Conclusions of the 4th International Workgroup Meeting on AMSJI® - October 5th, 2023

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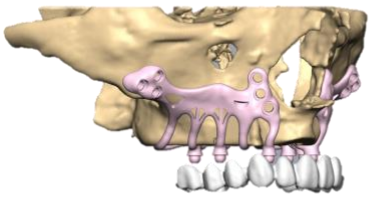
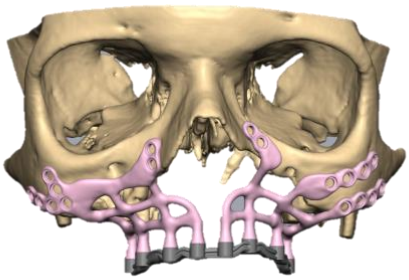
Report by Drs. Van den Borre

1. Modifications since “Consensus 3”

The piriform aperture frame may exhibit structural vulnerabilities on occasion. Consequently, three screw holes have been incorporated as a precautionary measure. However, it is noteworthy that when the bone exhibits sufficient resilience, a single screw may suffice for adequate stability. Nevertheless, the recommendation is still to employ two screws, as this approach serves to augment the primary fixation strength.

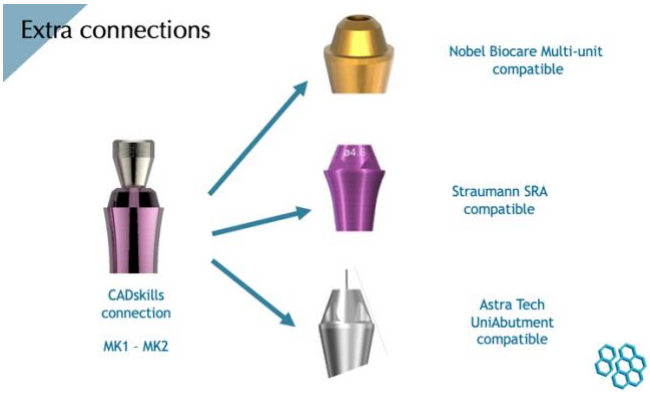


A redesign of the AMSJI has been undertaken, encompassing modifications to both the frame and its constituent arms. These alterations have been conceived with the intent of minimizing the forces exerted on the surrounding bone tissue. In the context of AMSJI reconstruction, a novel triple-bar configuration has been introduced, although it is important to note that finite element analysis (FEA) has yet to be conducted to validate its mechanical performance.

