

## Volumetric assessment of ameloblastoma based on craniofacial imaging

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**Objective:** Ameloblastoma is a slow-growing, persistent and locally invasive benign tumour of epithelial in origin. The aim is to measure and compare tumour volume of patients with ameloblastoma based on computed tomography (CT) and cone beam CT (CBCT) images.

**Methods:** This is across sectional study of patients with ameloblastoma attending Hospital Universiti Sains Malaysia from January 2001 and December 2011 with histologically benign and previously untreated ameloblastoma. Craniofacial images were retrieved and analyzed using open-source MITK 3M3 software and ABC/2 estimation technique.

**Results:** The ratio of male to female patients diagnosed is 2:1. The range of age is from 15 to 55 years old with the mean age 31.36. Out of 22 patients, 21 ameloblastoma occurred in the mandible (95.5%) and 1 in the maxilla (4.5%). From 15 patients with craniofacial imaging available, 66.7% are multilocular and the others are unilocular (33.3%). The commonest site of occurrence is at premolar to molar region (44.4%), followed by the region from third molar to condyle (41.6%). The mean volume of tumour calculated by MITK-3M3 is 57.43ml (SD=47.18ml) while mean volume estimated by ABC/2 algorithm is 53.74ml (SD=41.45ml). The Wilcoxon Sign Rank Test analysis showed no significant difference in the volume measurements between MITK 3M3 software and ABC/2 estimation technique ( $r=3$ ,  $p=0.241$ ).

**Conclusion:** The volumetric assessment using MITK 3M3 and ABC/2 provide accurate and reliable estimation of tumour volume, which can later be used for tumour growth prediction based on craniofacial imaging.

**Keywords:** Ameloblastoma, volume measurement, craniofacial imaging

### Biography

Rajion leads the Craniofacial Medical Imaging Cluster. His research interests include 3D craniofacial reconstruction, deformities and biomaterial. He obtained his PhD in 3D morphometric analysis in children with cleft lip and palate in 2004 from University Adelaide, Australia. He subsequently made research visits to Maastricht and Radboud Universities, Netherlands and Oral Imaging Centre, Leuven. He further obtained a Certificate for Entrepreneurship Learning from University of Cambridge in 2010. He is an Editor in chief of Archives of Orofacial Sciences, USM. He is also reviewer of international and national journals. He has published widely in the area of craniofacial imaging both nationally and internationally.

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