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Clinical predictors for permanent maxillary canine impaction: A novel approach using a multivariate data analysis.

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Background: Ectopic eruption and impaction of maxillary permanent canines is a frequently encountered clinical problem. A number of studies have been conducted in order to find possible predicting/predisposing factors. Conventional univariate statistics have been used in these studies, which have led to disperse and potentially inaccurate results. Multivariate data analysis (MVDA) is a powerful tool for integration and interpretation of complex datasets, which can be used to avoid high numbers of false positives predictors.

Aim: To find possible predicting factors for impacted canines by using a comprehensive multivariate approach.

Subjects and methods: This retrospective study included all patients referred for surgical exposure of impacted canines (n=45) to Mölndal Hospital, Sweden, during 2011. Age- and gender-matched orthodontic patients (n=45) with normally erupting canines were used as a control group. The age range for both groups was 11-17 years. Position of the canine (OPG radiographs), skeletal variables (profile radiographs) and dentoalveolar traits (casts) were evaluated as possible predicting/predisposing factors for impaction. A MVDA was performed using SIMCA (MKS Umetrics, Sweden).

Results: The vertical level and lateral distance of the impacted canines were positively correlated to impaction. None of the parameters evaluated either with profile x-rays or casts were associated to impacted canines.

Conclusion: The only factor that could be identified as a positive predictor for impaction, using a MVDA approach, was the position of the impacted canine. Neither the profile x-ray analysis nor the study cast analysis is adequate to predict canine impaction. Non-clinical parameters potentially associated with the etiology of impacted canines, such as inheritance and molecular factors regulating the eruption process, should be investigated in future studies.

Clinical implication: A clinical examination of the canine eruption path at DS2M1 is recommended, and should be complemented with radiological and regular clinical supervision when ectopic eruption of the maxillary canine is suspected.

Biography

Pamela Uribe completed her DDS degree at CES University, Medellín, Colombia in 2012. Currently, she is a PhD student at the Department of Orthodontics, Sahlgrenska Academy, University of Gothenburg, Sweden. Her research interests include the pathogenesis of impacted canines, molecular characterization of the dental follicle, and bone biology.

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