



Computer Guided Autogenous Bone Block Harvest from The Mandibular Symphysis

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Introduction: One of the common intraoral autogenous bone block donor sites is the mandibular symphysis. However, it poses a possible neurosensory injury. With recent advances in digital dentistry, a surgical guide could be fabricated using computer aided designing to minimize the risk of complications. **The aim of the study** was to evaluate the neurosensory alteration following computer guided autogenous bone block harvest from the mandibular symphysis versus the classic technique.

Methods: Twenty cases indicated for autogenous bone block harvest from the mandibular symphysis were randomly and equally divided into two groups. Computer guided autogenous bone block harvest from the mandibular symphysis was performed for the first group, while autogenous block harvest from the mandibular symphysis using the classic technique was performed for the second group. Neurosensory assessment, including pointed-blunt test and two-point discrimination test, was performed at 1 week, 1 month and 6 months postoperatively

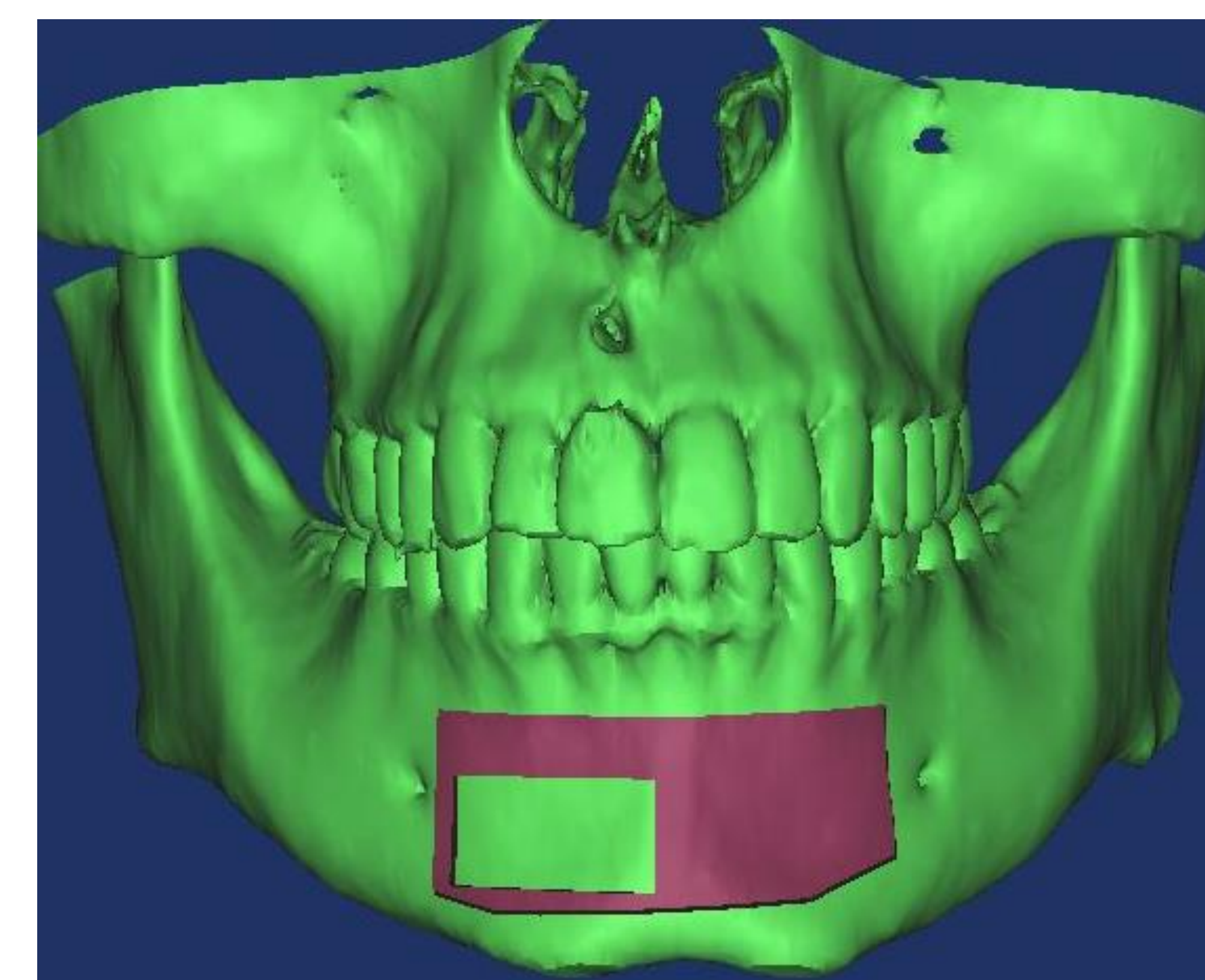


Fig. 1: Virtual planning and designing of the surgical guide



Fig. 2: 3D printed model for the mandible.

