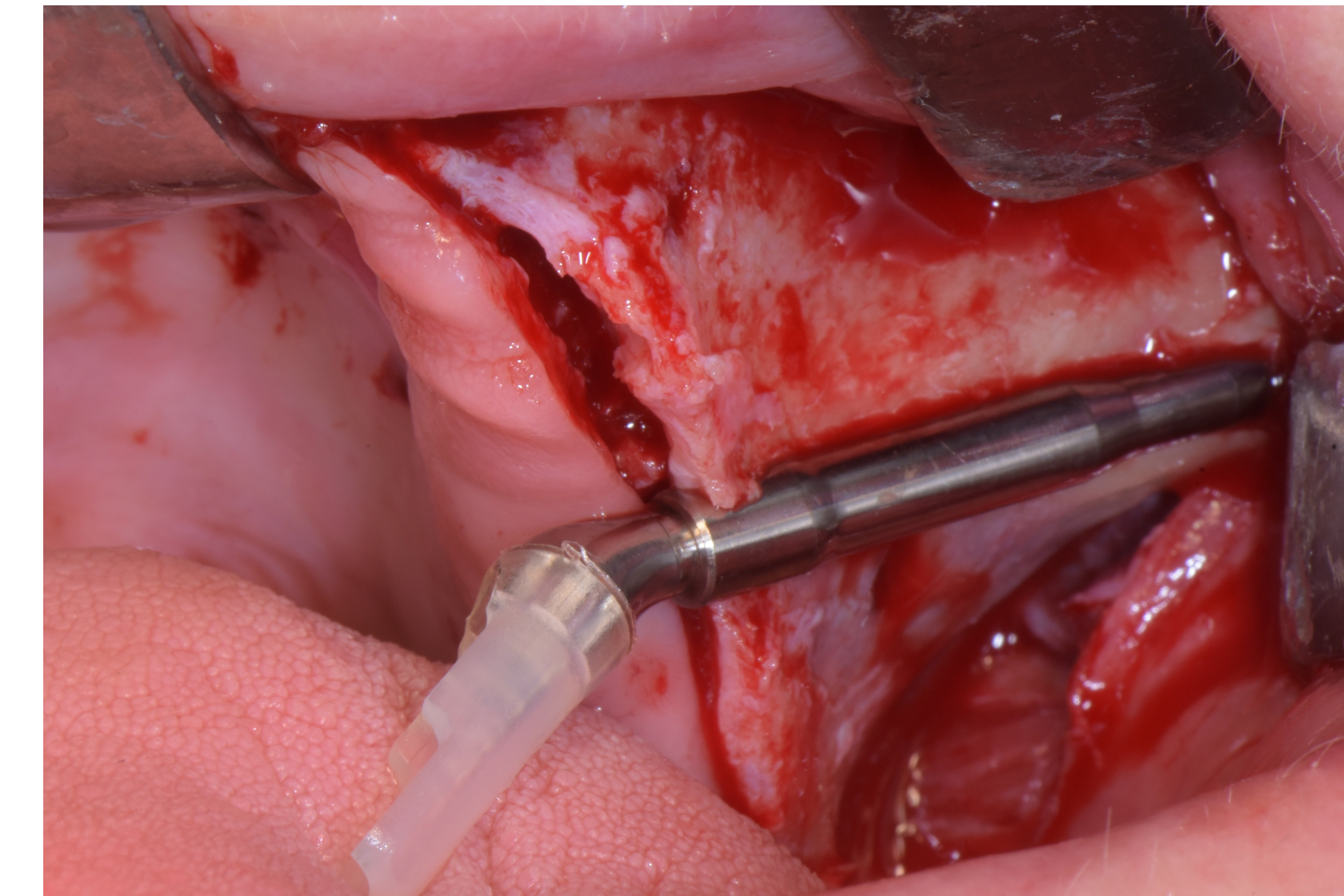
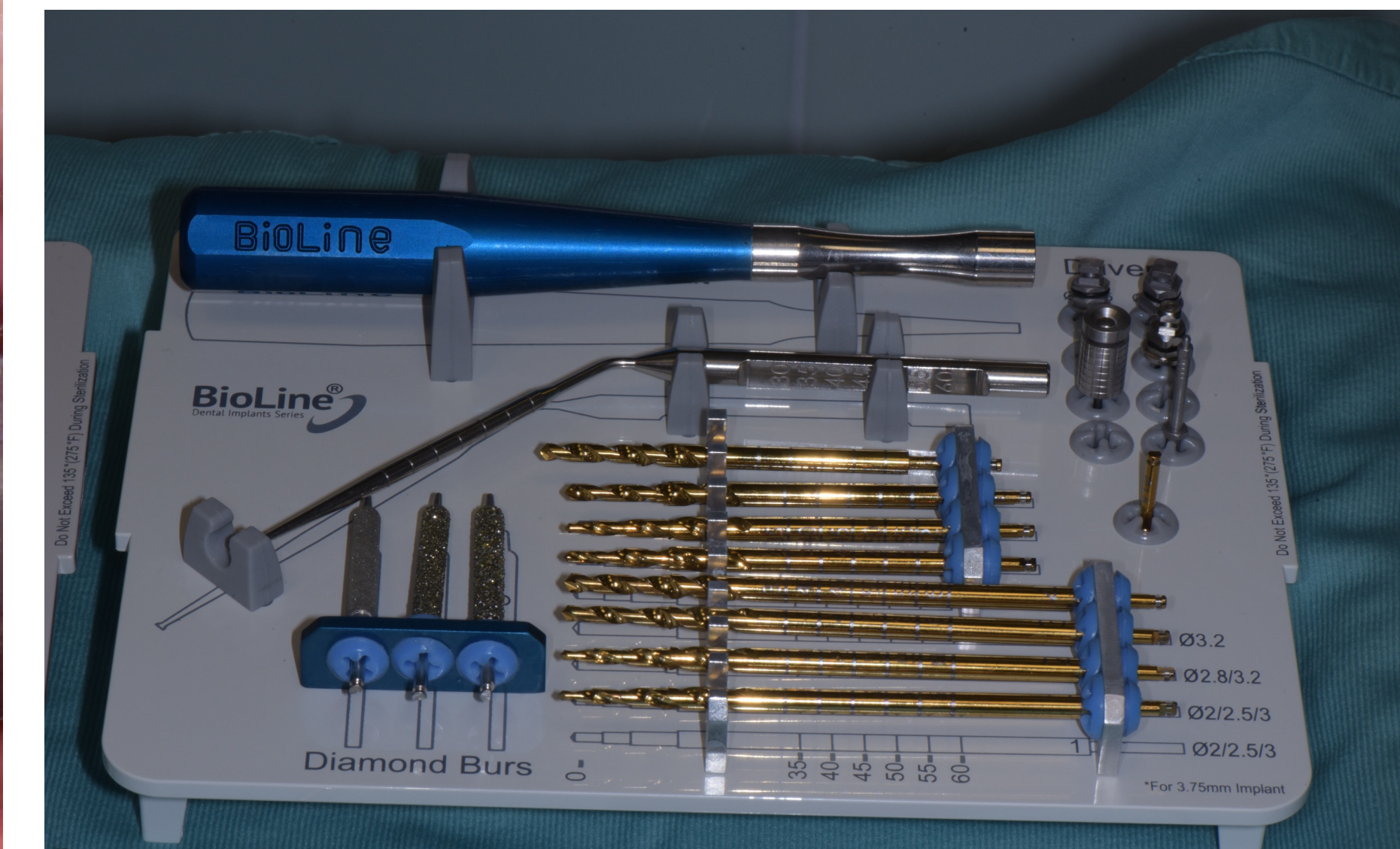
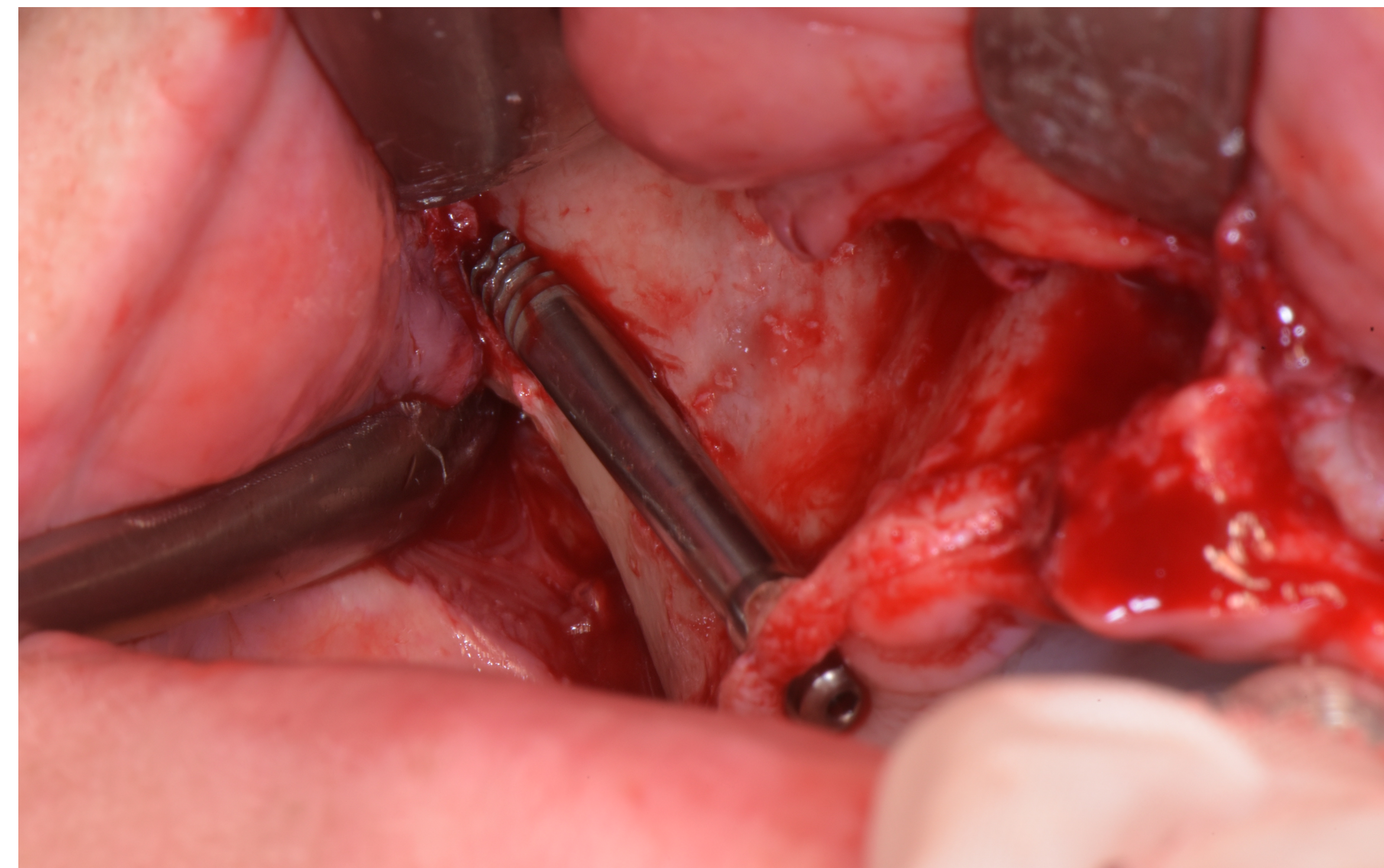
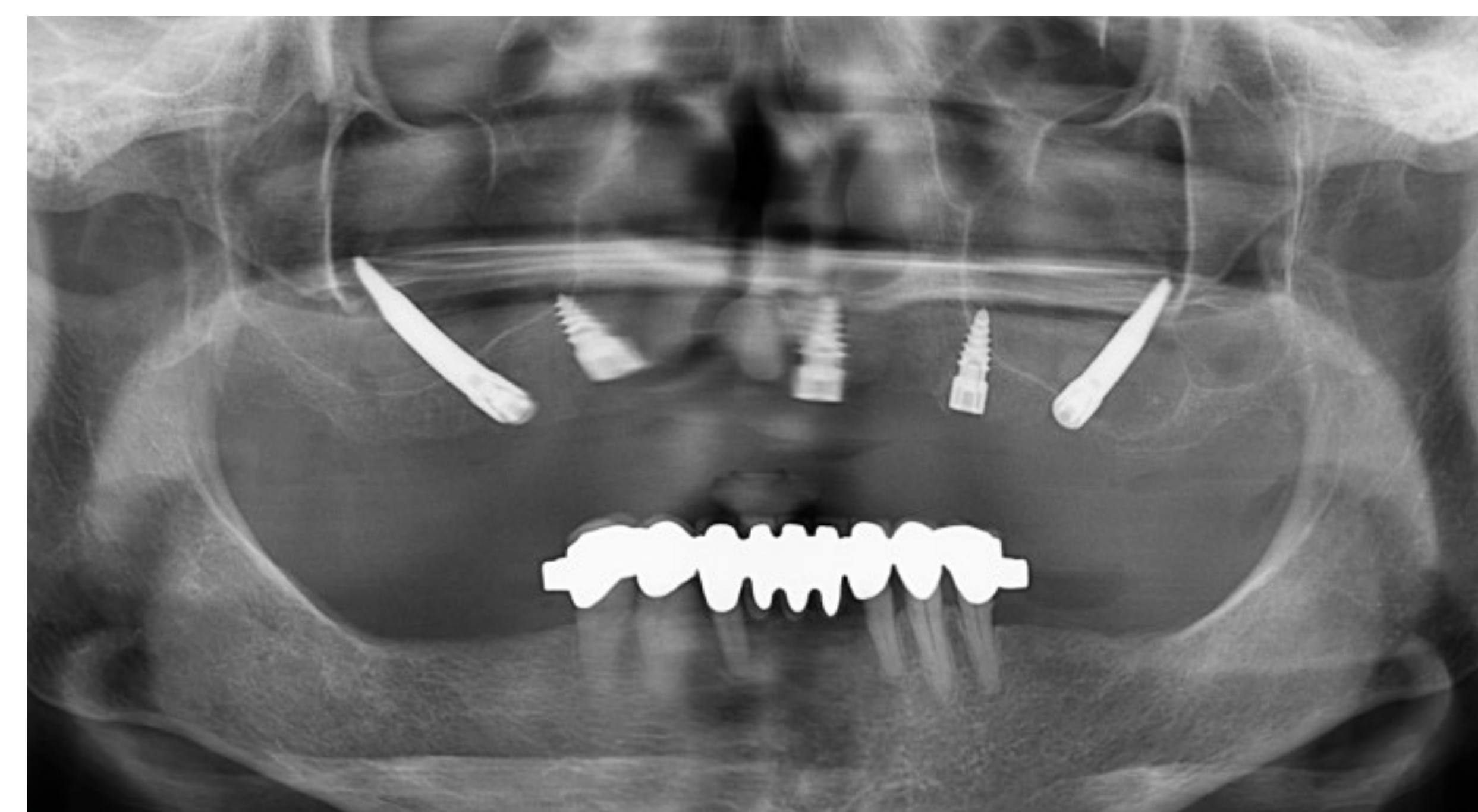
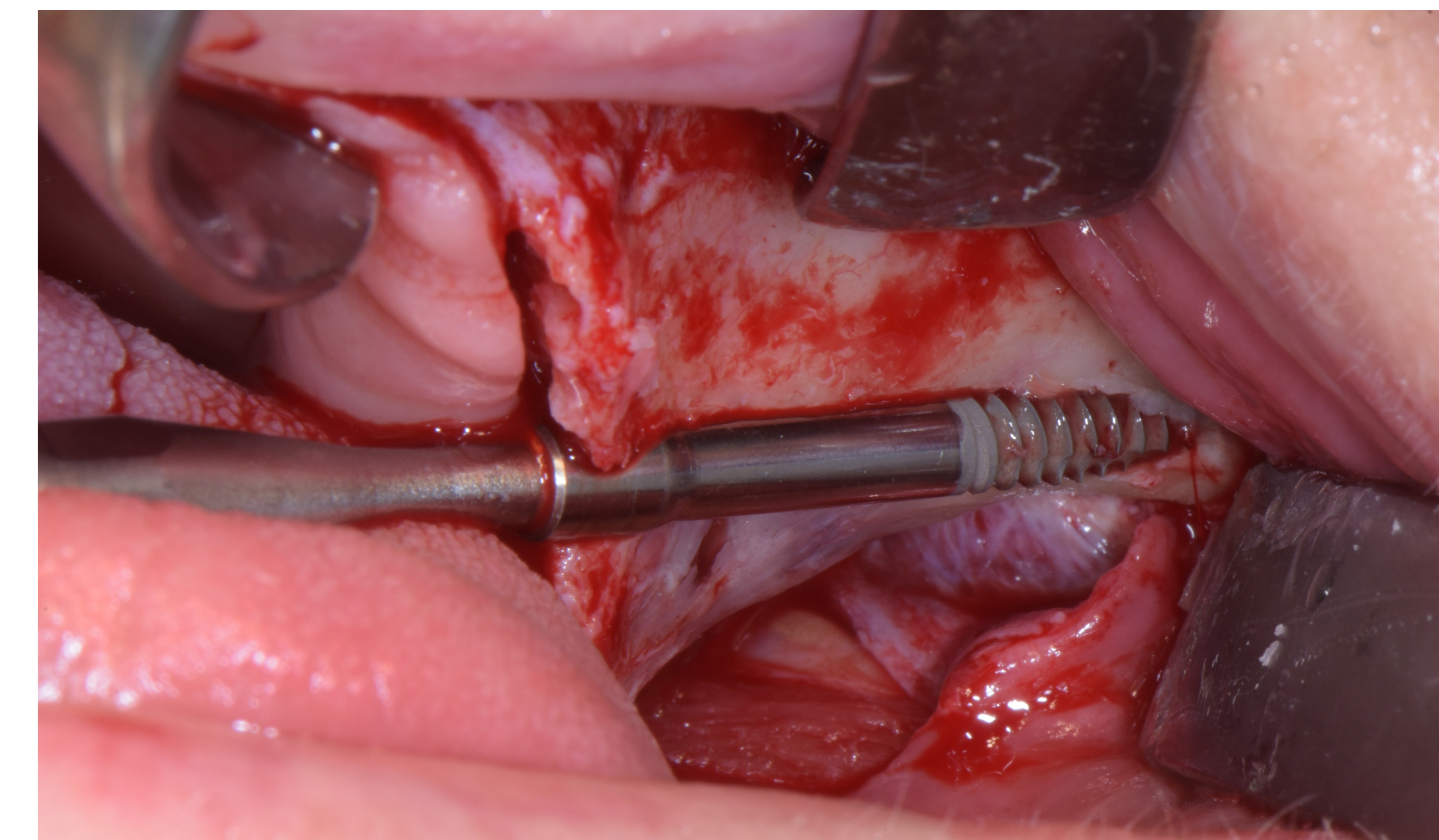
Zygomatic-related implant rehabilitation differs from traditional implant treatment in biomechanics, clinical procedures, outcomes, and eventual complications such as soft tissue incompetence or recession that may lead to recurrent sinus/soft tissue complications. The extreme maxillary atrophy that indicates the use of zygomatic implants prevents use of conventional criteria to describe implant success/failure. Currently, results