



A Study in Fresh Human Cadaver Heads Examining the Incidence of Maxillary Sinus Membrane Perforation During Crestal Sinus Elevation Comparing Osteotomes to Osseodensification Drills.

T. Alqadoumi , Y. Jeong Kim ,J. Lozada, A. Alhumaidan, P. Valentini

Advanced Periodontics & Implant surgery , Loma Linda University



Introduction

Crestal sinus membrane elevation technique is a surgical procedure that helps gain vertical bone volume when there is a pneumatization of the maxillary sinus cavity. Due to some visual limitations inherent to the procedure, the potential for maxillary sinus membrane perforations and subsequent complications exists. A crestal sinus lift technique using osseodensification drills has been used lately but there are not many studies to support the protocol for crestal sinus lift. The primary aim of the study is to evaluate the incidence of sinus membrane perforation during Osseodensification compared to the incidence of bone added crestal sinus elevation using osteotomes (BAOSFE). The secondary aim is to observe when the perforation occurs, during instrumentation, bone placement or implant placement.



Materials & Methods

- A total of 20 sinuses of 10 fresh human cadaver heads were used in a split mouth design. One side received BAOSFE (control group), and the other side received Osseodensification lift (test group). Presurgical cone beam computed tomography (CBCT) scans were taken to evaluate the available subantral bone height and to provide a reference point to standardize the amount of elevation. All sinuses were planned for 5 mm sinus lift with simultaneous implant placement. The perforation of the membrane was recorded using a direct camera video recording on skull-less human cadaver heads. The integrity or the disruption of the maxillary sinus membrane assessed and recorded as the membrane perforation for statistical comparisons. McNemar's test was used for statistical analysis.

