



4th GBR Symposium 2022

Vertical Ridge Augmentation using digital approach: Reinforced-PTFE Meshes vs Customized Titanium Meshes. Preliminary results of a RCT.

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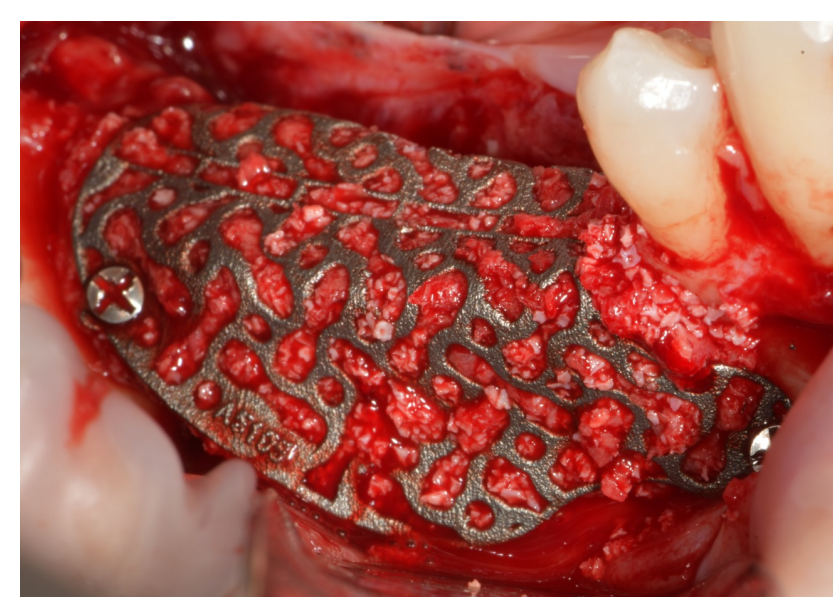
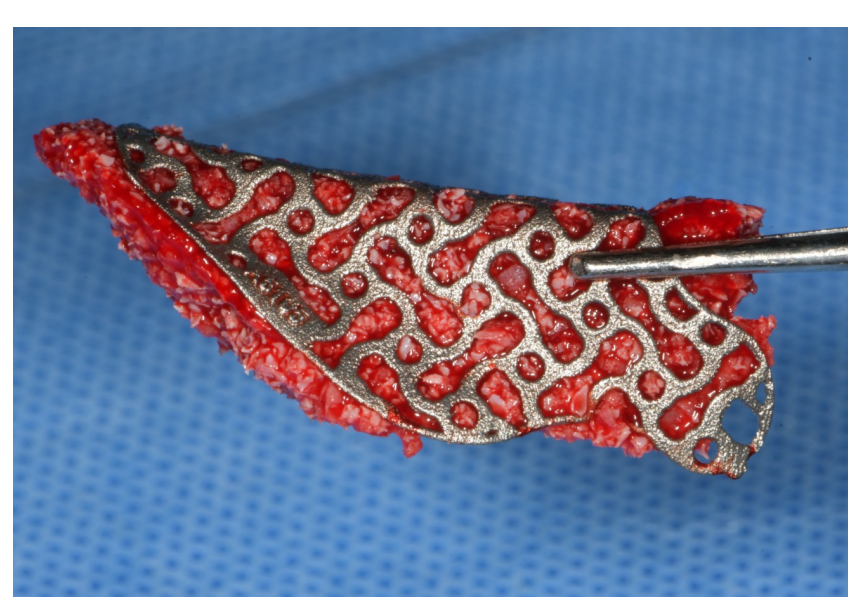
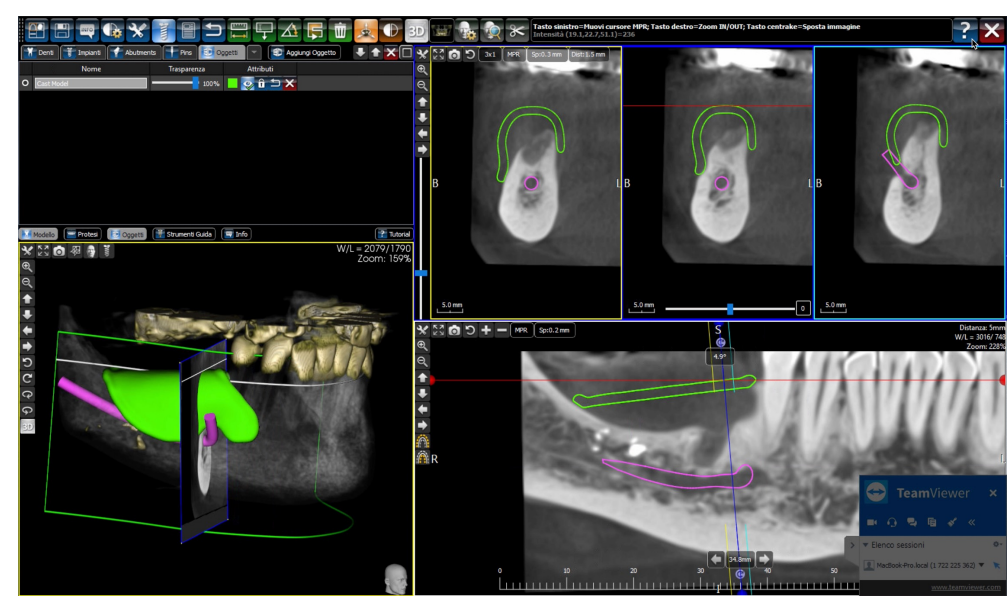
BACKGROUND AND AIM

Vertical ridge augmentation (VRA) is an advanced surgical technique for several edentulous ridge reconstruction, but it still shows some drawbacks. Titanium-reinforced PTFE meshes and custom-made titanium meshes represent the most innovative devices in the field of guided bone regeneration (GBR). The aim of this RCT (ethical approval CE19143) was to analyze the results obtained after VRA using titanium-reinforced PTFE meshes (RPM) compared to customized titanium meshes (Yxoss CBR) in order to evaluate any statistical differences.