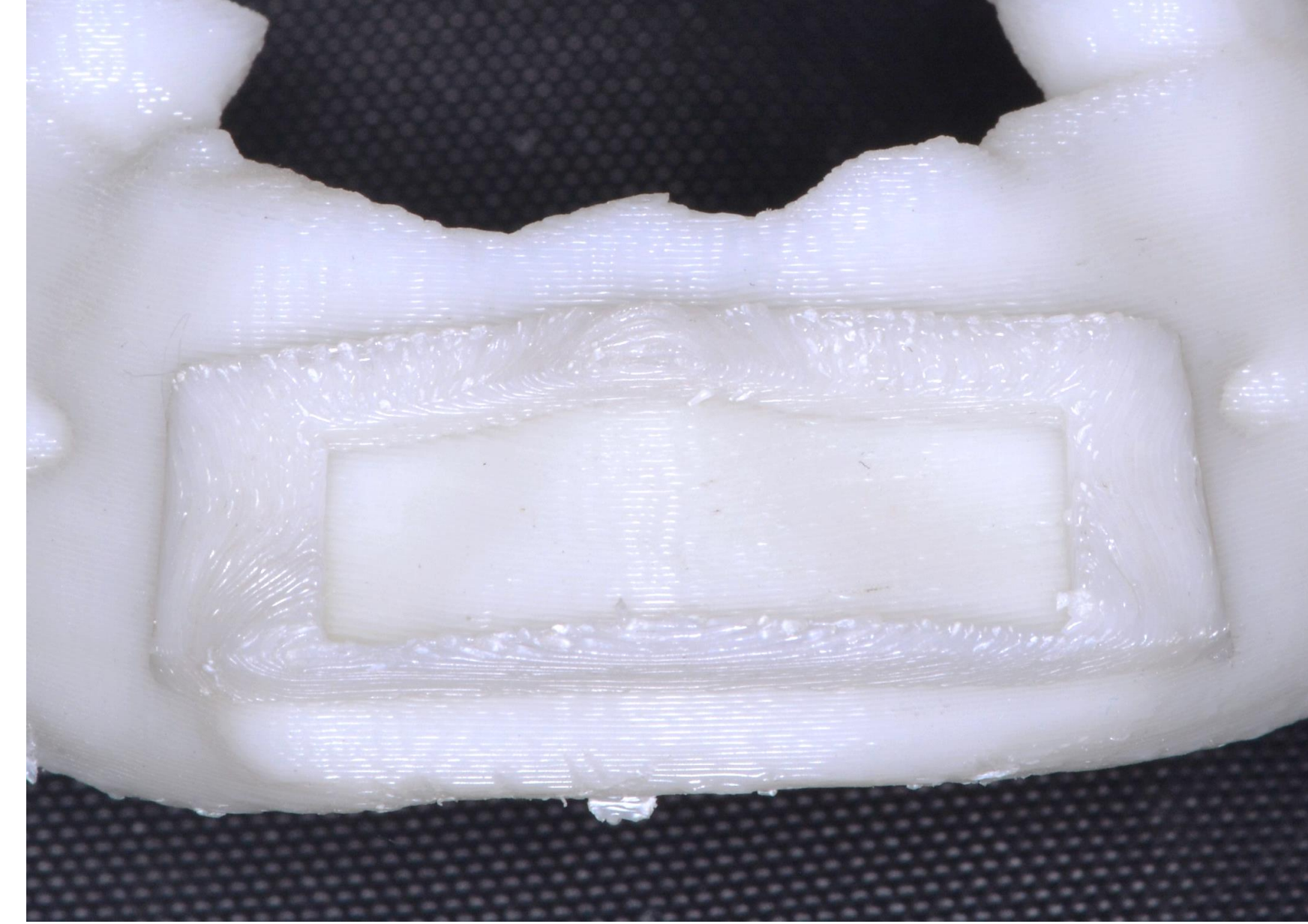


Fig. 3: Seating of the printed guide on the model.