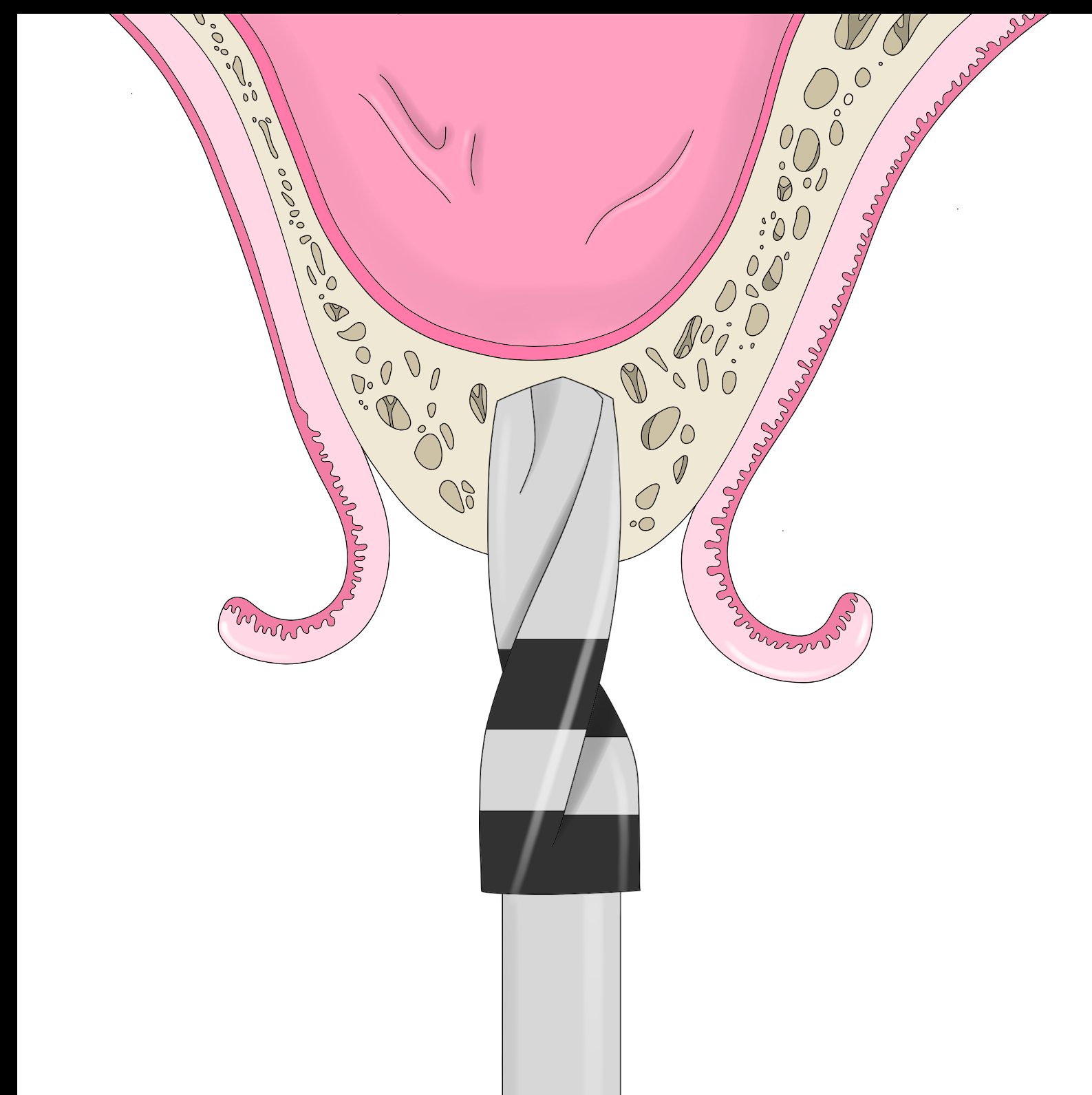