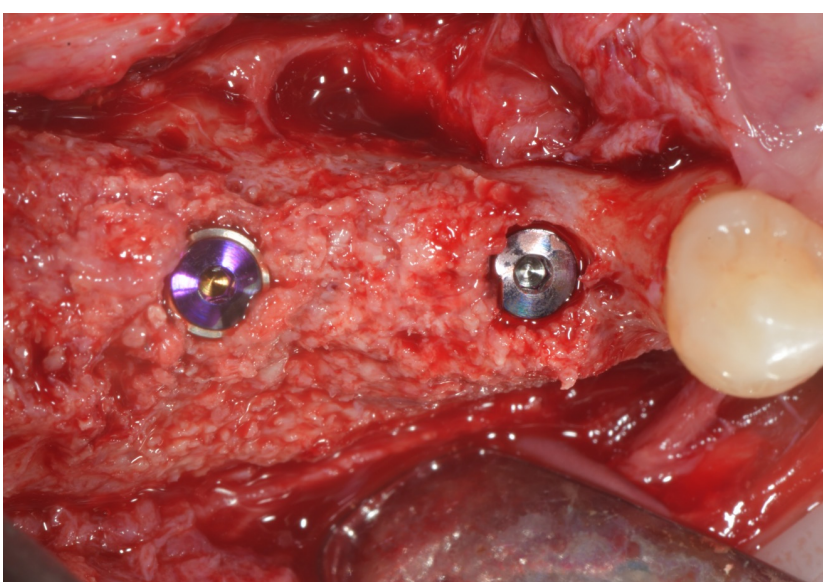
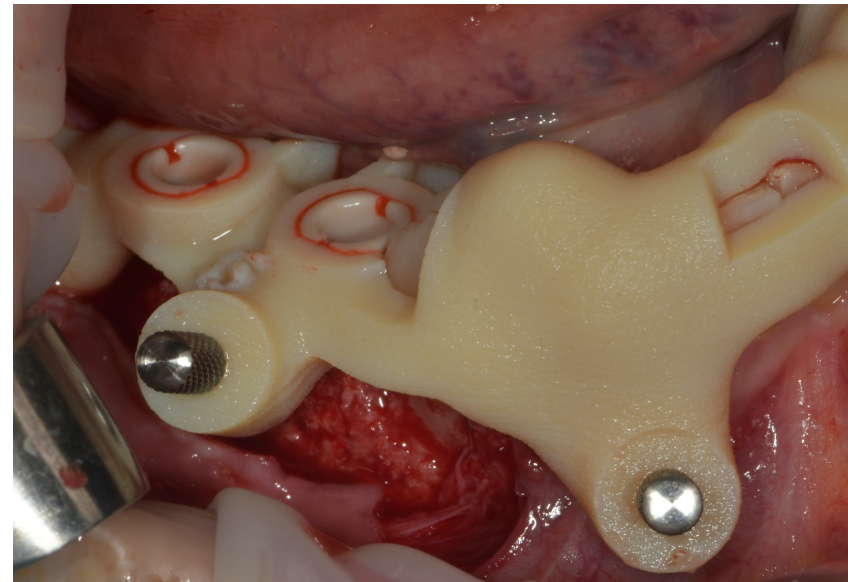
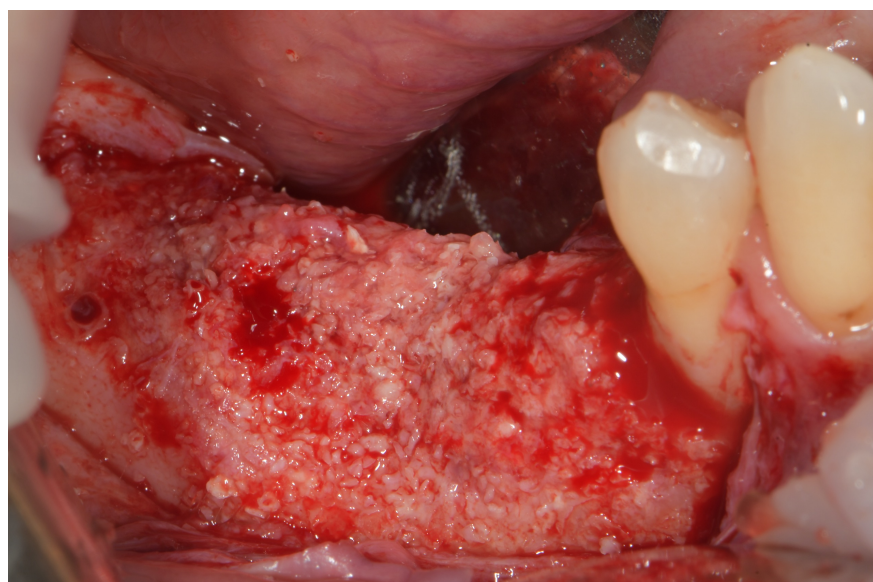
