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Controversies in
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Clinical Guidelines for Minimizing Complications in Subcrestal Implant Placement

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Introduction

A new concept in implant design incorporates a back-tapered neck with a microstructured surface to promote bone growth at the implant shoulder. This design necessitates subcrestal implant placement. While statistical analyses indicate favorable outcomes for marginal bone level development, challenges remain during the second-stage and prosthetic treatment phase.

Material and Methods

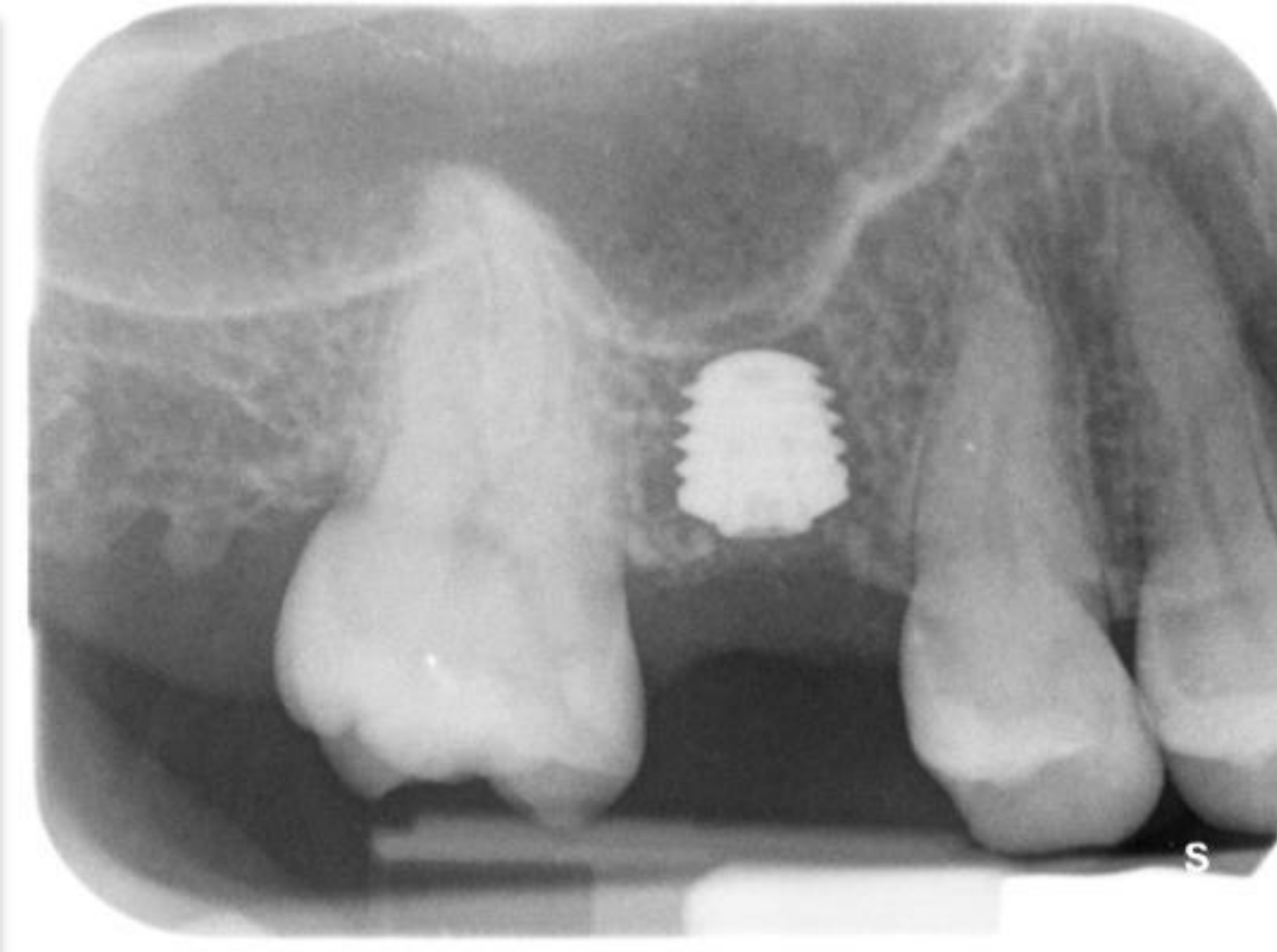
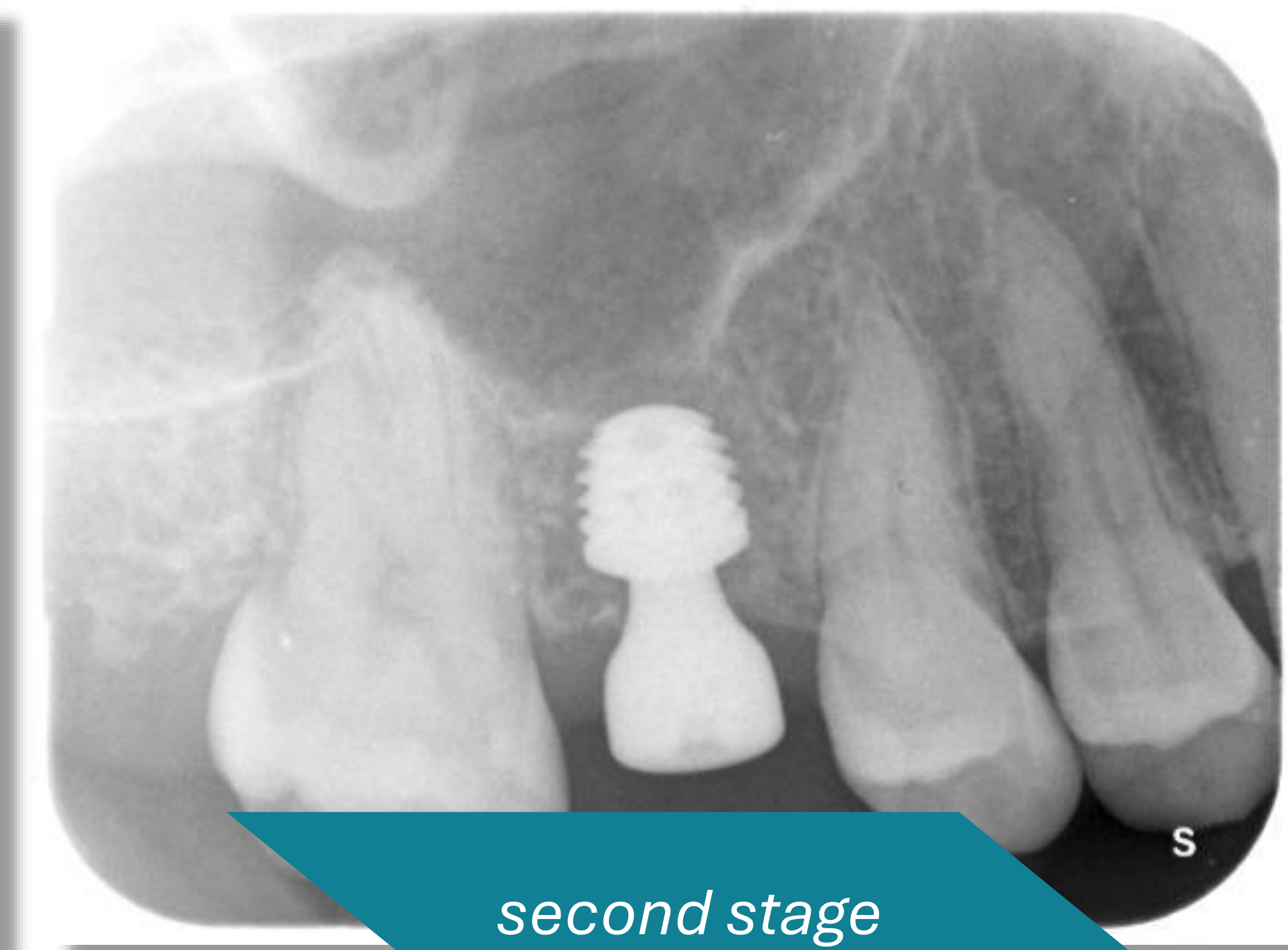
Since 2018, back-tapered neck implants with a uniform prosthetic platform and diameters ranging from 3.5 mm to 6 mm have been utilized. Implants were predominantly placed subcrestally, with some positioned epicrestally. The maximum subcrestal placement depth across all dimensions was 3 mm, with single-wall depths reaching up to 5 mm in select cases to avoid the need for additional grafting.