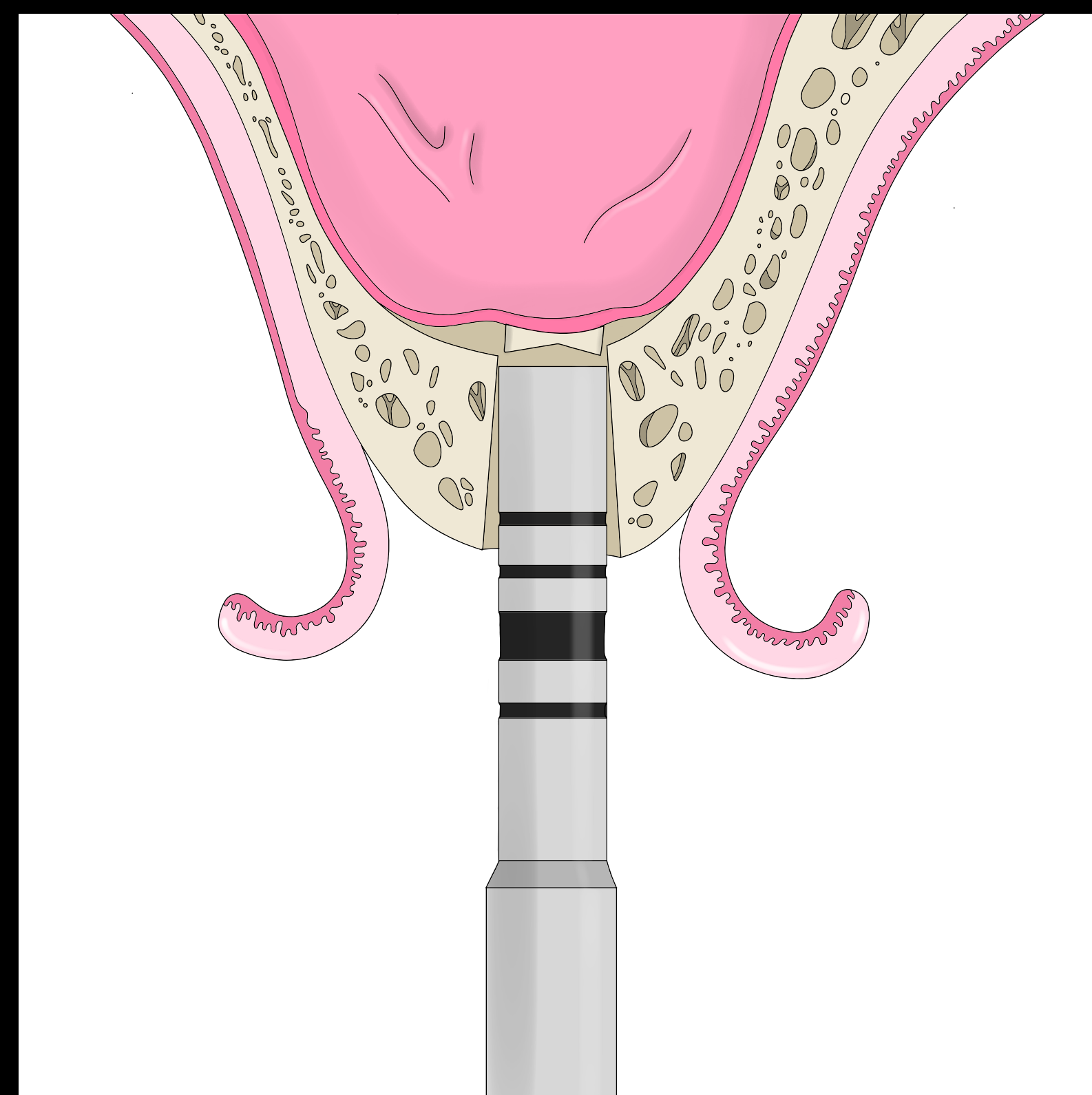
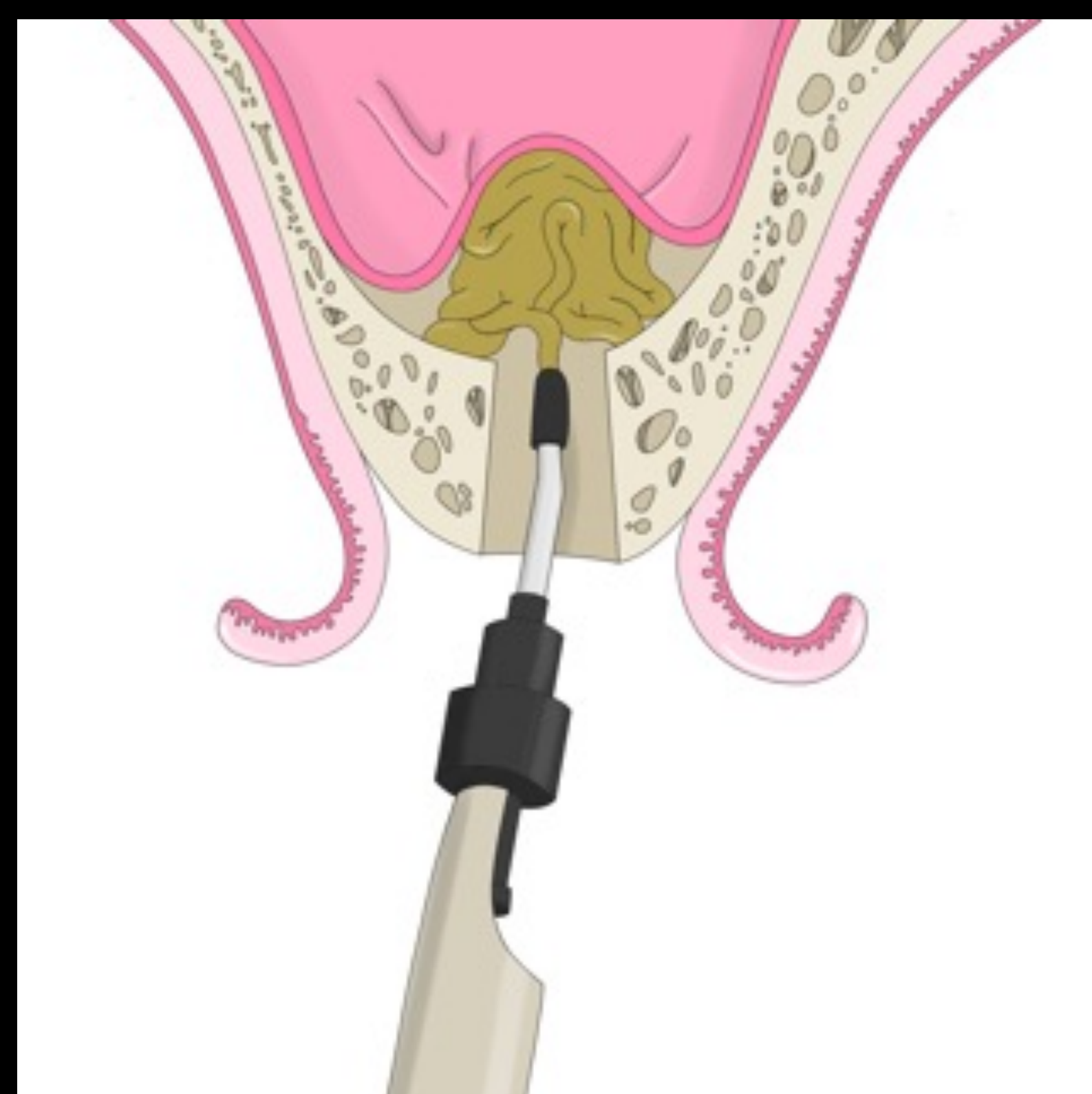