and complications of zygomatic implants reported in the literature are inconsistent and lack a standardized systematic review. Moreover, protocols for the rehabilitation of the atrophic maxilla using zygomatic implants have been in continuous evolution. The current zygomatic approach is relatively new, especially if the head of the zygomatic implant is located in an extramaxillary area with interrupted alveolar bone around its perimeter. Specific criteria to describe success/survival of zygomatic implants are necessary, both to write and to read scientific literature related to zygomatic implant-based oral rehabilitations. The aim of this article was to review the criteria of success used for traditional and zygomatic implants and to propose a revised Zygomatic Success Code describing specific criteria to score the outcome of a rehabilitation anchored on zygomatic implants. The ORIS acronym is used to name four specific criteria to systematically describe the outcome of zygomatic implant rehabilitation: offset measurement as evaluation of prosthetic positioning; rhino-sinus status report based on a comparison of presurgical and postsurgical cone beam computed tomography in addition to a clinical questionnaire; infection permanence as evaluation of soft tissue status; and stability report, accepting as success some mobility until dis-ossointegration signs appear. Based on these criteria, the assessment of five possible conditions when evaluating zygomatic implants is possible. *Int J Oral Maxillofac Implants* 2020;35:366–378. doi: 10.11607/jomi.7488

Keywords: criteria of success, ORIS, review (narrative), ZAGA, zygomatic implants, zygomatic success code

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MATERIAL AND METHOD

A retrospective analysis was conducted on patients > 18 yo, with a maxillary implant-prosthetic rehabilitation supported by zygomatic