Placement of three implants diameter 4, 6 and 5 mm with micro-structured neck and identical prosthetic platform (copaSKY, bredent medical, Senden, Germany)



Sub crestal insertion



second stage surgery



Crestal bone adapted crown



Stable Bone level

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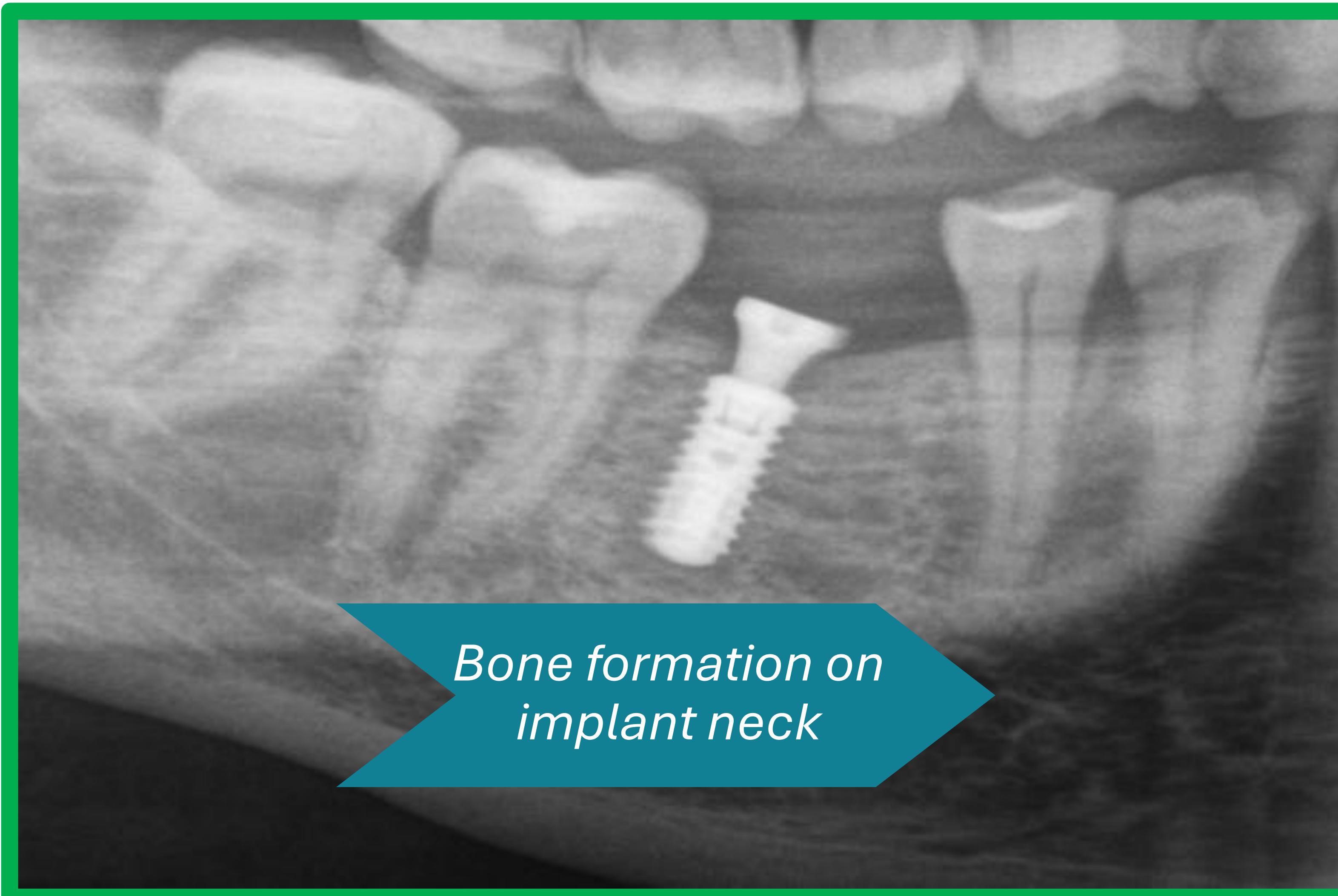