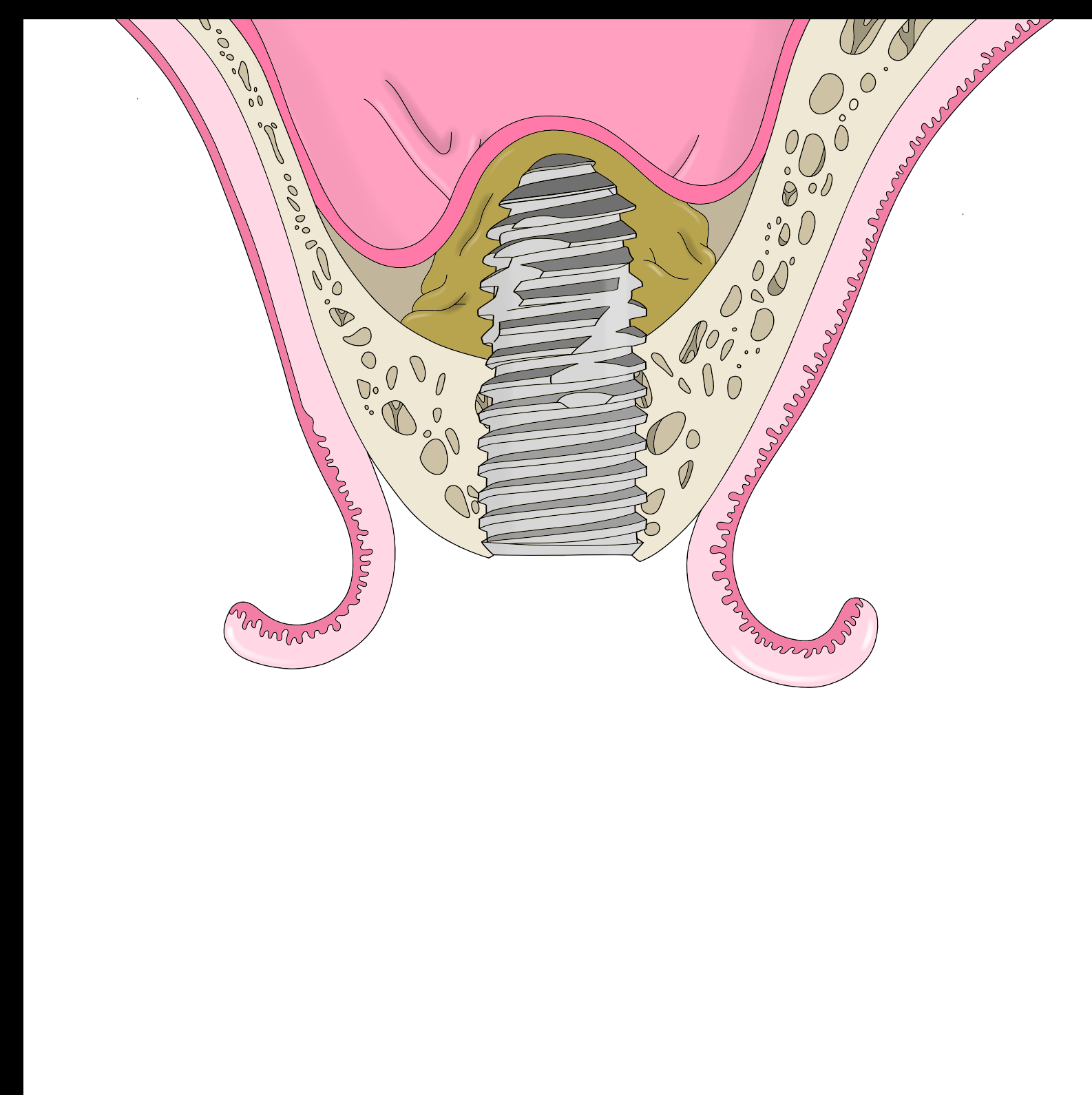
