Prevalence and Sexual Dimorphism of the Mesial Marginal Developmental Groove in Maxillary Premolars: A Study in the Malay Population

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Abstract

Background: Forensic odontology is essential for human identification when DNA or fingerprinting is compromised. Postmortem identification uses teeth because they resist environmental degradation and may remain intact under extreme conditions. While dental morphological traits are useful in forensics, population-level data are needed before using them in identification protocols. Mesial marginal developmental groove (MMDG) data in maxillary premolars in Malay are scarce. To determine the prevalence and sexual dimorphism of the MMDG in maxillary premolar one and two (PM1 and PM2) among Malay patients. Methods: One hundred ninety plaster dental casts were retrieved from the Orthodontic Department. Standardised photographs of the occlusal surface of maxillary PM1 and PM2 were assessed for the presence or absence of MMDG. Descriptive statistics

were employed to determine prevalence, and Chi-square tests were performed to evaluate sexual dimorphism. Results: MMDG prevalence in PM1 was 90.5%–93.2% and 53.7%–57.4% in PM2, with bilateral symmetry observed across all tooth types. No significant sexual dimorphism was determined in the prevalence of MMDG for all tooth types. Conclusion: The MMDG in maxillary premolars showed no sexual dimorphism in Malay people, limiting its use in forensics. However, its high prevalence and bilateral consistency make MMDG a stable morphological marker for dental identification and population studies.

Author keywords

Forensic odontology; Malay population; Maxillary premolars; Mesial marginal developmental groove; Prevalence; Sexual dimorphism

Indexed keywords

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