

# AnatomyAdvances 2026: Bridging Clinical and Surgical Anatomy for Medical Progress

Conference Proceedings

May 25, 2026 - United Kingdom

## Minimizing Vascular Injury in Sinus Floor Elevation: A Cone Beam Computed Tomography Study of the Posterior Superior Alveolar Artery

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### Abstract

**Objective:** The intimacy of the posterior superior alveolar artery (PSAA) with the lateral sinus wall makes it significant during sinus floor elevation for implant placement in the posterior maxilla. The objective of this study was to analyze crucial anatomical variations using cone beam computed tomography (CBCT).

**Materials and Methods:** 356 maxillary sinuses (178 CBCT scans - 95 males and 83 females) were analyzed for the rate of detection of the PSAA, location relative to the lateral wall of the maxillary sinus, and distance of the PSAA to the sinus floor. The prevalence of any additional branches of the PSAA was recorded.

**Results:** The PSAA was identified bilaterally in 150 cases (84.3%), unilaterally in 2 cases (1.12%), and was undetectable in 26 cases (14.6%). The intraosseous course was most frequent in the molar region and a near-equal distribution between intraosseous and beneath the sinus membrane in the premolar region. The mean diameter of the PSAA was  $1.67 \pm 0.34$  mm. The distance to the maxillary sinus floor measured  $13.46 \pm 4.24$  mm, whereas the distance to the alveolar crest was  $22.53 \pm 2.32$  mm. Two branches of the PSAA were observed in 27.34% (n= 82) of the cases. On average, the second branch was  $12.34 \pm 3.65$  mm from the maxillary sinus floor and  $21.89 \pm 3.51$  mm from the alveolar crest.

**Conclusion:** Antrostomy preparation should be performed as mesial and as low as possible with a slight inferior curve around the area of the second premolar and first molar.