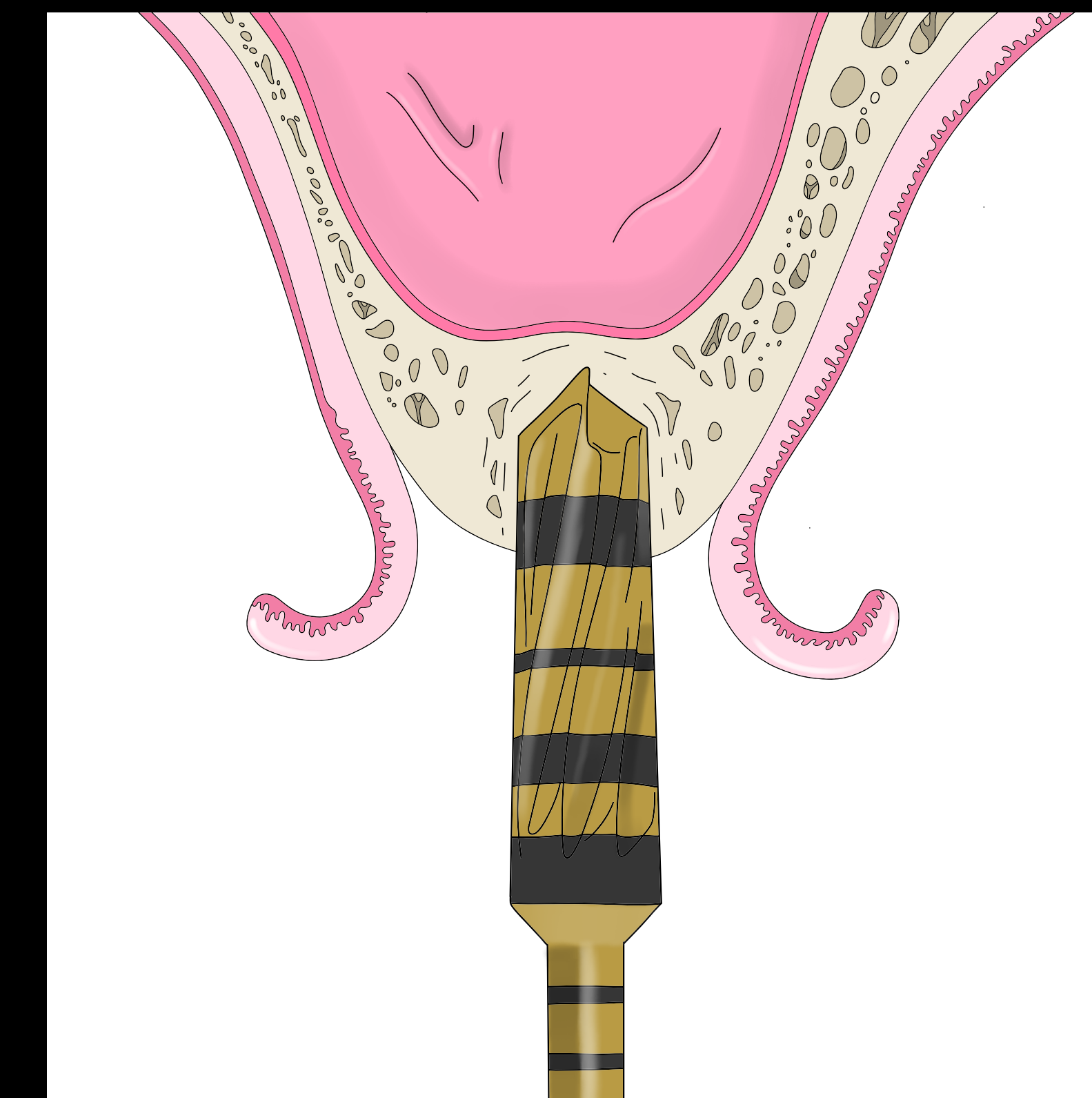
