

[Home](#) > [Journal](#) > [Medicine & Healthcare](#) > [OJST](#)[Indexing](#) [View Papers](#) [Aims & Scope](#) [Editorial Board](#) [Guideline](#) [Article Processing Charges](#)[OJST](#) > [Vol.2 No.4, December 2012](#)

OPEN ACCESS

Morphometric analysis of the relationships between the maxillary first molar and maxillary sinus floor

PDF (Size: 391KB) PP. 352-357 DOI: 10.4236/ojst.2012.24060

Author(s)

Andreea Didilescu, Mugurel Rusu, Mihai Săndulescu, Carmen Georgescu, Radu Ciuluvică

ABSTRACT

Objectives: To assess the relationships between the maxillary first molar and the maxillary sinus floor in a group of patients referred to a dental clinic. **Methods:** Ninety-seven patients were recruited for this study. The distances between the examined roots (mesio-buccal, disto-buccal and palatal) as well as furcations, and the sinus floor, were evaluated using cone beam computed tomography, and grouped as follows: class 0: distance = 0 mm; class 1: 0 mm < distance < 2 mm; class 2: 2 mm ≤ distance < 4 mm; class 3: 4 mm ≤ distance < 6 mm; class 4: 6 mm ≤ distance. The Spearman's Rank Correlation coefficient was used to test the univariate associations between furcation-sinus floor distance and each root class. **Results:** The prevalence of class 0 was the highest for the palatal root (44.33%), followed in descending order by mesio-buccal (40.21%), and disto-buccal (38.14%) roots. The highest correlation coefficient was recorded when assessing the relationship between furcation-sinus floor distance and palatal root classes ($\rho = 0.66$, $p < 0.001$, $n = 97$). **Conclusions:** Altogether, the results suggest that the palatal root of the maxillary first molar not only had the closest relationship with the sinus floor, but also proved to be the best predictor for the furcation-sinus floor distance. The clinician should be aware of the anatomical and morphological details of this root, especially when taking surgical decisions.

KEYWORDS

Cone-Beam Computed Tomography; Maxillary Sinus; Endodontics; Oral Surgical Procedures

Cite this paper

Didilescu, A., Rusu, M., Săndulescu, M., Georgescu, C. and Ciuluvică, R. (2012) Morphometric analysis of the relationships between the maxillary first molar and maxillary sinus floor. *Open Journal of Stomatology*, 2, 352-357. doi: 10.4236/ojst.2012.24060.

References

- [1] Waite, D.E. (1971) Maxillary sinus. *Dental Clinics of North America*, 15, 349-368.
- [2] Lambrecht, J., Böhck, I. and Dierck, P. (1986) Ist die Kieferhöhle physiologischerweise keimfrei? In: Watzek, G. and Matejka, M., Eds., *Erkrankungen der Kieferhöhle*, Springer, Berlin, 31-37. doi:10.1007/978-3-7091-8833-0_4
- [3] Watzek, G., Bernhart, T. and Ulm, C. (1997) Complications of sinus perforations and their management in endodontics. *Dental Clinics of North America*, 41, 563-583.
- [4] Laine, F. (1999) Diagnostic imaging of the maxillary sinus. *Oral and Maxillofacial Surgery Clinics of North America*, 11, 45-67.
- [5] Dimitrakopoulos, I. and Papadaki, M. (2008) Foreign body in the maxillary sinus: Report of an unusual case. *Quintessence International*, 39, 698-701.
- [6] Abubaker, A.O. (1999) Applied anatomy of the maxillary sinus. *Oral and Maxillofacial Surgery Clinics of North America*, 11, 1-13.
- [7] Eberhardt, J.A., Torabinejad, M. and Christiansen, E.L. (1992) A computed tomographic study of the distances between the maxillary sinus floor and the apices of the maxillary posterior teeth. *Oral*

[OJST Subscription](#)[Most popular papers in OJST](#)[About OJST News](#)[Frequently Asked Questions](#)[Recommend to Peers](#)[Recommend to Library](#)[Contact Us](#)

Downloads: 44,270

Visits: 107,414

[Sponsors, Associates, and Links >>](#)

- [8] Kilic, C., Kamburoglu, K., Yuksel, S.P. and Ozen, T. (2010) An assessment of the relationship between the maxillary sinus floor and the maxillary posterior teeth root tips using dental cone-beam computerized tomography. *European Journal of Dentistry*, 4, 462-467.
- [9] Georgescu, C.E., Rusu, M.C., Sandulescu, M., Enache, A.M. and Didilescu, A.C. (2012) Quantitative and qualitative bone analysis in the maxillary lateral region. *Surgical and Radiologic Anatomy*, 34, 551-558. doi:10.1007/s00276-012-0955-6
- [10] Freisfeld, M., Drescher, D., Schellmann, B. and Schüller, H. (1993) The maxillary sixth-year molar and its relation to the maxillary sinus. A comparative study between the panoramic tomogram and the computed tomogram. *Fortschritte der Kieferorthop?die*, 54, 179-186. doi:10.1007/BF02341464
- [11] Kwak, H.H., Park, H.D., Yoon, H.R., Kang, M.K., Koh, K.S. and Kim, H.J. (2004) Topographic anatomy of the inferior wall of the maxillary sinus in Koreans. *International Journal of Oral and Maxillofacial Surgery*, 33, 382-388. doi:10.1016/j.ijom.2003.10.012
- [12] Sharanand, A. and Madjar, D. (2006) Correlation between maxillary sinus floor topography and related root position of posterior teeth using panoramic and cross-sectional computed tomography imaging. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics*, 102, 375-381. doi:10.1016/j.tripleo.2005.09.031
- [13] Koch, F., Breil, P., Marroquin, B.B., Gawehn, J. and Kunkel, M. (2006) Abscess of the orbit arising 48 h after root canal treatment of a maxillary first molar. *International Endodontic Journal*, 39, 657-664. doi:10.1111/j.1365-2591.2006.01130.x
- [14] Oberli, K., Bornstein, M.M. and von Arx, T. (2007) Periapical surgery and the maxillary sinus: Radiographic parameters for clinical outcome. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics*, 103, 848-853. doi:10.1016/j.tripleo.2006.09.017
- [15] Huangand, C.H. and Brunsvold, M.A. (2006) Maxillary sinusitis and periapical abscess following periodontal therapy: A case report using three-dimensional evaluation. *Journal of Periodontology*, 77, 129-134. doi:10.1902/jop.2006.77.1.129
- [16] Arijji, Y., Kuroki, T., Moriguchi, S., Arijji, E. and Kanda, S. (1994) Age changes in the volume of the human maxillary sinus: A study using computed tomography. *Dento Maxillo Facial Radiology*, 23, 163-168.
- [17] Jun, B.C., Song, S.W., Park, C.S., Lee, D.H., Cho, K.J. and Cho, J.H. (2005) The analysis of maxillary sinus aeration according to aging process; volume assessment by 3-dimensional reconstruction by high-resolution CT scanning. *Otolaryngology and Head and Neck Surgery*, 132, 429-434. doi:10.1016/j.otohns.2004.11.012