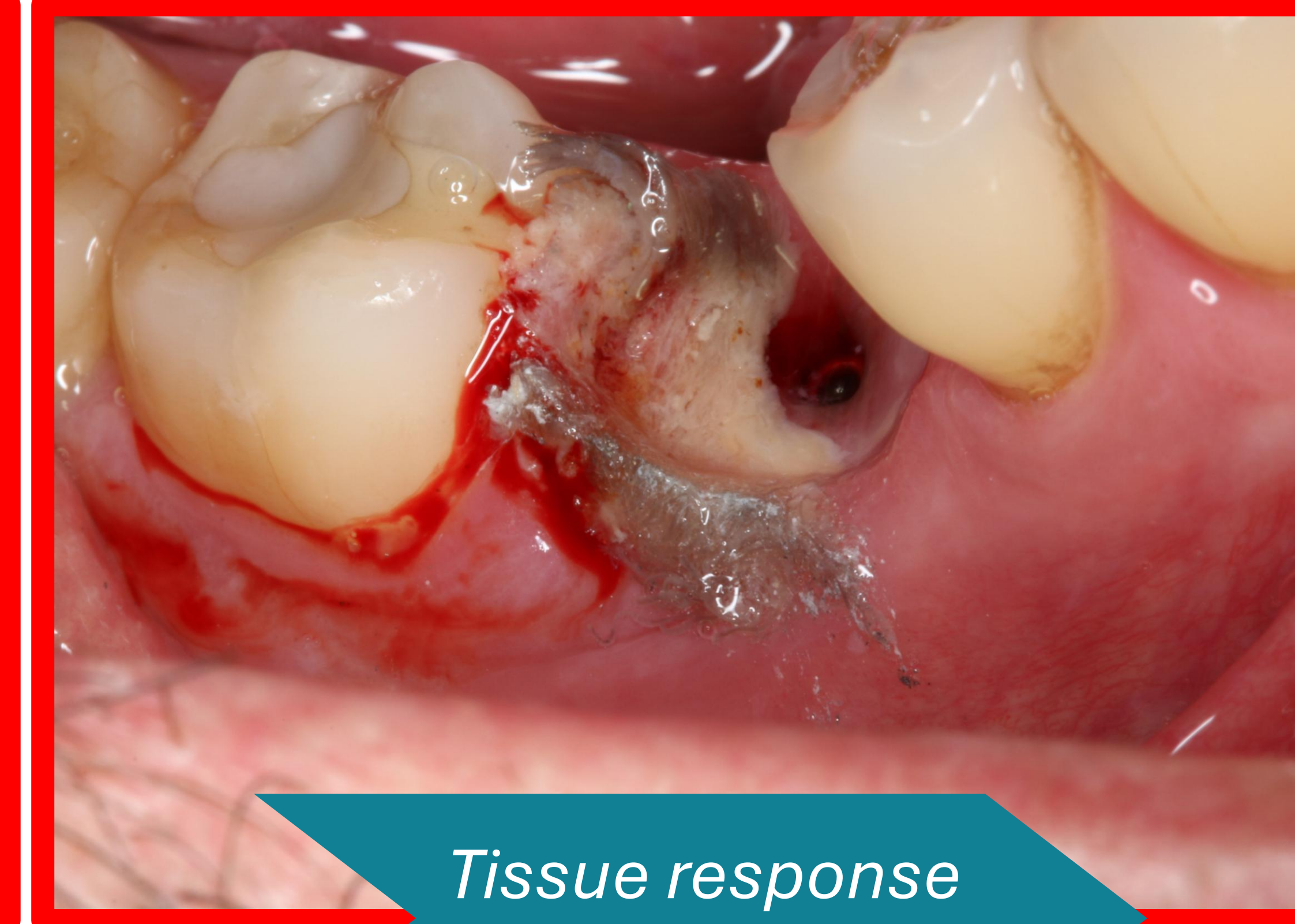
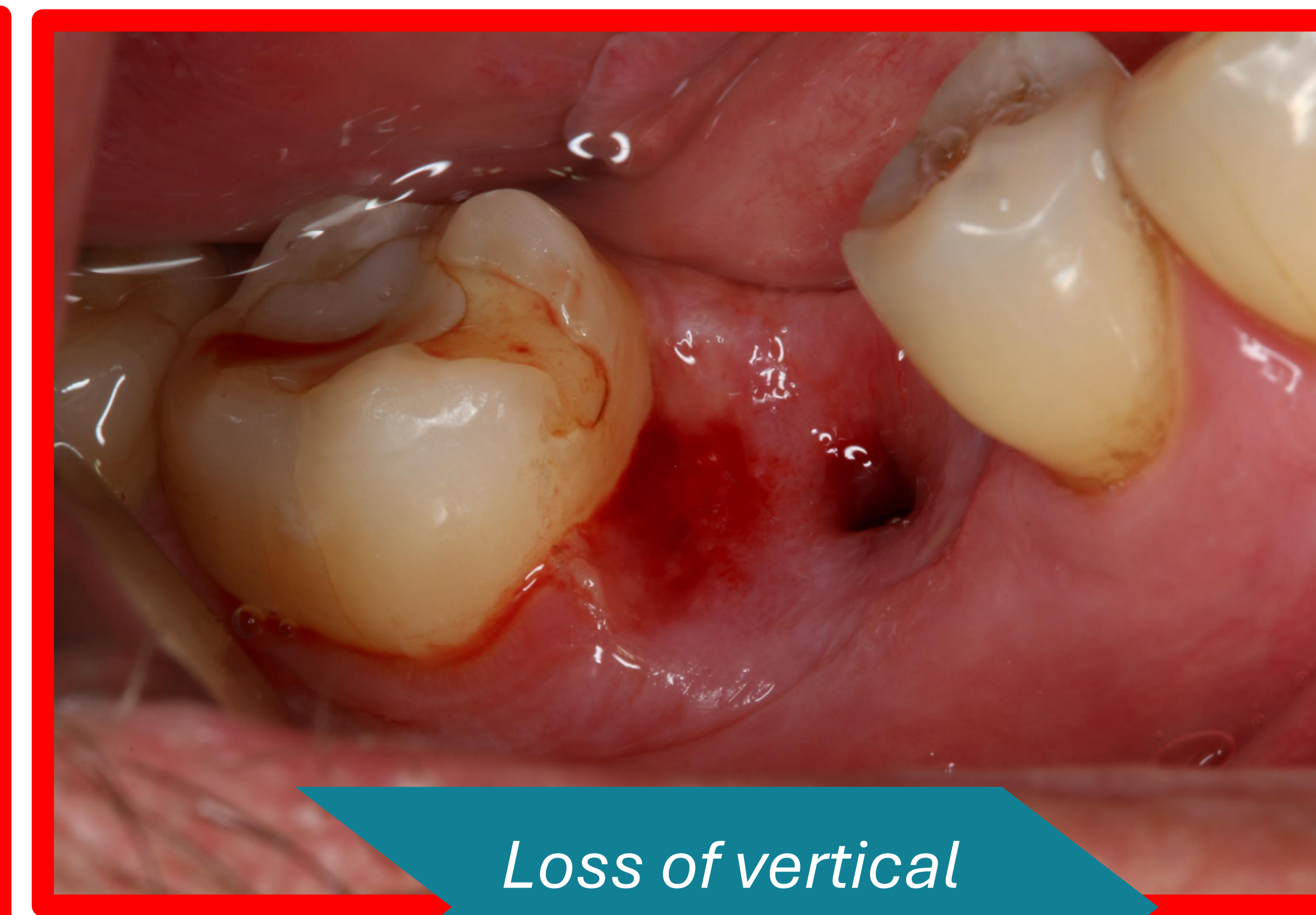
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Results:

Furthermore, depending on the design of the individual abutment, insufficient space for soft tissue nutrition sometimes resulted in tissue necrosis or abscess formation. When the distance between the abutment contour and the bone was less than 3 mm, bone resorption was observed



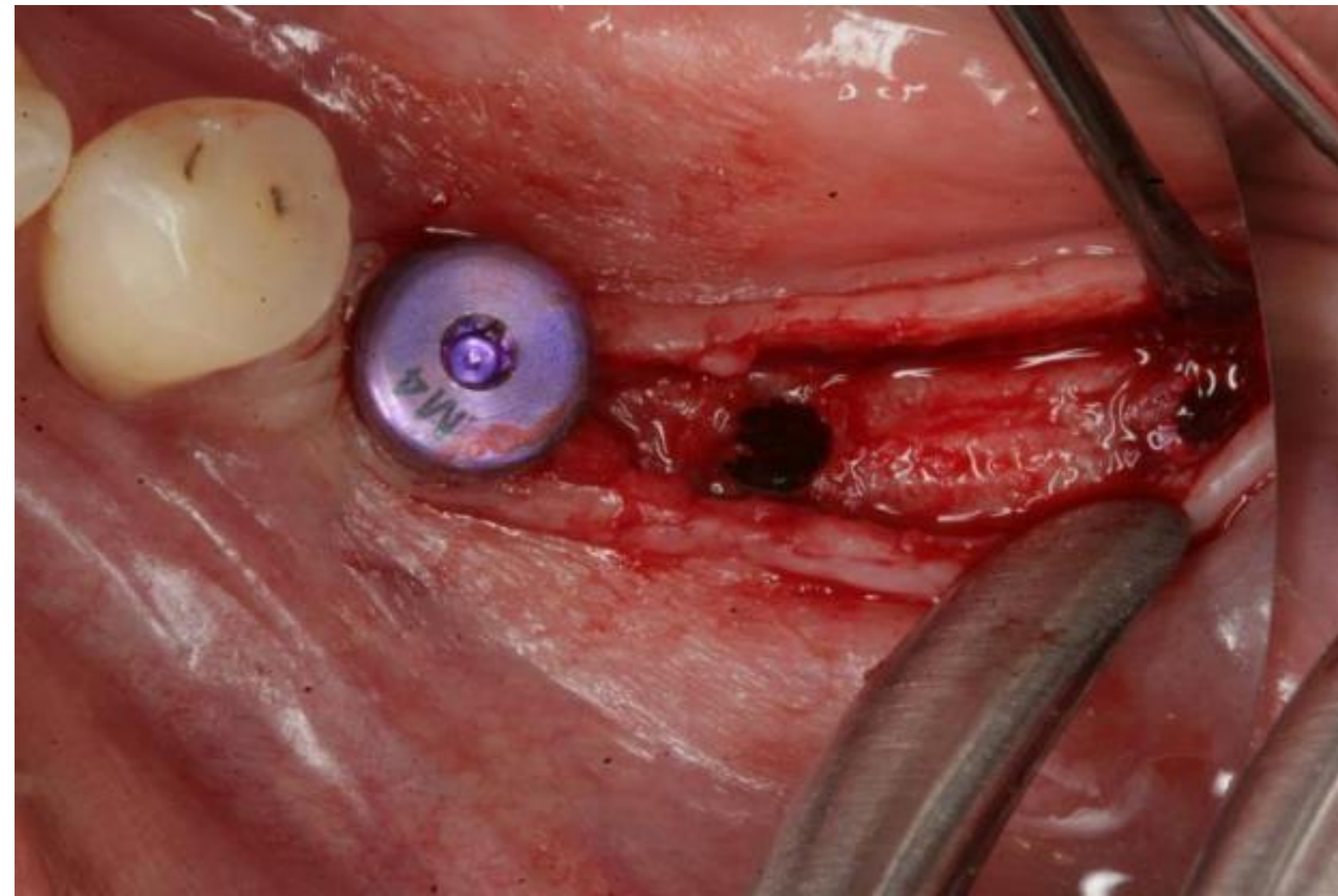
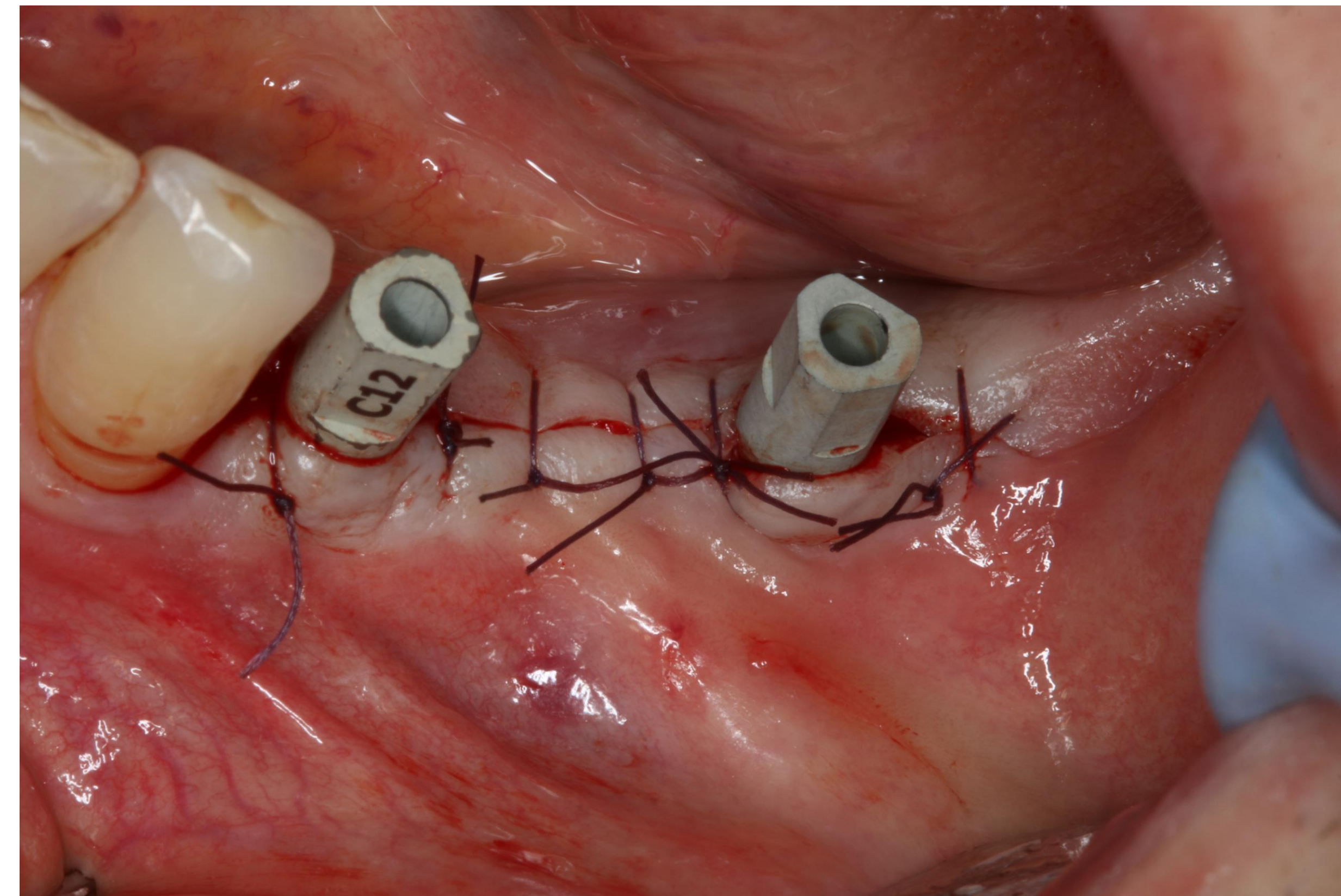
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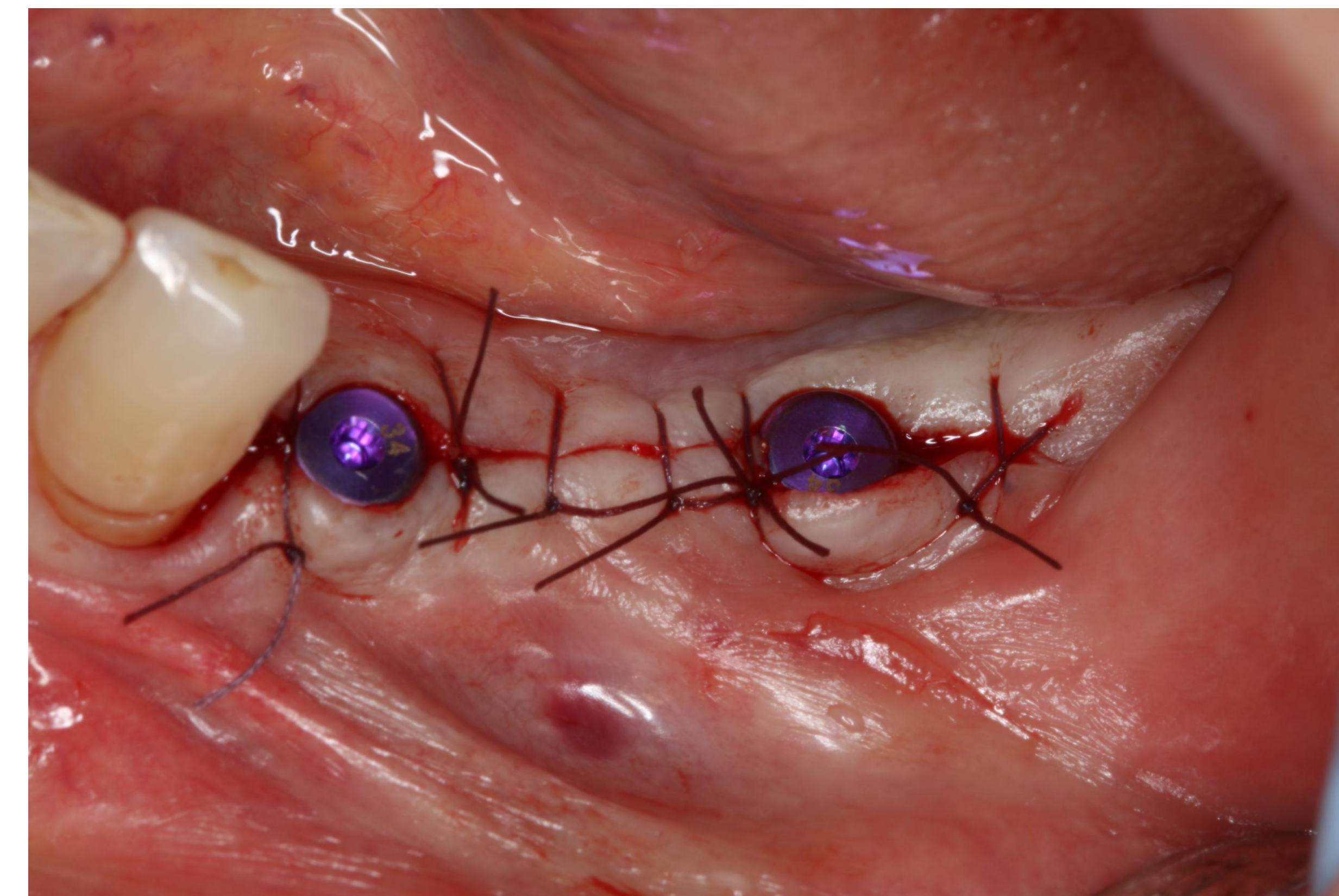
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Results:

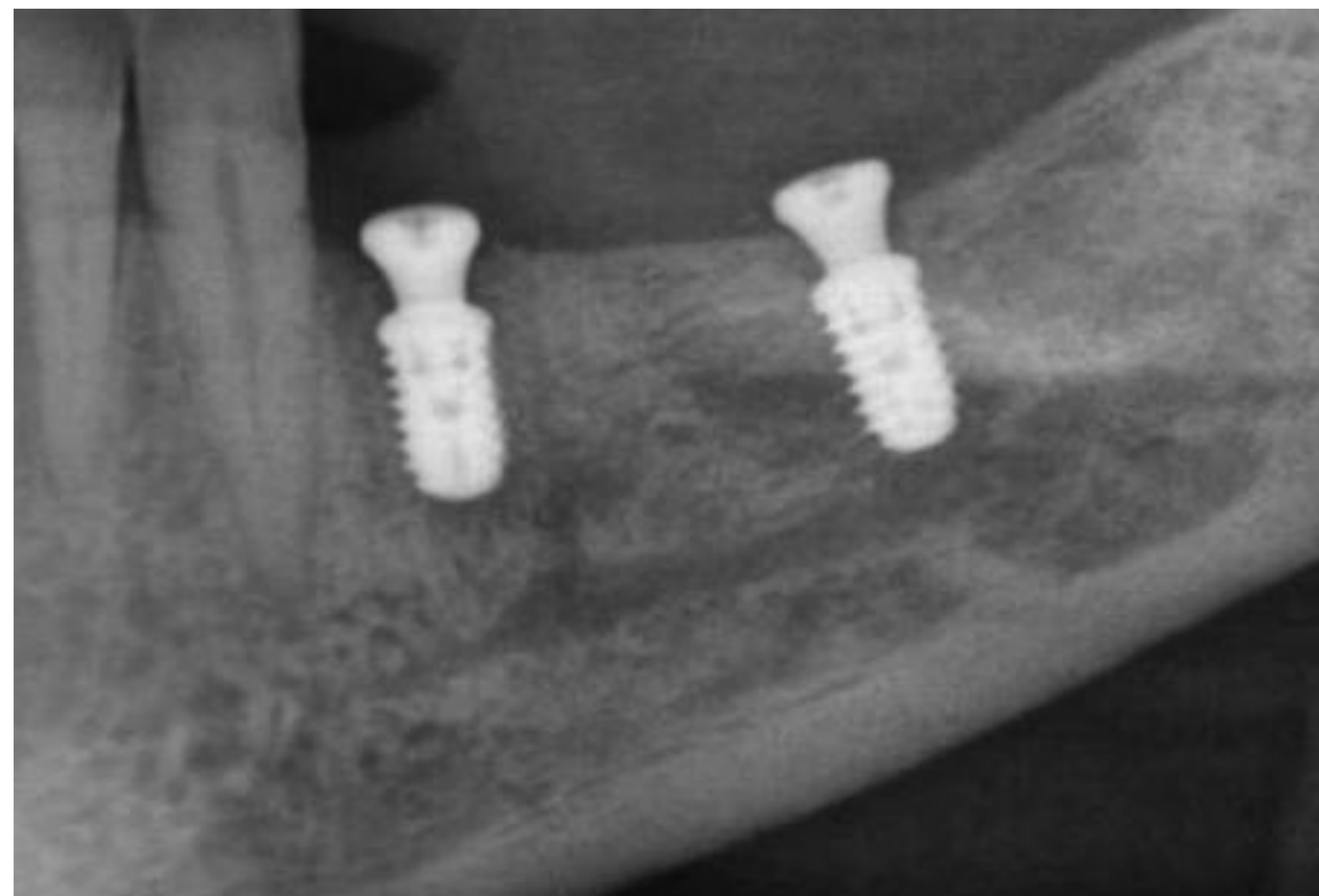


Implants placed epicrestally showed no increase in vertical bone dimensions at the level of the implant shoulder. In contrast, subcrestally placed implants demonstrated new bone formation on the shoulder at the time of the second-stage surgery, depending on the placement depth and implant diameter.



The most common challenge during second-stage surgery was the need for bone removal, even over the cover screw. Larger incisions provided better visualization for bone removal and improved wound healing compared to point-like incisions, which risked harming the soft tissue.

A frequent complication was the difficulty in seating the scan body due to direct contact between the secondary component and surrounding bone.



Conclusion

Post-surgical radiographs should be reviewed prior to second-stage surgery to determine the most suitable incision type. For deeply seated implants, an actual radiograph is recommended. Strict radiological monitoring is crucial during impression-taking to ensure precise transfer of the vertical implant position.

Radiological data should also be provided to the lab technician at the time of impression to guide the design and ensure adequate space for soft tissue. Following these principles minimizes lab-related misfits, pain, and infections. Over the long term, these practices contribute to stable marginal bone levels and, in most cases, even bone growth.

References

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