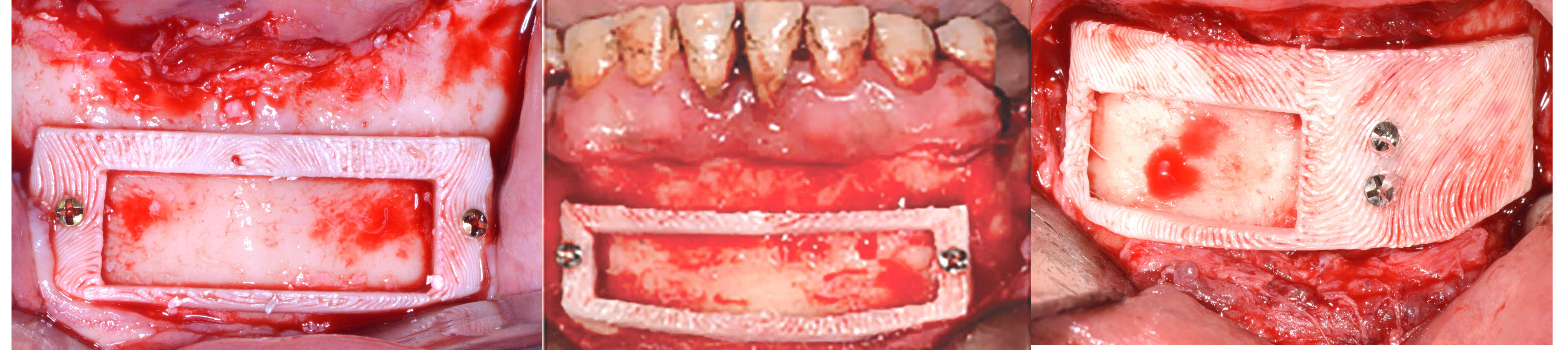


Fig. 4: Adaptation and adequate fixation of the surgical guide in different cases.

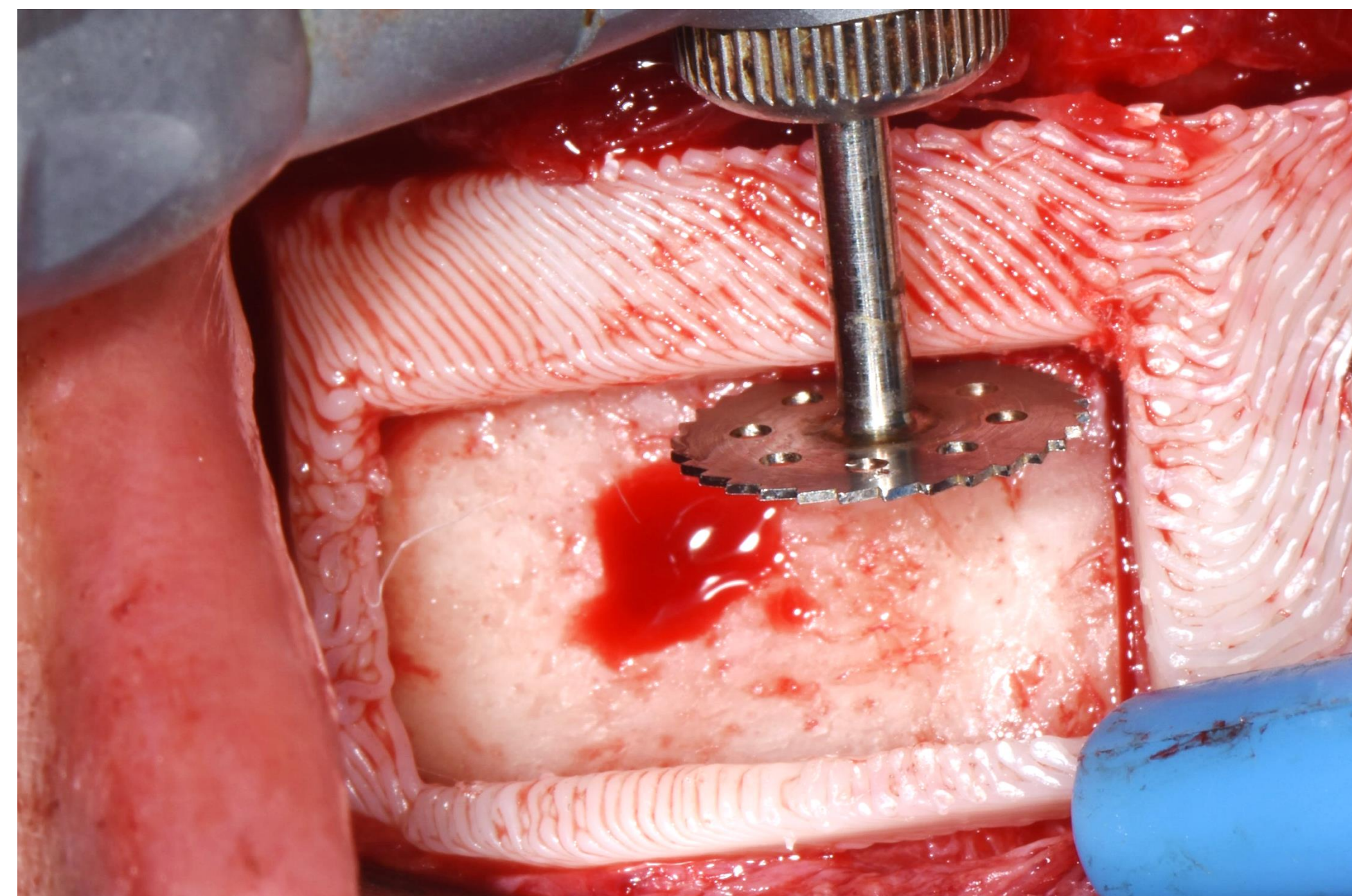


Fig. 5: Osteotomy outlines performed using saw disk under copious saline irrigation