implants with at least 4 years of function. All the included patients were recalled for a clinical follow-up visit, whilst medical charts were used to collect the information regarding the surgical procedures and the prosthetic rehabilitations.

RESULTS

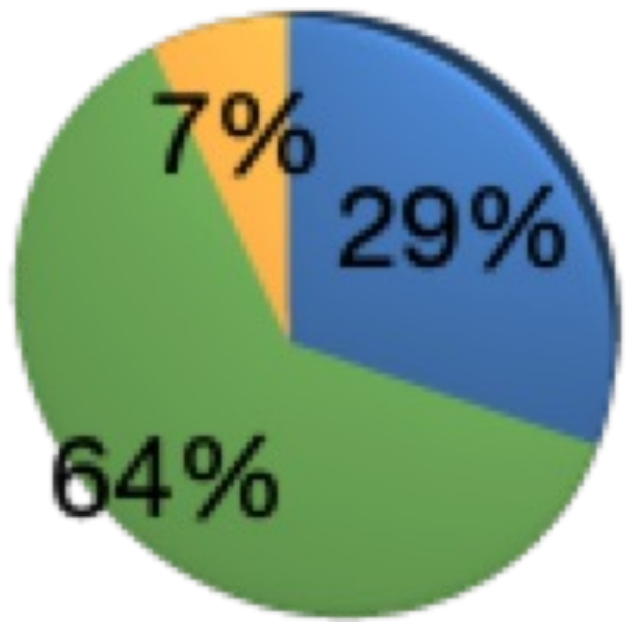
Five patients who received in total 8 zygomatic implants, 18 standard implants, and 2 nasal implants, were recalled for a follow-up visit. The mean patients’ age at the time of implant placement was 56.25 ±9.5 years, mean follow up of 82 ± 39 months. One patient suffered from epilepsy and assumed medications for this illness, whilst four patients were in general good health. Three out of 5 patients were light smokers. The maxillary anatomy was classified as ZAGA 1 in all the cases. All the surgical procedures were performed under general anesthesia. The implant site preparation was performed with the ultrasonic technique (40% of the cases), with conventional drilling (20%) or using both techniques (40%), with no intra-operative complications. At the follow-up, no signs of sinusitis were detected, and no prosthetic complications were observed. According to the ORIS criteria, four implants showed a success type I (50%) and four implants a success type II (50%).