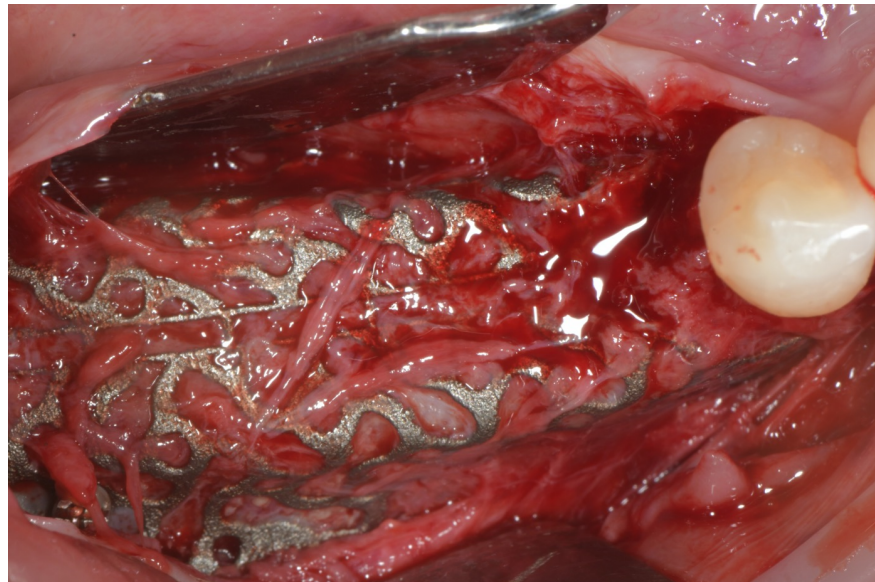
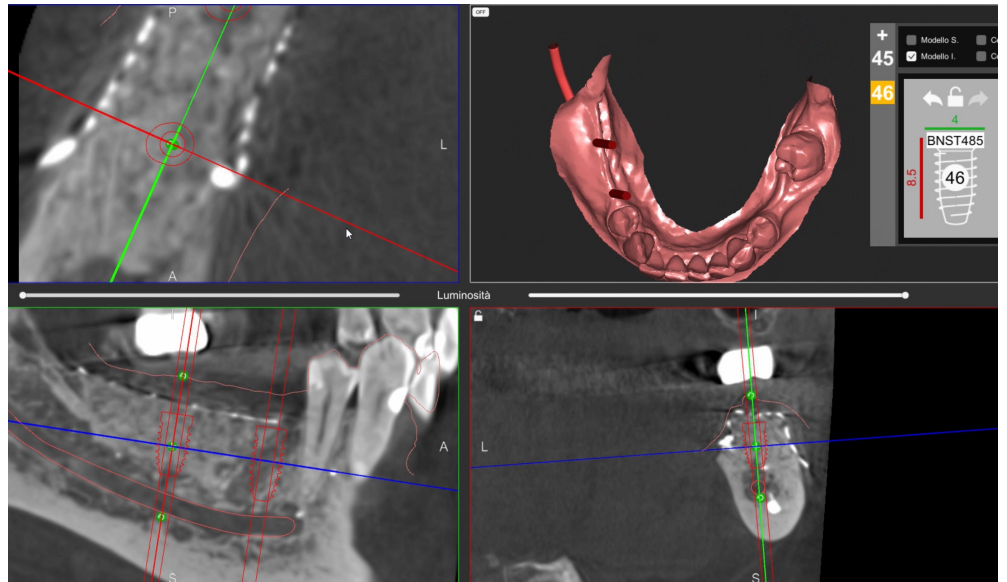
METHODS AND MATERIALS