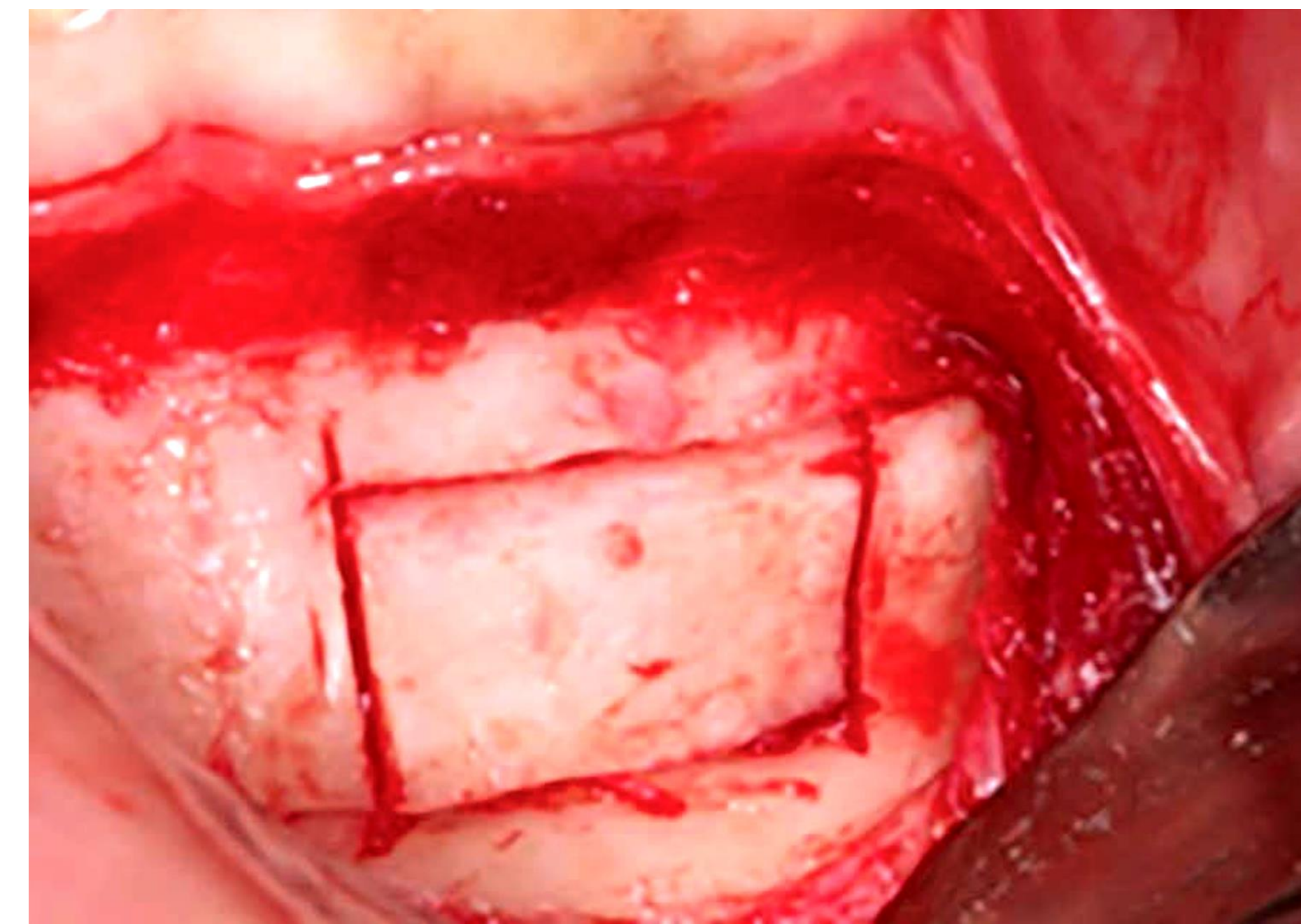


Fig. 6: Osteotomy created and surgical guide removed.

