

Editorial

A clinical round table about the treatment of the severely resorbed posterior mandible. Part 1: challenges, endeavor and perspectives

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Implant dentistry evolved and improved very quickly during the last 15 years, and the Frontier of the rehabilitation strategies is each year pushed further. However, there is one very common clinical situation that remains quite complex to treat even for the experienced clinicians: the severely resorbed posterior mandible. After teeth extraction, the centrifuge resorption of the alveolar bone is quite quick and it remains only a dense cortical bone. The presence of anatomical obstacles - mostly the mandibular inferior nerve - and the general shape and orientation of the residual bone mandibular body, often compromise a functional and stable implantation in this area after natural resorption. The problem is often solved in full arch mandibular rehabilitation through the use of implants in the anterior region and a prosthetic cantilever to rehabilitate the posterior area, but this approach is not possible when the patients still have healthy anterior mandibular teeth and only need posterior rehabilitations.

The use of short implants gives excellent result in moderately resorbed posterior mandibular ridges [1], but resorption can very quickly reach the limits of what short implants can do. If a bone reconstruction is required, this mandibular cortical bone is dense and often not well vascularized, what makes difficult to regenerate some bone chamber or to graft a material on the mandible body. Moreover, the specific dynamic of the mandible body implies many constraints both intrinsic and extrinsic on the posterior bone body, what are supplementary sources of interferences with a potential bone regenerative therapeutic strategy.

Many techniques have been suggested to treat this area, but all of them remain quite complex: for example, inferior alveolar nerve transposition or by-pass [2], distraction osteogenesis [3], ridge lateral expansions [4], segmental osteotomies [5], Guided Bone Regeneration (GBR)[6], onlay or particulate bone grafts [7]. Based on the literature, we can not find any consensus on what would be the ideal treatment for this area, as most of the potential techniques remain relatively experimental and done on small series.

In this issue of the POSEIDO journal, we started to ask their opinion to a group of renowned clinicians worldwide, on how they would treat a severely resorbed posterior mandible, based on their long experience and clinical daily practice. The objective of this series of articles in the POSEIDO journal is to highlight many different surgical techniques or strategies - some of them have never been published before - to perform an implant-supported fixed rehabilitation on severely resorbed posterior mandibular alveolar ridges, and

to discuss the advantages and disadvantages of each of them, in order to reach finally a form of consensus conference between experts. These articles will take mostly the form of clinical case letters illustrating and debating new approaches, and they will lead to roundtables between experienced clinicians.

In this first series of letters, we mostly focused on the concept of Screw-Guided Bone Regeneration (S-GBR). This is actually a quite general concept that finds applications in many areas: the GBR barrier delimitating the bone regenerative compartment is supported by screws (osteosynthesis screws or even the dental implants) serving as space maintainers and supporting pillars for the bone regeneration. This approach was de facto used in many sinus augmentation procedures [8] and in various forms of guided bone regeneration since many years, even if this concept was never really duly isolated from other forms of GBR. **In this issue, we tried for the first time in the literature to isolate, define, illustrate and refine this specific concept of S-GBR, and to show how it can bring interesting clinical therapeutic solutions to the treatments of the resorbed posterior mandible.** Some other approaches such as the nerve by-pass or the sandwich technique were also described, and this will be illustrated further in the next issue.

This series of articles also highlighted 2 very important elements in these regenerative strategies. The first key element is the absence of consensus on the choices of bone materials [9], resorbable or non resorbable membranes and even implant design and surface [10]. The literature is very large but very controversial and commercial on this matter [9,10], and it is impossible to get a clear and scientifically validated information of what should be used, in which situation, particularly in complex cases of severely resorbed posterior mandible. For now, we have decided to read the various suggestions of combinations that were validated by the experience of some clinicians, but it is an objective of POSEIDO to reach a real first consensus on this matter in the future.

The second key element that appears in this roundtable is the development of the systematic use of Leukocyte- and Platelet-Rich (L-PRF) membranes [11]. L-PRF is a platelet concentrate for surgical use, defined as an autologous fibrin matrix enriched in platelets, leukocytes and growth factors and obtained after centrifugation of 10 mL blood samples [12]. The technique is easy and inexpensive, and after compression of the L-PRF clots, many L-PRF membranes can be collected and used in oral surgeries. L-PRF was largely used in some countries like France and Italy since more than 10 years, but the technique only started to develop recently worldwide, due to confusions with the Platelet-Rich Plasma (PRP) families that have been almost abandoned in the oral and maxillofacial field. L-PRF membranes strongly stimulate bone and soft tissue healing [13,14] and can be easily combined with many materials and membranes to improve the current techniques [7,15]. For the treatment of the posterior mandible, these membranes offer new opportunities to improve and simplify the treatments, particularly through the improvement of soft tissue healing and maturation and the reduction of the risk of gingival flap dehiscence above the bone regenerative chambers.

The development of new techniques in the treatment of the resorbed posterior mandible is therefore only at its early steps, and we hope that this overview of new techniques will lead the POSEIDO network to define a first consensus and maybe new therapeutic standards in the future.

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