The preliminary data included 43 out of 50 patients: 20 treated with RPM (control); 23 treated with Yxoss (test). All surgical devices were planned, customized and realized for each patient using a novel digital approach. During T0, after flap incision and elevation, digital devices were filled with bone graft, stabilized in situ and covered by resorbable membranes. After 6-9 months (T1) computer-guided approach was used to place the implants. Data collection included: clinicians- and patient-related outcomes, vertical bone defect (VBD) planned bone volume (PBV), surgical and healing complication (SC-HC), vertical bone gain (VBG), bone density (D), pseudo-periosteum (PP), implant stability (T), etc.

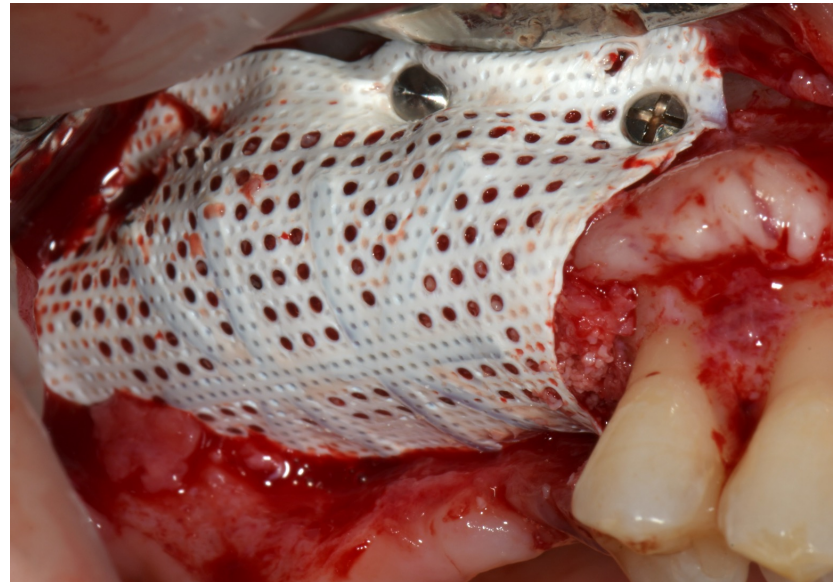
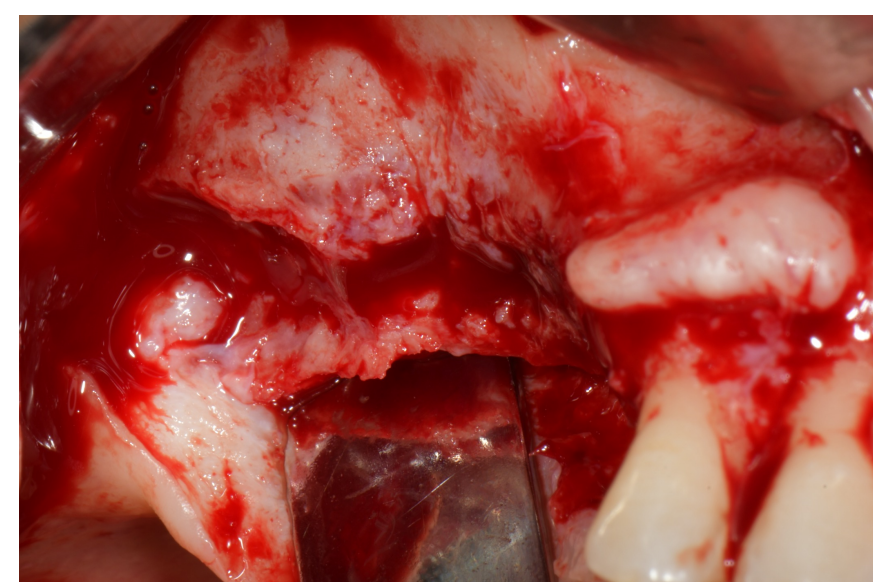
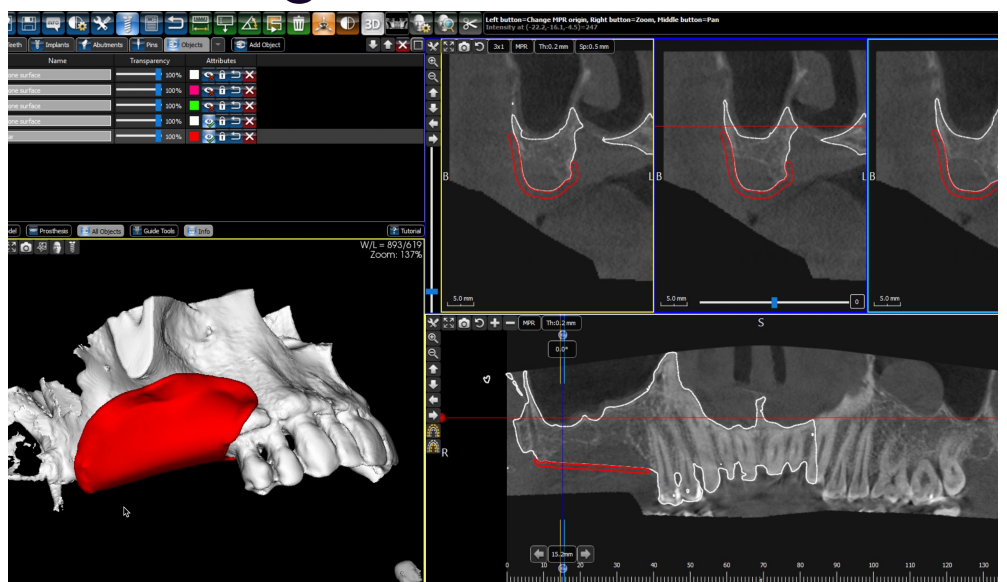
GBR using custom - made titanium mesh