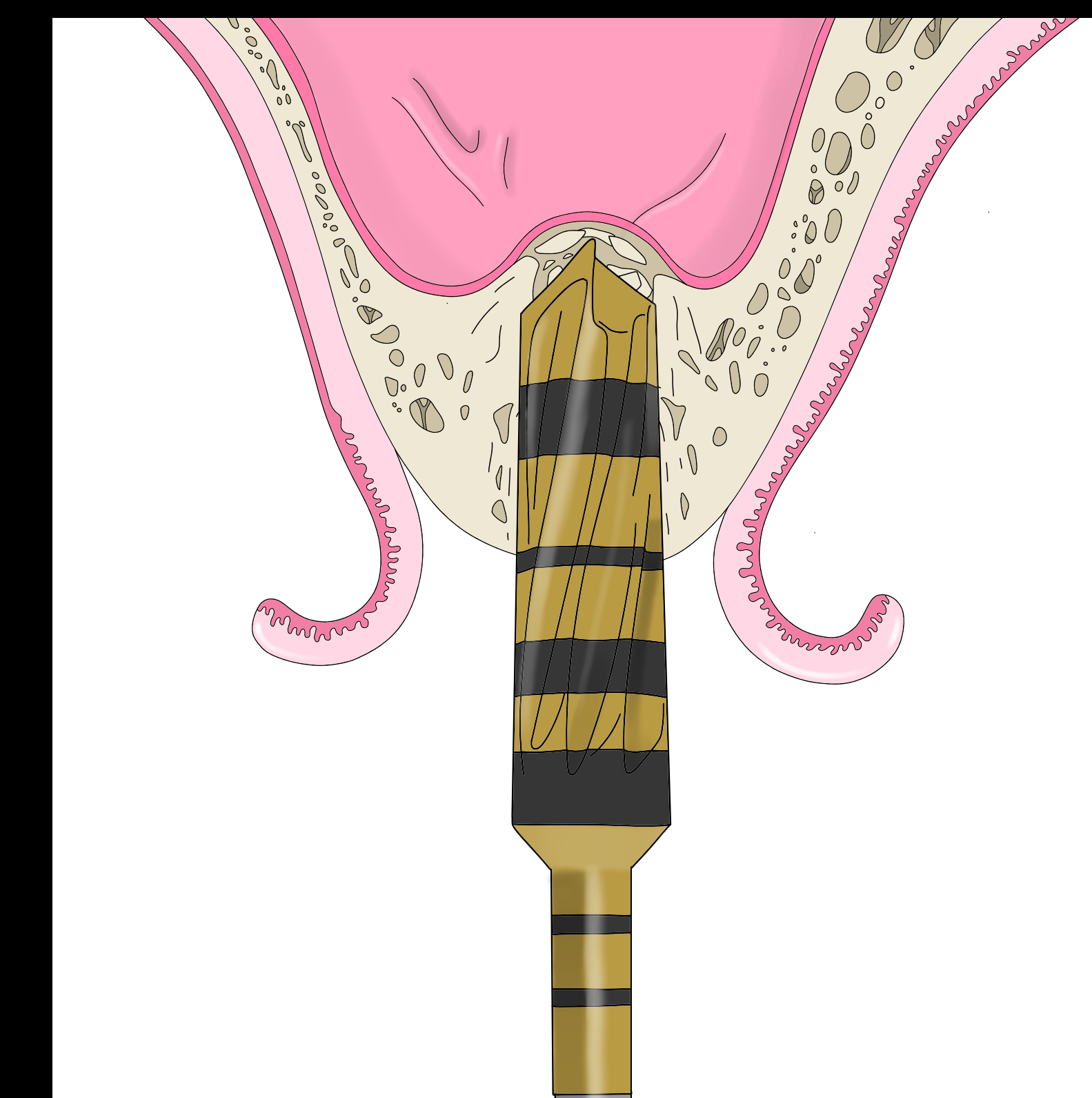
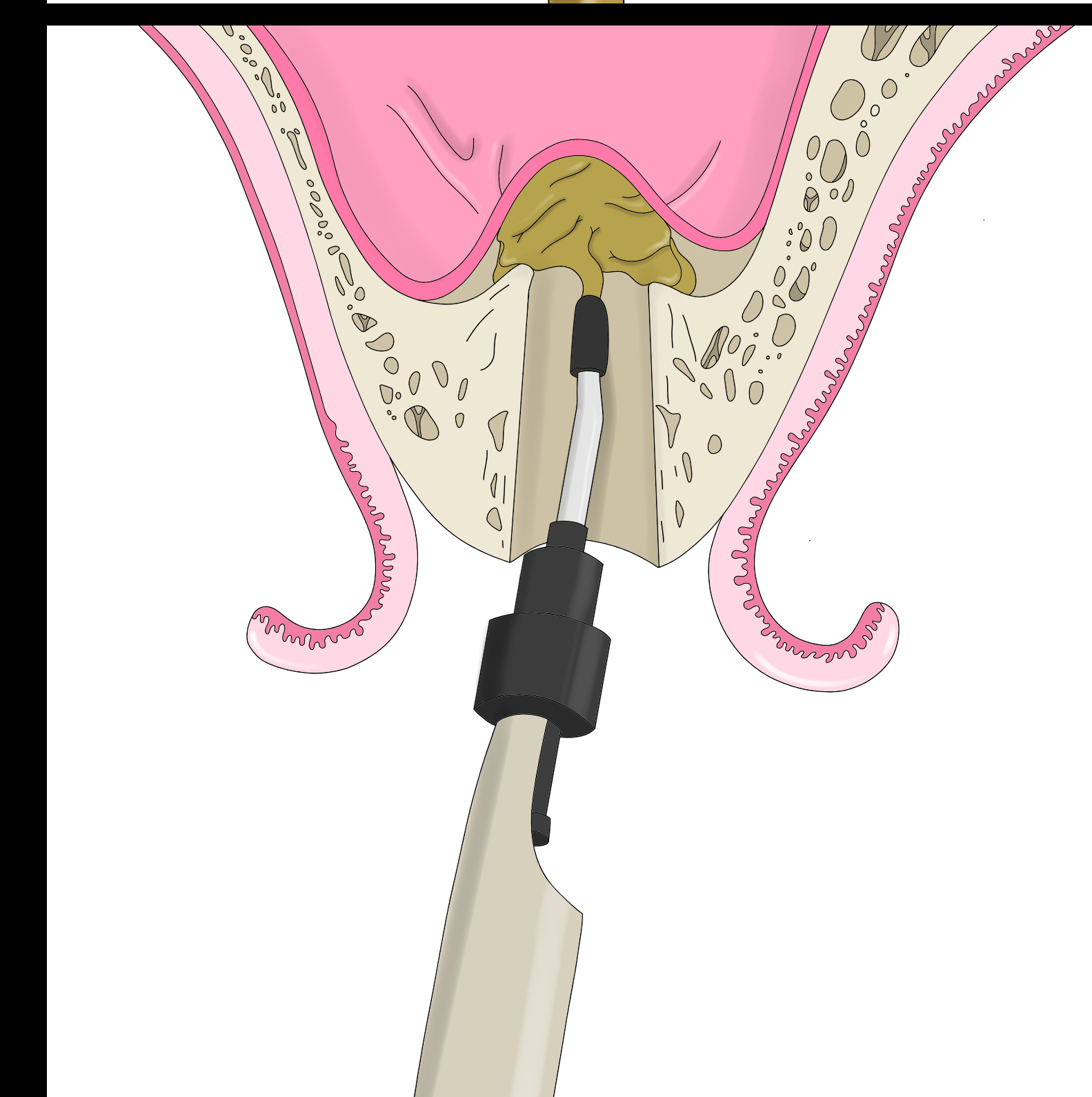