DISCUSSION

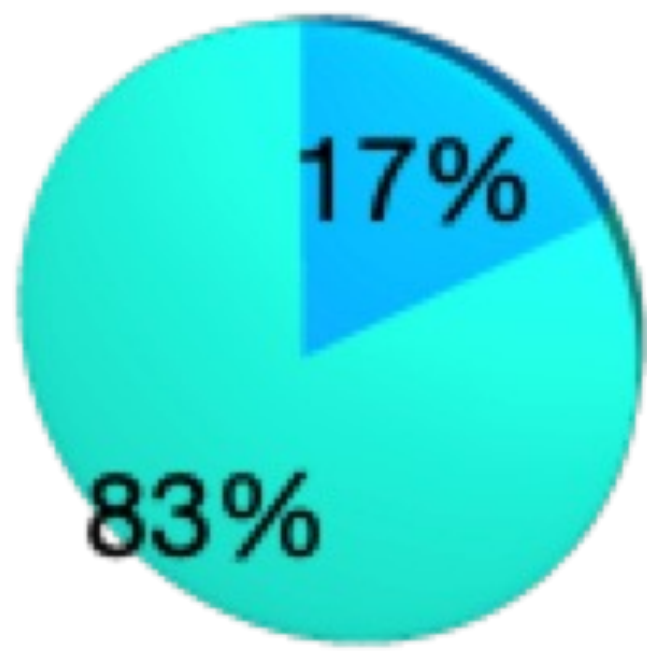
Implant-prosthetic rehabilitations supported by zygomatic implants seems to be a predictable solution in patients with severe maxillary atrophy, especially in case of failure of previous bone grafting procedures.

Zygomatic implants	Implant 1	Implant 2	Implant 3	Implant 4	Implant 5	Implant 6	Implant 7	Implant 8
(O) - Offset of the prosthesis	0≤ d ≤6	0≤ d ≤6	-3≤ d ≤0	-3≤ d ≤0	-3≤ d ≤0	0≤ d ≤6	0≤ d ≤6	0≤ d ≤6
(R) - Rhinosinus-associated pathology	L-K(-) ML-M(-)	L-K(-) ML-M(-)	L-K(-) ML-M(+)	L-K(-) ML-M(-)	L-K(-) ML-M(+)	L-K(-) ML-M(+)	L-K(-) ML-M(-)	L-K(-) ML-M(+)
(I) - Peri-implant soft tissue condition	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection	No recession No signs of inflammation or infection
(S) - Stability	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation	No mobility No pain No rotation

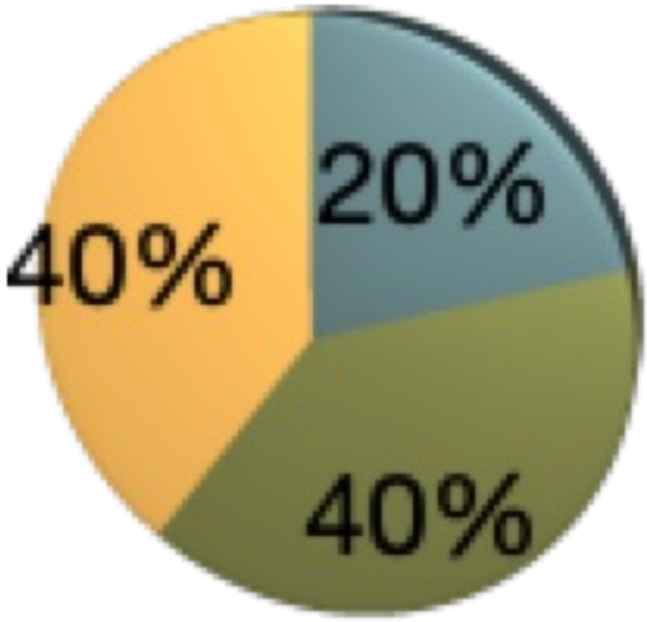
Zygomatic
Standard
Nasal



Immediate loading
Delayed loading



Conventional drilling
Ultrasonic technique
Both



Implant success (ORIS criteria): 4 Success I (50%), 4 success II (50%)