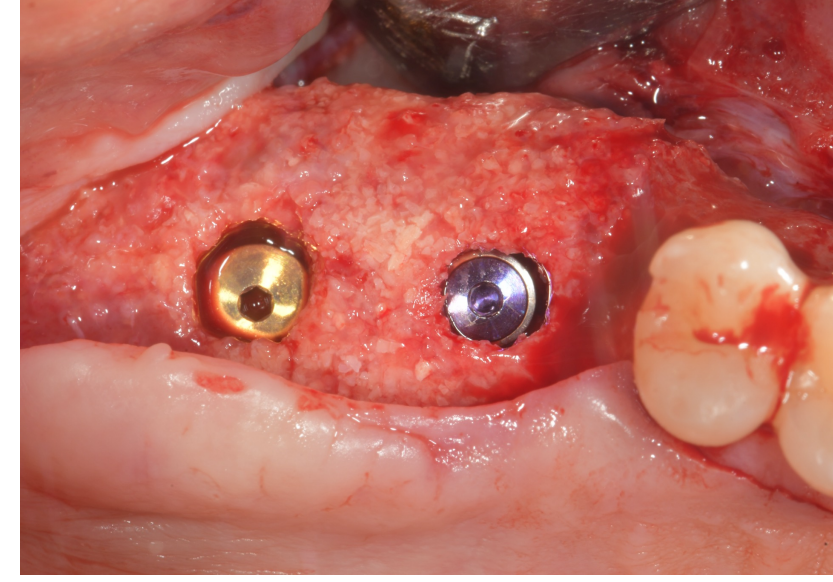
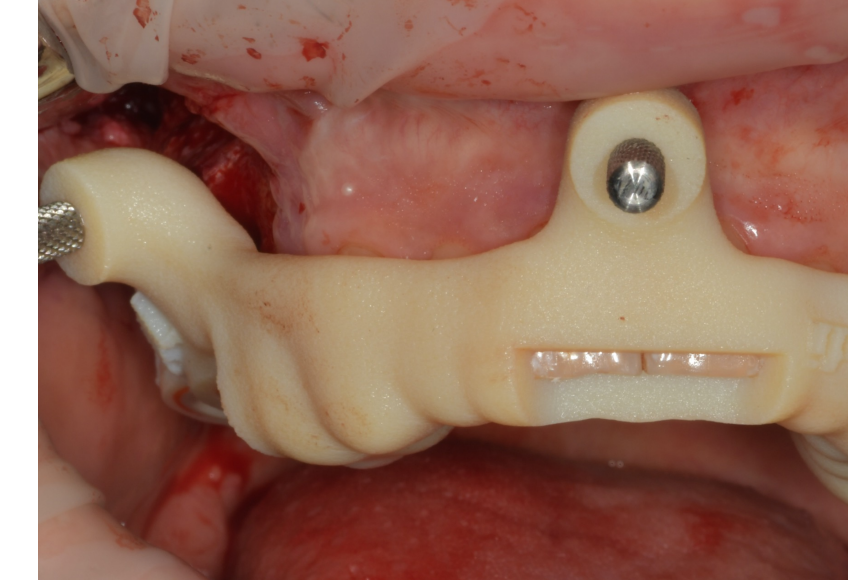
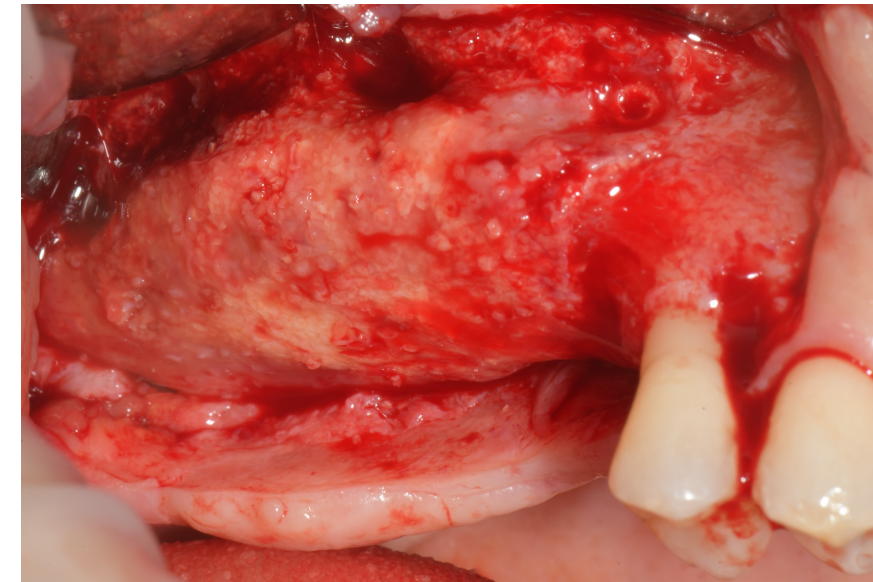
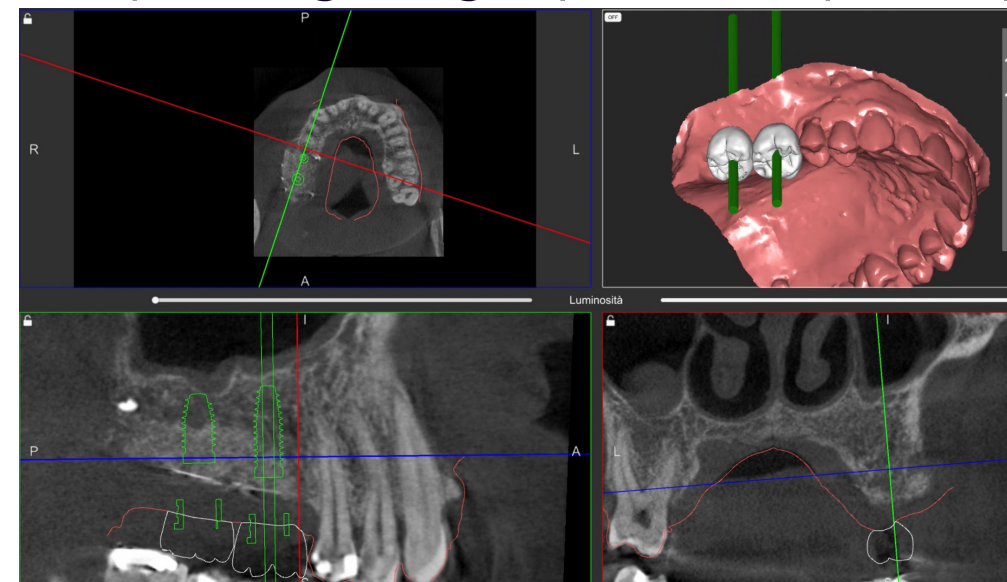
Reopening surgery with implant placement



