The posterior wall of the maxillary sinus: An important landmark in endoscopic sinus surgery

Jasim E. Gubaidi MD, Robert Pedra MD, Albert Alexander MD, Kevin McLaughlin MD, Daniel W. Nau MD

Department of Otolaryngology-Head and Neck Surgery, Louisiana State University Health Sciences Center, New Orleans, La.

**Abstract**

**Objective:** To determine the consistency of the relationship between the posterior wall of the maxillary sinus (PMW) and the face of the sphenoid sinus (FOS) using a novel technique utilizing 1mm axial CT scans in a tertiary care otolaryngology clinic.

**Materials and Methods:** 28 patients scheduled for image-guided ESS, as originally described by Messerklinger 1, were reviewed using OsirixTM software. The sphenoid ostium was identified and its Y value was recorded. The sphenopalatine foramen was identified. If it was present in multiple images, the middle image was chosen. The Y-coordinate (location in anterior-posterior dimension) of the most postero-medial portion of the posterior maxillary wall present in this axial cut was recorded. Using Osirix software and 1mm axial CT scans, the PMW was anterior to the FOS in 40/56 sides (71.4%). The Pearson coefficient for inter-rater reliability was 0.94. Coefficient of 0.94, indicating very good inter-rater reliability. 1 millimeter axial CT scans of the paranasal sinuses were reviewed using OsirixTM software. Scans were reviewed by a neuroradiologist and interpreted by the junior author (JG) and a senior faculty member (RP).

The posterior wall of the maxillary sinus is a relatively unmistakable visible landmark that is relatively easily visualized during standard ESS, and is generally unaltered by even minor surgical maneuvers. The sphenoidal ostium is an important anatomic landmark that aids in the identification of the posterior wall of the maxillary sinus. This relationship between the PMW and the FOS is a useful and consistent landmark for multiple aspects of ESS, and showed a consistent relationship between this landmark and the anterior wall of the sphenoid sinus. This corroborates our data, as this “antrostomy ridge” and the posterior wall of the maxillary sinus as described in our protocol are in very close proximity.

**Inclusion/Exclusion Criteria**

**Inclusion Criteria:**
- Patient underwent an image-guided endoscopic surgery with the senior author.
- Patient underwent an axial CT scan and was consented to CT scan.

**Exclusion Criteria:**
- Patient’s anatomy was too significantly altered by severe sinus/paranasal pathology or surgery.

**Results**

The PMW is a reliable indicator of the depth of the FOS. The fact that the PMW is a relatively unmistakable and concrete landmark helps to provide a clear and consistent landmark for various sinusosal and skull base procedures. The PMW is a reliable indicator of the depth of the FOS. The PMW is anterior to the FOS in 40/56 sides (71.4%). The Pearson coefficient for inter-rater reliability was 0.94. Coefficient of 0.94, indicating very good inter-rater reliability. 1 millimeter axial CT scans of the paranasal sinuses were reviewed using OsirixTM software. Scans were reviewed by a neuroradiologist and interpreted by the junior author (JG) and a senior faculty member (RP).

**Discussion**

In general, the posterior wall of the maxillary sinus is a reliable and consistent landmark that can be used to help guide the surgeon to the posterior wall of the maxillary sinus. This relationship between the PMW and the FOS is a useful and consistent landmark for multiple aspects of ESS, and showed a consistent relationship between this landmark and the anterior wall of the sphenoid sinus. This corroborates our data, as this “antrostomy ridge” and the posterior wall of the maxillary sinus as described in our protocol are in very close proximity.

**Conclusion**

The PMW is a reliable indicator of the depth of the FOS. The fact that the PMW is anterior to the FOS in 40/56 sides (71.4%) is a useful guide to the posterior wall of the maxillary sinus. The PMW is a reliable indicator of the depth of the FOS. The PMW is anterior to the FOS in 40/56 sides (71.4%). The Pearson coefficient for inter-rater reliability was 0.94. Coefficient of 0.94, indicating very good inter-rater reliability. 1 millimeter axial CT scans of the paranasal sinuses were reviewed using OsirixTM software. Scans were reviewed by a neuroradiologist and interpreted by the junior author (JG) and a senior faculty member (RP).

**References**