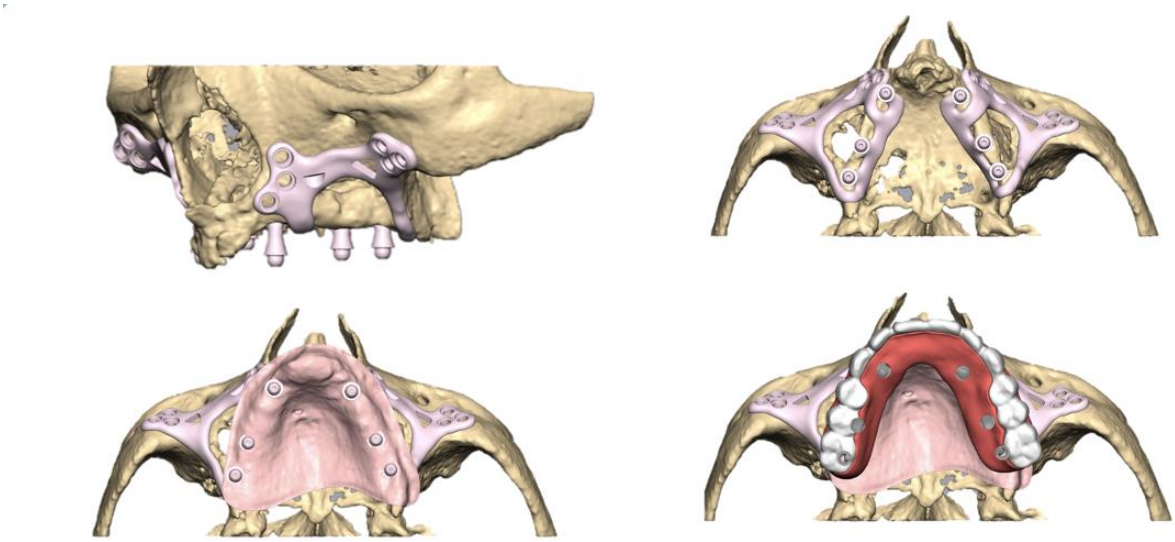


2. Planned modifications

   A. Astra (Astra Uni-abutment EV) type of connection platform will be added to the CADskills platform to allow more freedom to operate to the restorative dentist and the dental laboratory.



B. The prevalence of recessions primarily observed on the buccal aspect of the anatomical region has necessitated the development of the AMSJI Palatal variant. While this design is currently accessible for clinical deployment, it is essential to underscore that comprehensive Finite Element Analysis (FEA) studies have not yet been undertaken to evaluate its structural integrity and performance. This same caveat applies to the AMSJI RECON.



C. Within the context of AMSJI deployment in mandibular applications, diverse iterations of AMSJI models have found utility. Nonetheless, the quest for an optimal design persists, as several considerations remain pivotal. A principal concern revolves around the strategic placement of osteosynthesis screws, with an ongoing deliberation concerning the merits of an in-line versus an oblique orientation. Furthermore, it is noteworthy that the absence of a posterior extension is a deliberate choice aimed at minimizing the extent of surgical incisions.

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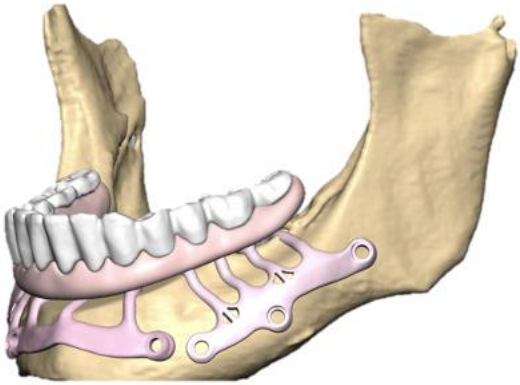


3. Biological risk determinants, proven and assumed

The presence of a thin biotype poses a notable risk factor for the development of gingival recessions, rather than infection. This observation aligns with findings in several other orthodontic studies. It is plausible that the risk may be influenced by both the height of the vestibule and the height of the keratinized mucosa, with a minimum requirement of at least 6 mm of keratinized mucosa for optimal gingival health. Achieving this threshold can be accomplished through the utilization of a palatal graft procedure.

It is essential to exercise caution when dealing with patients who smoke, as they exhibit a significantly elevated risk, approximately seven times higher, for the development of gingival recessions. Similarly, individuals with suboptimal oral hygiene and uncontrolled diabetes face comparable challenges in managing gingival health.

Notably, no discernible increase in risk has been identified in relation to the presence of high or HOG and VOG in the context of gingival recession development.

4. Monitoring recession

Monitoring recession presents a complex challenge, characterized by the existence of various available methodologies, each beset with its own set of inherent issues. To address this, a range of alternative approaches has been presented to the international working group, with the intention of conducting a comprehensive statistical analysis to ascertain preferences and discern trends among these methodologies.

5. Avoidance of recession

The management of gingival recessions presents various treatment modalities. Among these options, the utilization of a split-thickness graft has demonstrated effectiveness in elevating

the muco-gingival margin height and achieving successful coverage of the recession, as performed by Dr. Dank. It is crucial, however, to emphasize the importance of ongoing follow-up to assess the long-term outcomes of this intervention.

Another viable approach is the implementation of a palatal rotation flap, also executed by Dr. Dank, which has resulted in a stable clinical scenario. This procedure appears to have yielded favorable results.