GBR using titanium - reinforced PTFE membrane



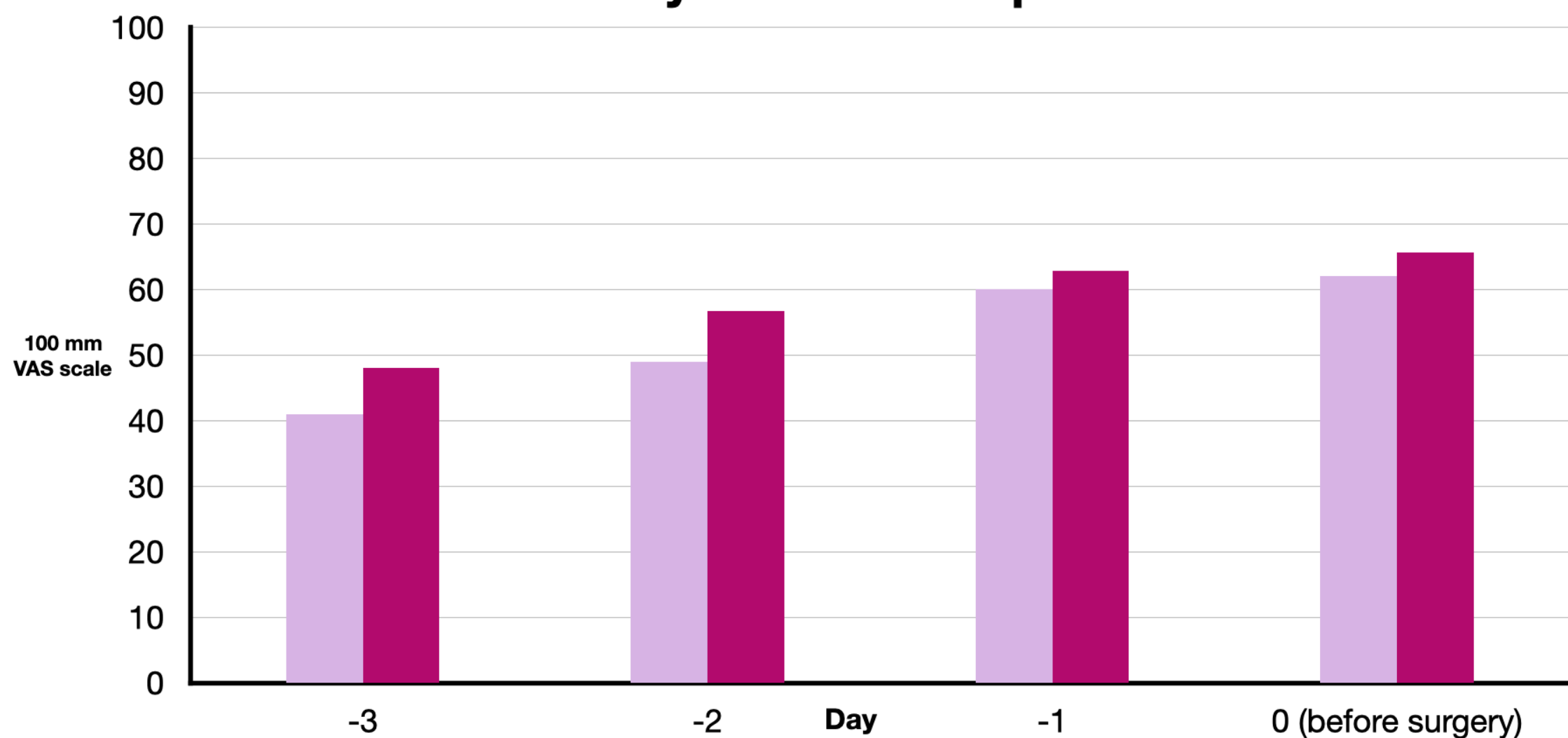
Reopening surgery with implant placement