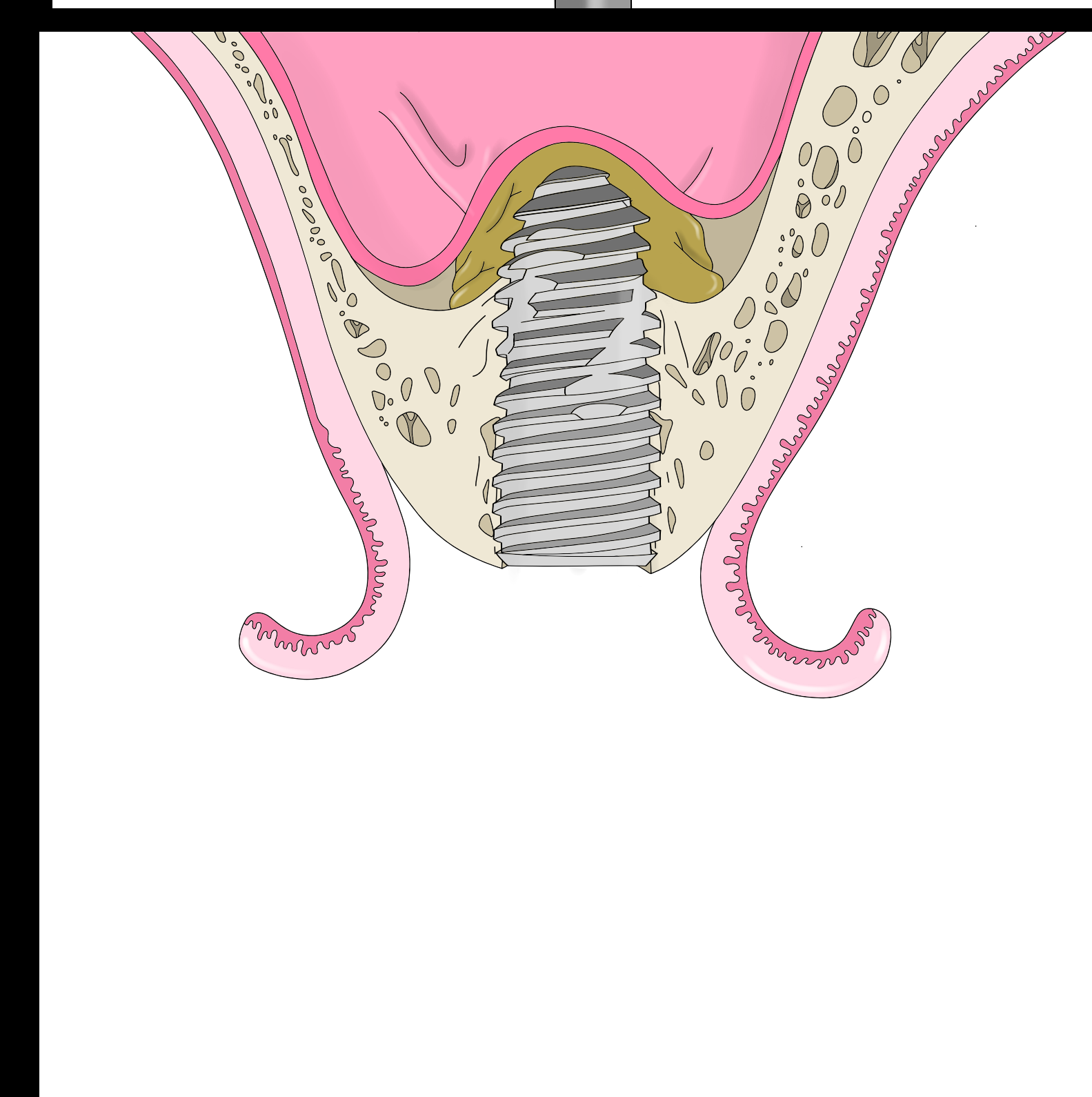