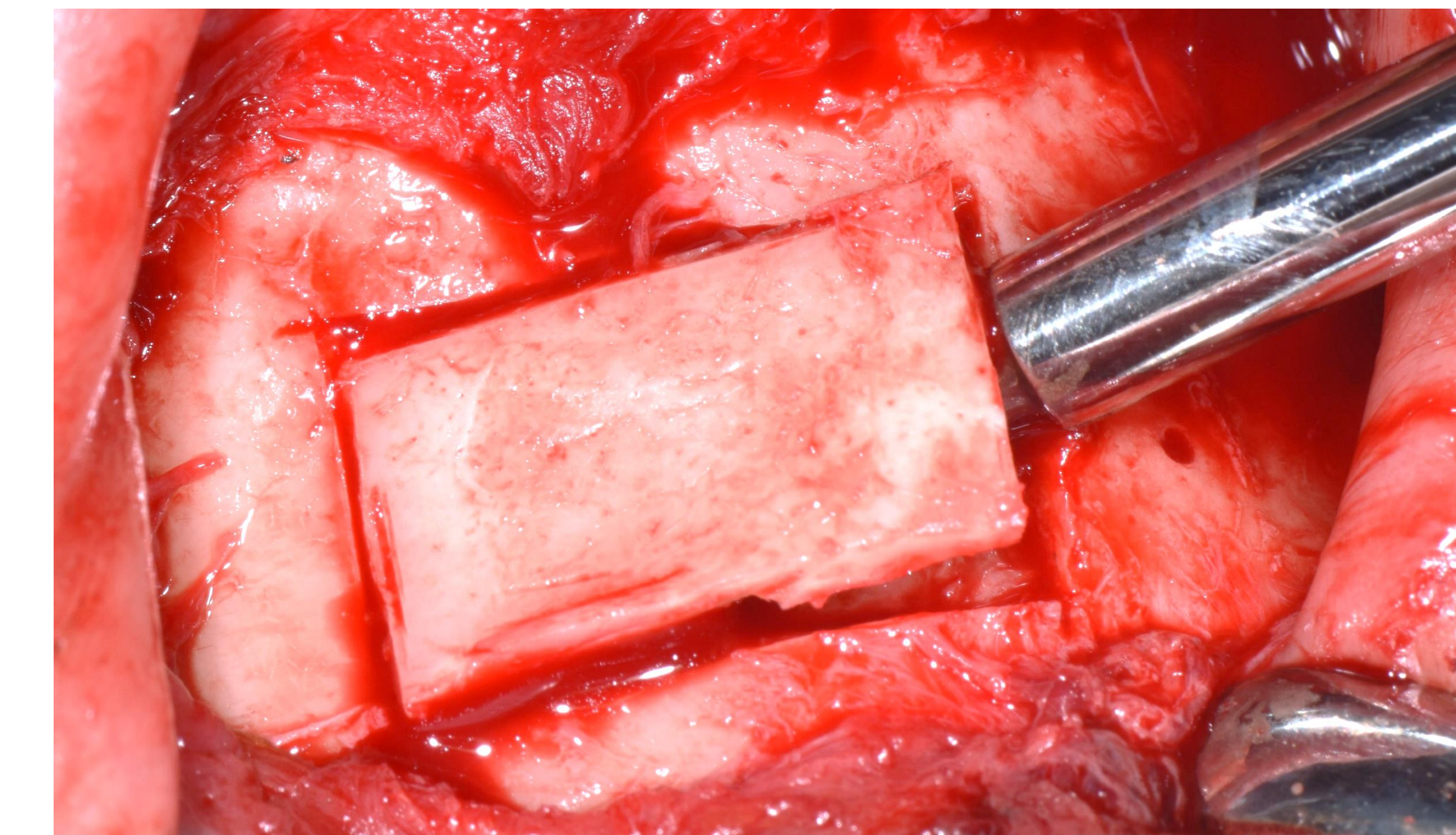


Fig. 7: Block graft tapped out using bi-beveled chisels

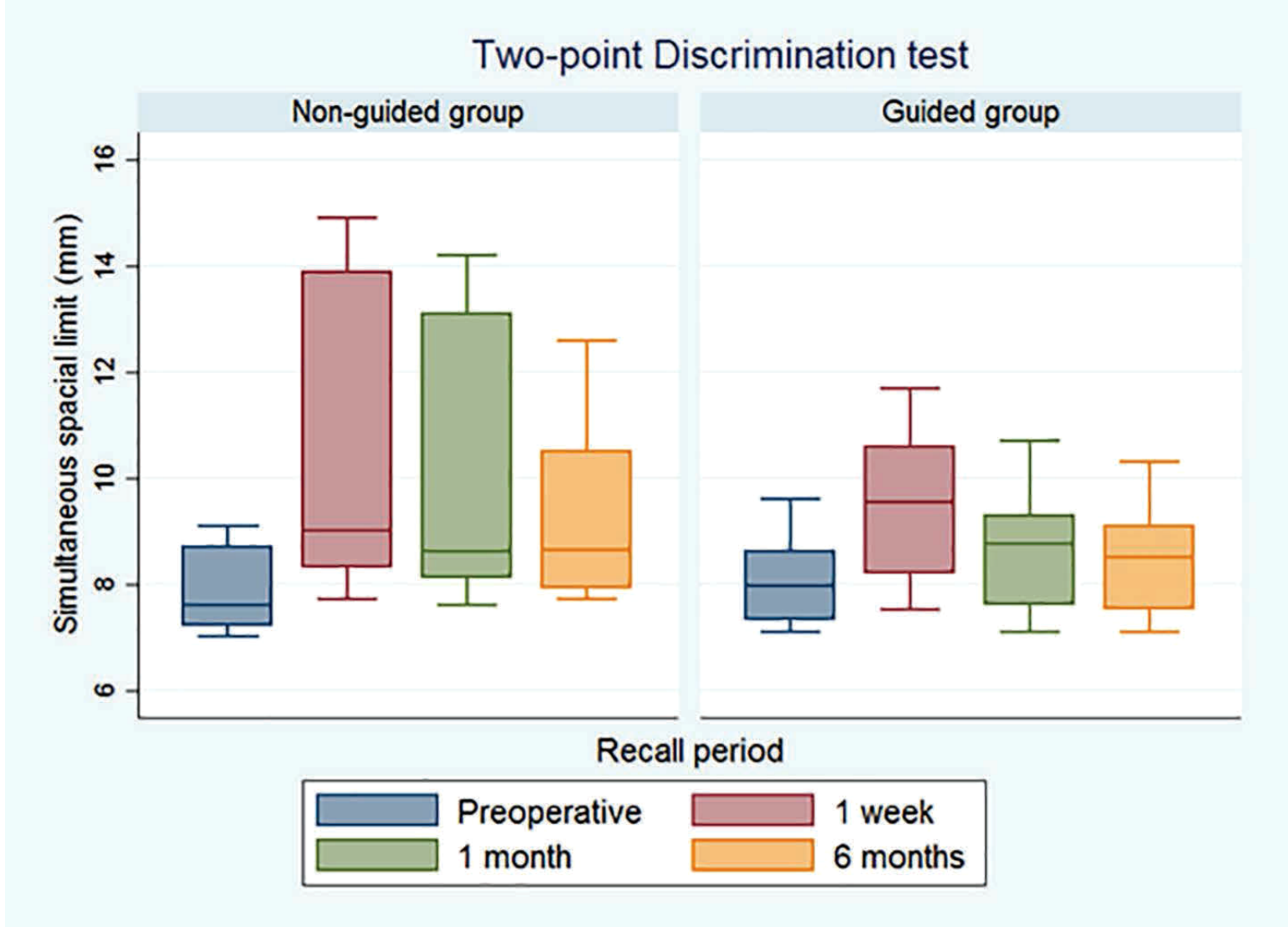


Fig. 8: Box Plot analysis of the 2-point discrimination test of the guided and non-guided group.

Tooth	Negative pulp sensitivity test at 1 week postop	Negative pulp sensitivity test at 1 month postop	Negative pulp sensitivity test at 6 months postop
33 (n = 9)	3 (33.3%)	1 (11.1%)	1 (11.1%)
32 (n = 8)	2 (25%)	1 (12.5%)	1 (12.5%)
31 (n = 9)	4 (44.4%)	1 (11.1%)	-
41 (n = 9)	1 (11.1%)	-	-
42 (n = 8)	2 (25%)	1 (12.5%)	-
43 (n = 8)	3 (37.5%)	1 (12.5%)	-
Total (n = 51)	15 (29.4%)	5 (9.8%)	2 (3.9%)

N < 10 since some teeth were absent or showed negative preoperative pulp vitality and therefore were excluded from the analysis.