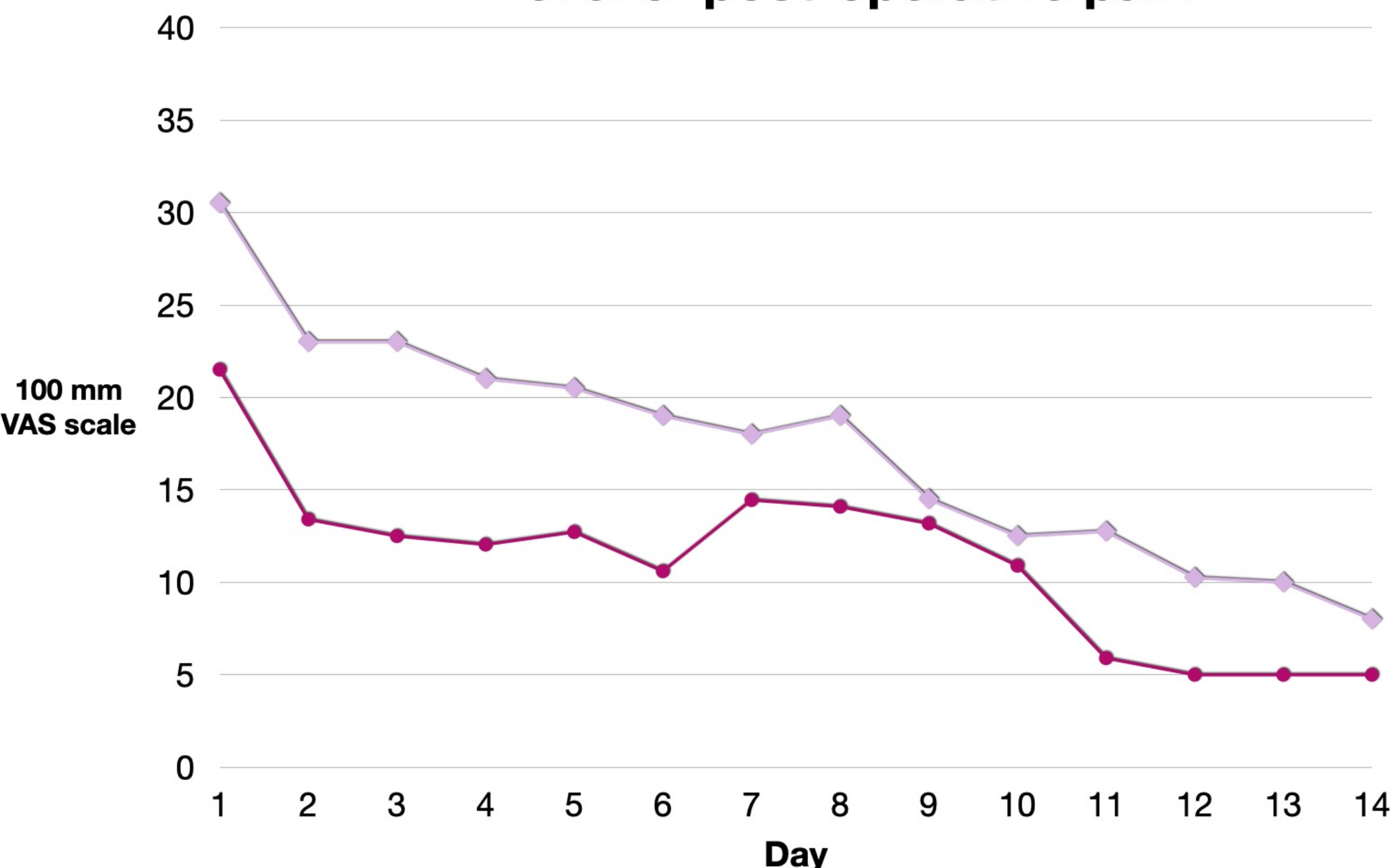
RESULTS AND CONCLUSIONS

Patient anxiety was similar in both groups as well as levels of postoperative pain & dosage of NSAIDs. Clinician anxiety was slightly higher in test group; blood pressure trends were similar. SC were 5% vs 13% and HC were 15% and 4.3% in control and test groups respectively. Mean duration of VRA was 109.7min (control) and 119.5min (test). No significant differences were observed in the different phases. Mean VBD was 5.8mm (control) and 6.1mm (test), and mean PBV was 1.4cc and 1.2cc, respectively. Mean VBG was 5.4mm: 5.3mm (control group) and 5.5mm (test). D-values was similar in the two groups, while PP-values was slightly better. Implants with T > 35 Ncm were 64.3% (control) and 50% (test). Preliminary results of this RCT showed no significant differences neither in patient- and clinician-related outcomes nor in clinical and radiological outcomes. Based on these preliminary results, both digital approaches seem to be effective and reliable for VRA.