The phenomenon of gingival recessions has emerged as a central focus of future research endeavors. Of particular interest is the progressive recession occurring on the buccal arms. Currently, our understanding is limited with regard to the incidence and rate of progression toward potential system failure in such cases. As such, comprehensive investigations are warranted to elucidate these critical aspects and inform future clinical practices.

Proposed classification

- Type 1: Stable
- Type 2: Progressive
- Type 3: With chronic inflammation (glazy, reddish)
- Type 4: With acute infection (pain, pus, edema, functio laesa)

How to solve tissue shrinkage over AMSJI RECON ? A bone graft that is mended to the subperiosteal implant may be an option, mentioned by Prof. Dr. De Riu. However, several problems arise with this technique and the evidence is not convincing.

6. Dealing with infection

Unfortunately, deep infections are there. Different protocols exist. However, we use a strict protocol as mentioned on the website of CADskills which is known by the members of the International Working Group.

7. Fractures – AMSJI /temporary prosthesis

Four instances of frame fractures have been documented, and it's noteworthy that these occurred exclusively in "older" designs predating the year 2021. A potential mitigating strategy to prevent such fractures entails the consideration of arm thickening to enhance structural robustness. In each of these fracture cases, an observable void was detected beneath the frame, which may be attributed to various factors, including infection, mobility, design characteristics, or bruxism. It is pertinent to mention that finite element analysis (FEA) findings have indicated that conventional forces alone are unlikely to induce frame fractures.

The incidence of temporary prosthesis fractures remains infrequent. This rarity can be attributed to the deliberate design of temporary prostheses, which are intentionally engineered to possess reduced structural strength. This approach is strategic, as it

encourages patients to actively engage in the process of fabricating the final prosthesis, given the transient nature of the temporary restoration (2-3 months).

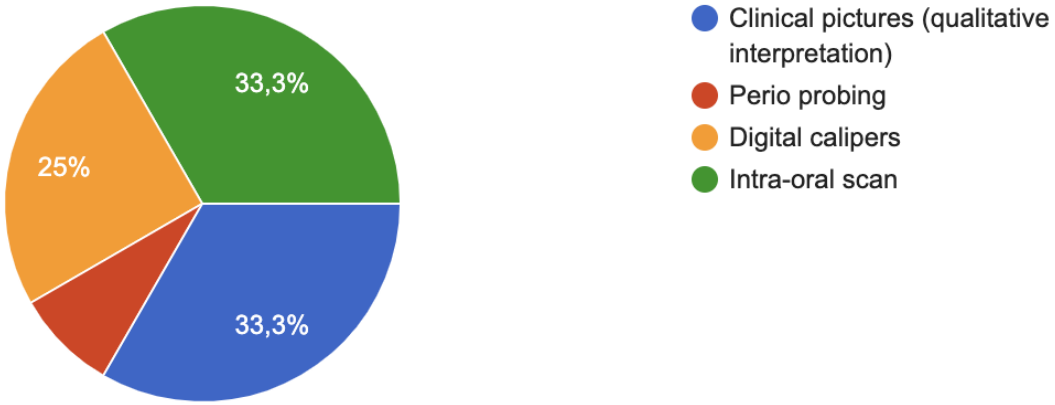
8. Results Google Forms survey after the 4th International Workgroup Meeting on AMSJI

In conclusion of the meeting, a survey was disseminated among the attendees to elicit their feedback in an anonymous manner. The survey garnered responses from a total of eleven surgeons. The outcomes of this survey are as follows:

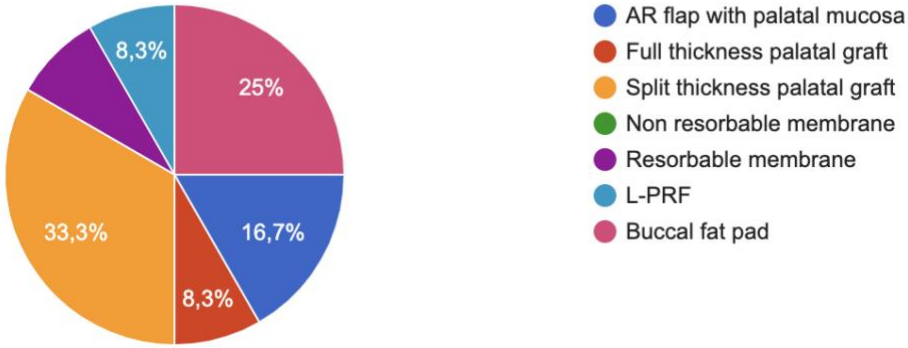
	YES	NO	Any suggestions and/or remarks ?
Adding of an additional screw hole in the buttresses	100 % (n = 11)	0 % (n= 0)	None
Triple bar spanning for AMSJI RECON	66,7 % (n = 8)	33,3 % (n = 4)	Remark 1: A thicker subperiosteal implant in just one piece, because the degloving or the Weber - Fergusson access permits an easy insertion. Remark 2: This change looks like it may increase the vertical height of the AMSJI. Extra vertical height may limit the restorative space and consequentially aesthetics. Remark 3: Avoid the anterior region.
Astra Uni-abutment as extra connection	91,7 % (n = 10)	8,3 % (n = 1)	None
Morphology of the AMSJI palatal	81,8 % (n = 8)	18,2 % (n = 2)	Remark 1: Thickness of the palatal portion should be relatively thinner than the other AMSJI components as the patient's tongue might feel a discomfort created by the thickening of the palatal mucosa.

			Remark 2: Promising idee, however it maybe causes dehiscence in patients with a very thin phenotype. A less extensive expansion to the palate may be necessary.
Conceptualization of an AMSJI mandible	75 % (n = 9)	25 % (n = 3)	Remark 1: Delete the distal and mesial extension. Fixation on the oblique external line, straight under the abutments is enough. Remark 2: Plates following Champy lines with a double plate in the symphysis region. Remark 3: The posterior screw hole could be fabricated more superiorly in the ascending ramus area to make intraoral screwing easier using straight screw drivers. Remark 4: To enhance stability, the posterior end should be a fork design (Y shaped) with 2 screw holes, one in the current position and one on the retromolar pad area just like the Champy plate concept.

Which techniques do you suggest for monitoring progression?



Which technique do you favor for preventing, treating recessions?



What do you think of a bone graft or a bone flap connected to the AMSJI to prevent shrinkage in the lip portion in AMSJI recon?

The use of full-thickness skin grafts might be a better option in certain cases. Implant placement with "sticky bone" could provide favorable results. An observation has shown successful outcomes with osseous free flaps anchored to subperiosteal implants with dental connections. However, in situations where maxillectomies are not eligible for free flaps, there have been attempts using subperiosteal implants with temporalis muscle flaps, resulting in a few exposures in the paranasal area. When reconstructing the premaxilla with subperiosteal implants, iliac bone grafts, and facial artery myomucosal flaps for lining, there were no issues of shrinkage or exposure. The preference for pedicled bone grafts over block grafts is grounded in concerns over potential necrosis, but the challenge lies in determining which vessels to anastomose in the upper jaw. This approach is considered crucial, particularly in cases with limited interocclusal space, horizontal atrophy, and when patients favor a fixed bridge as a solution.

What techniques should be applied and studied when cheek infection happens ?

The suggested protocol mentioned on the website involves a comprehensive approach to managing deep tissue infections related to AMSJI. Additionally hyperbaric therapy may also be considered. The treatment approach includes full removal of the AMSJI, debridement, and resection of any fistulas followed by antibiotic therapy.

Additional research could focus on techniques like lavage, surgical debridement, and cleaning the surface of the AMSJI with specific solvents, without affecting the implant's smoothness. This includes a prospective multi-center study aimed at collating data on risk factors associated with patients presenting with these infections and assessing the success of treatment interventions. To prevent further infections, an in-depth study of the mucosal seal around the AMSJI posts is suggested, as maintaining this barrier could prevent deeper infections caused by the oral flora. Furthermore, studying the bacteriology of these infections for more accurate and faster results using appropriate antibiotic regimens is crucial.

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