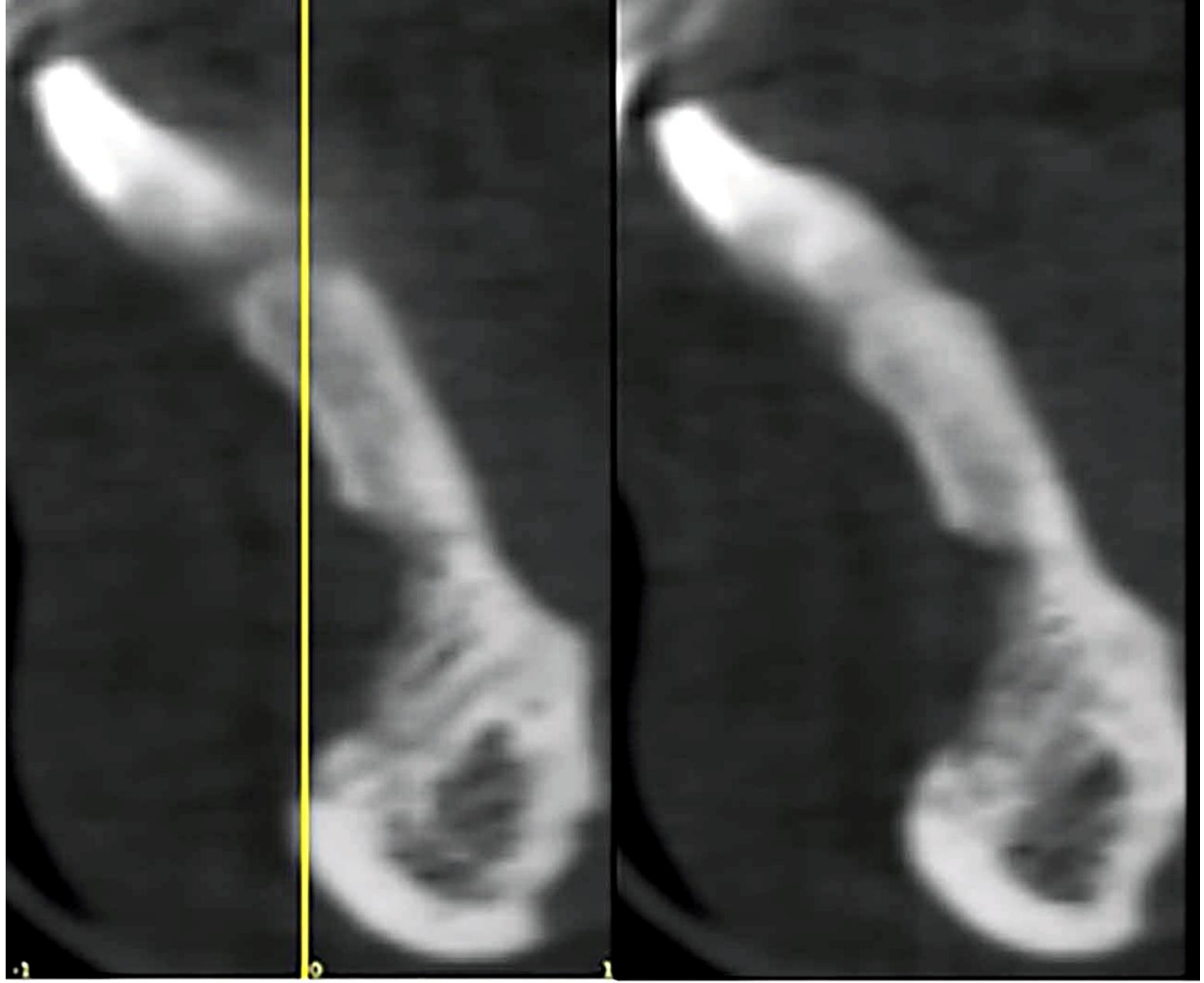


Fig. 9: Cross sectional views showing the donor site immediately postoperatively and at 6 months postoperatively. Incomplete fill of the donor site is evident.