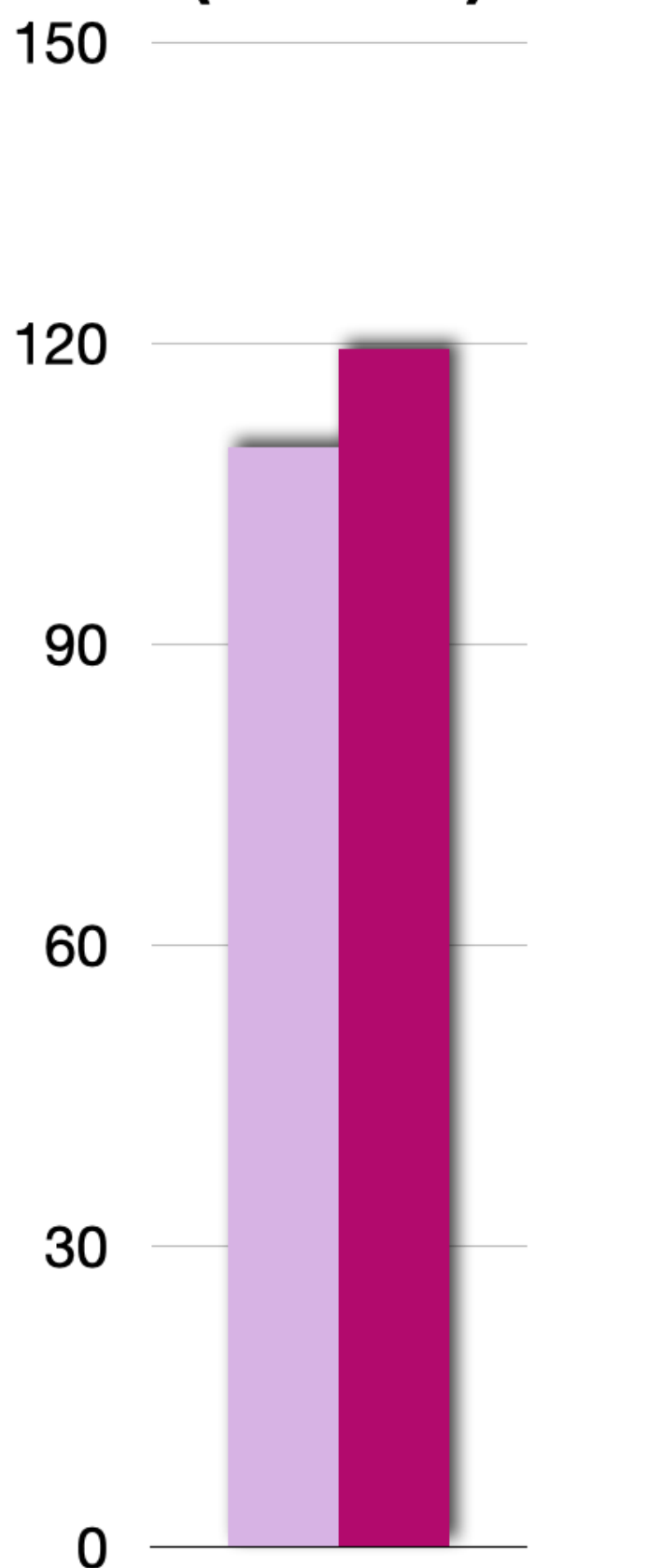
Anxiety level of the operator



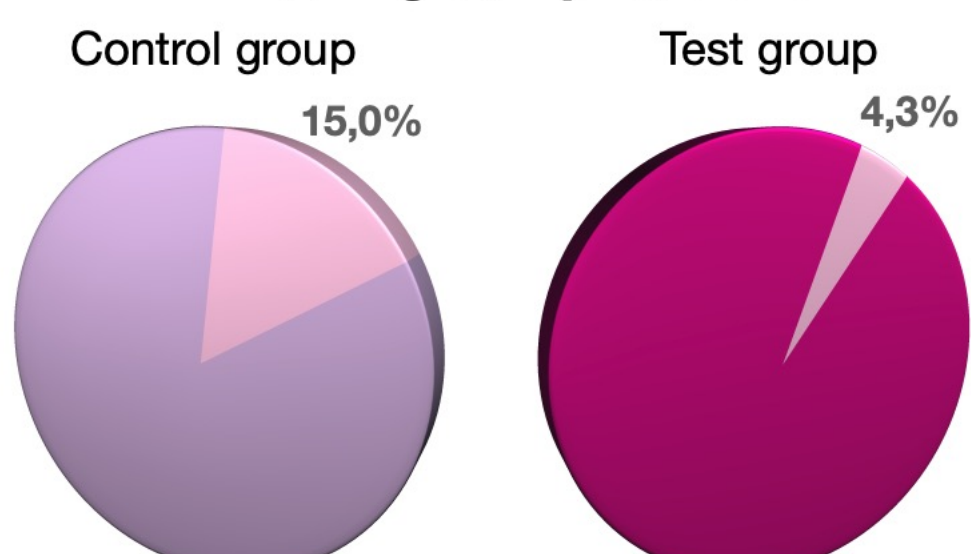
Level of post-operative pain



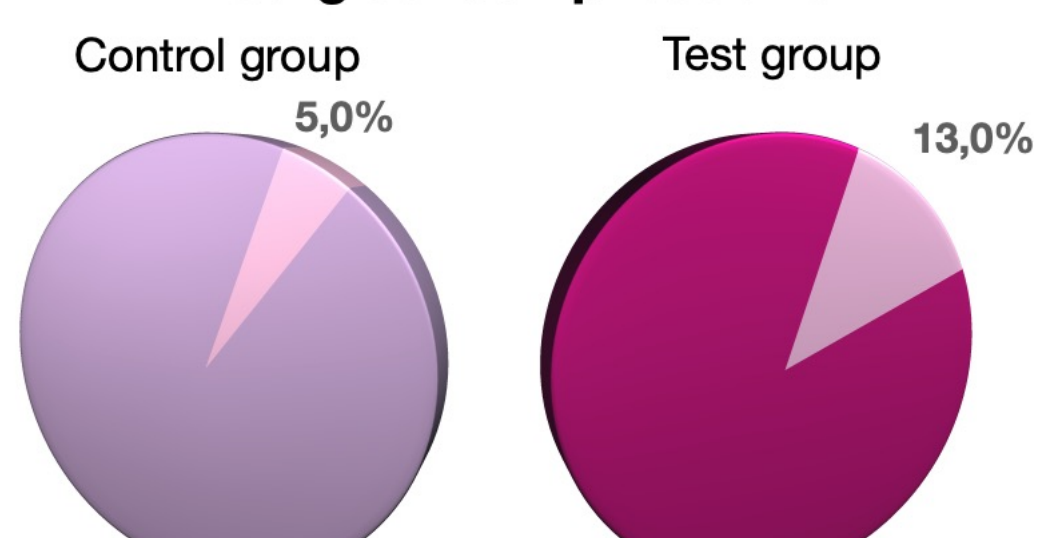
Duration of surgery (Minutes)



Healing complications



Surgical complications



Control group



Test group