A Study in Fresh Human Cadaver Heads Examining the Incidence of Maxillary Sinus Membrane Perforation During Crestal Sinus Elevation Comparing Osteotomes to Osseodensification Drills.

T. Alqadoumi , Y. Jeong Kim ,J. Lozada, A. Alhumaidan, P. Valentini

Advanced Periodontics & Implant surgery , Loma Linda University



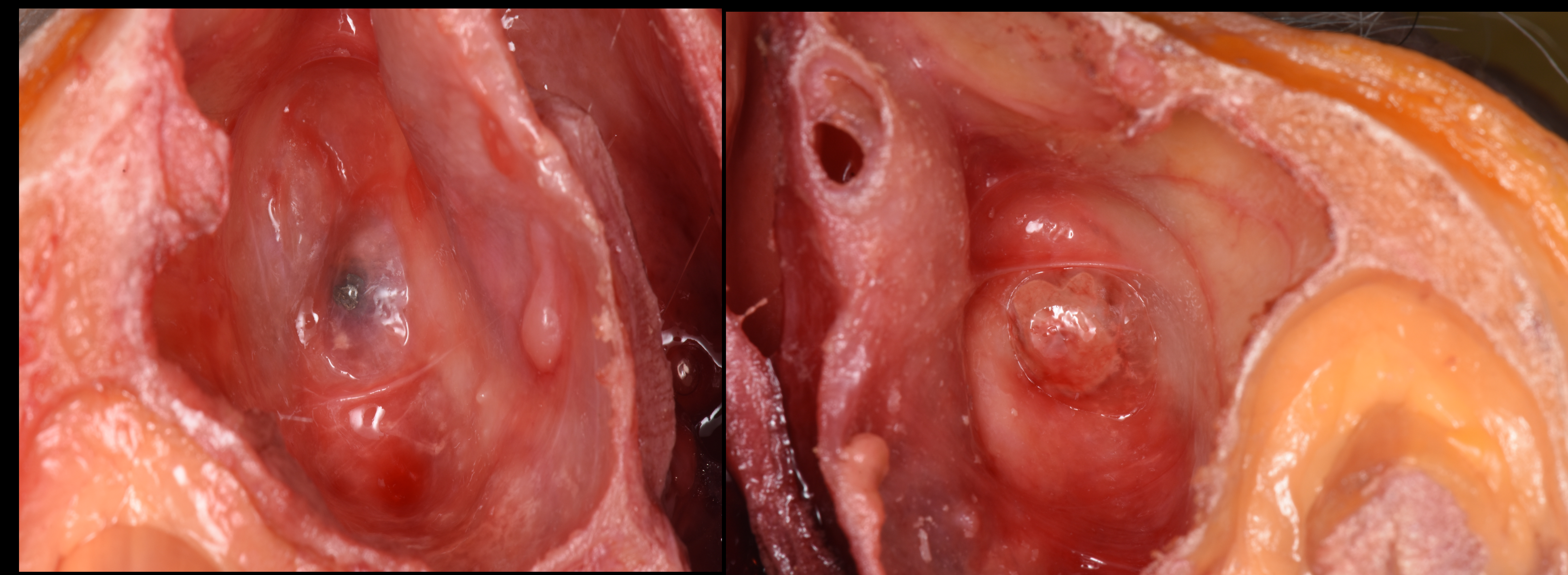
Control group: BAOSFE

Experimental group: Osseodensification



Results

- The rate of sinus membrane perforation in the BAOSFE was 40% and the rate for osseodensification group was 50%. There was no statistical difference between both groups ($p=0.564$).
- When evaluating the timing of the perforation, most of the perforations happened at the time of implant placement, 20% in the control group and 40% in the test groups ($p=0.480$). Meanwhile, 10 % of the sinuses perforated at the time of drilling in the test site compared to 20% in the control group with no significant difference ($p= 0.317$). No perforation was noted at the time of bone graft placement.
- When sinus width was evaluated, we noticed localized vertical pattern of elevation when sinus width was narrower than 7 mm with higher incidence of perforation, meanwhile wider sinuses $>7\text{mm}$ a flat wide base elevation with less membrane perforation.





A Study in Fresh Human Cadaver Heads Examining the Incidence of Maxillary Sinus Membrane Perforation During Crestal Sinus Elevation Comparing Osteotomes to Osseodensification Drills.

T. Alqadoumi , Y. Jeong Kim ,J. Lozada, A. Alhumaidan, P. Valentini

Advanced Periodontics & Implant surgery , Loma Linda University



Conclusion

- No significant difference was found between both groups in the incidence of membrane perforation.