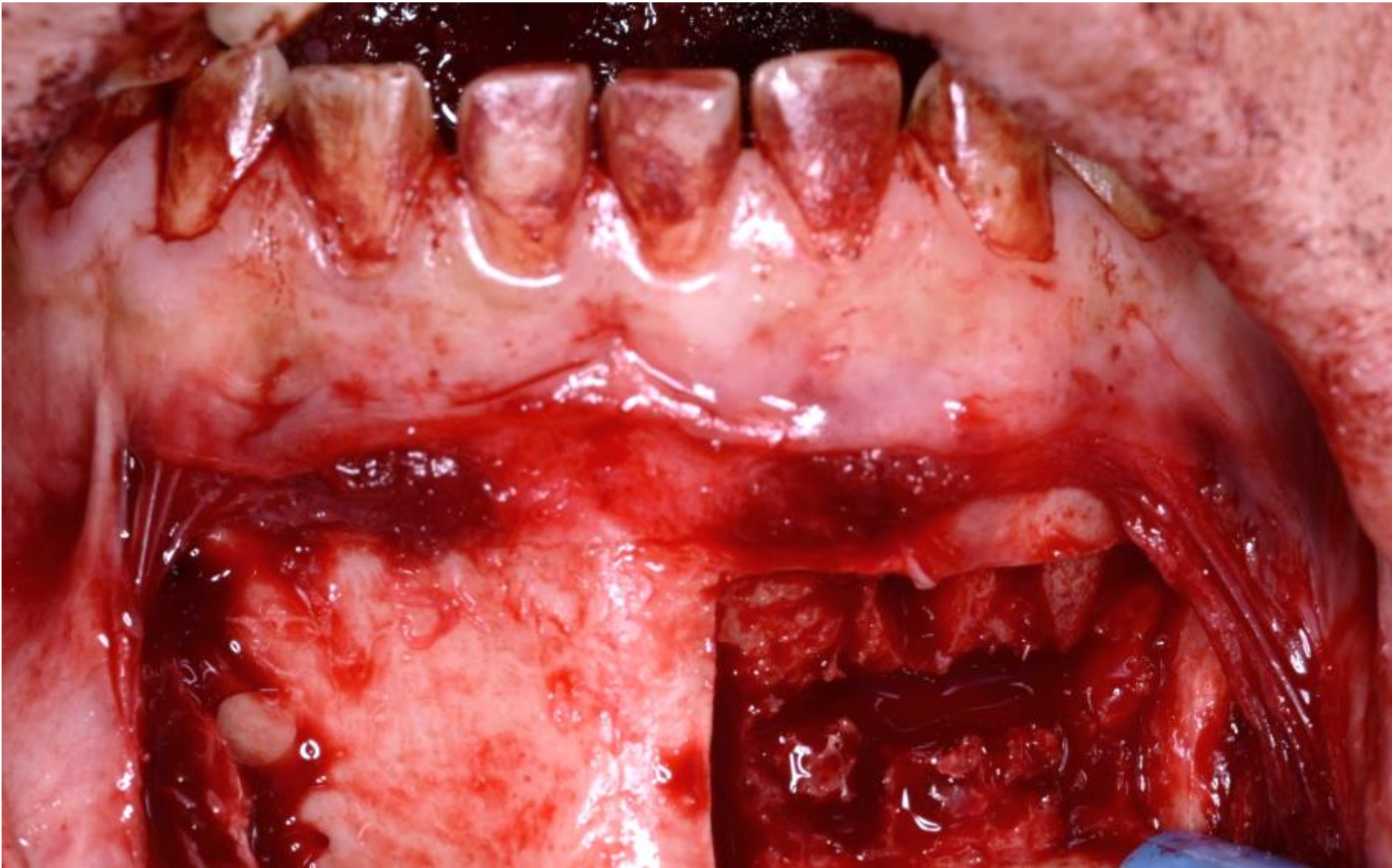


Fig. 10: Too high osteotomy outline resulting in direct injury to the apices of the involved teeth.

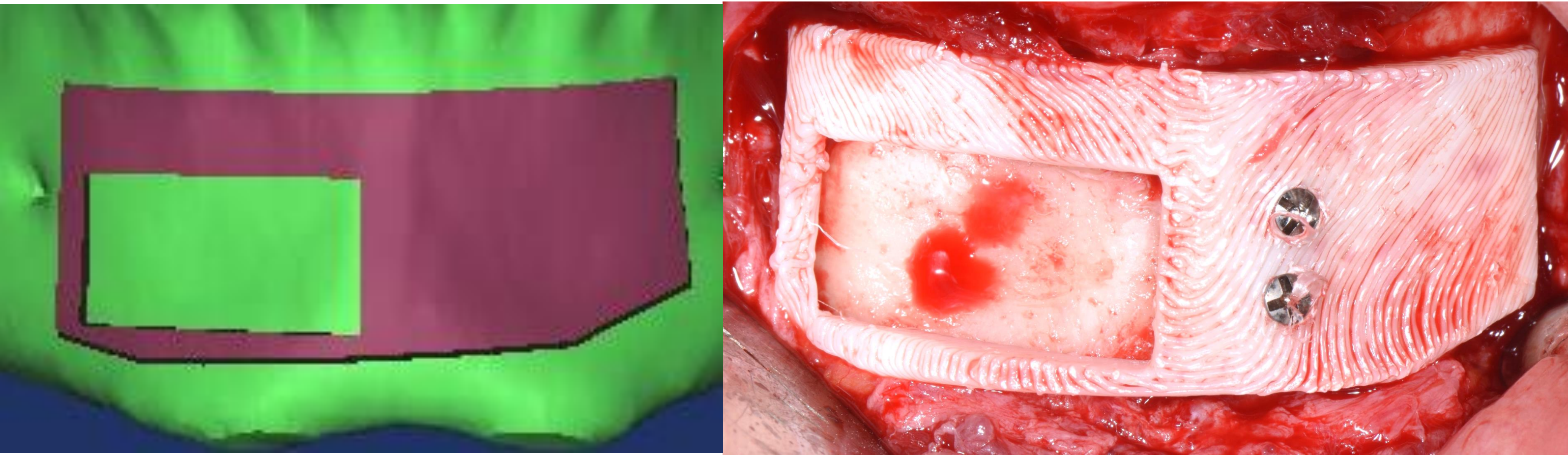


Fig. 11: Planning of the surgical guide versus clinical adaptation.

Results: All cases undergone uneventful healing regarding wound dehiscence and infection during follow up, except 2 cases in the guided group and one case in the classic group that showed wound dehiscence which resolved within one month for all 3 cases. Neurosensory evaluation for the guided group at 1 week showed one case with hypoesthesia and hypoalgesia which resolved completely at the one month follow up. While the classic group showed three cases with hypoesthesia which resolved for one case within 1 month and was persistent through the 6 months follow up for the other 2 cases.

Conclusion: Within the limitations of this study, computer guided autogenous bone block harvest from the mandibular symphysis shows promising results in the reduction of neurosensory complications following harvesting procedures and presents as a safe alternative to the classic technique.