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CEPHALOMETRIC ANALYSIS OF ANTERIOR OPEN BITE IN SUDANESE PATIENTS: A CASE STUDY

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Abstract: This case study aimed to investigate the cephalometric features of anterior open bite in a sample of Sudanese patients. Anterior open bite is a malocclusion characterized by a lack of vertical overlap between the maxillary and mandibular incisors when the posterior teeth are in occlusion. While the etiology of anterior open bite can vary, understanding the cephalometric features specific to this condition in Sudanese patients can provide valuable insights for diagnosis and treatment planning.

Keywords: Anterior open bite, cephalometric analysis, malocclusion, Sudanese patients, skeletal parameters, dental parameters, soft tissue analysis, orthodontic diagnosis, treatment planning.

INTRODUCTION

Anterior open bite is a type of malocclusion characterized by the absence of vertical overlap between the maxillary and mandibular incisors when the posterior teeth are in occlusion. This dental condition can lead to functional and aesthetic issues, affecting speech, mastication, and facial appearance. The etiology of anterior open bite is multifactorial, involving genetic, environmental, and behavioral factors. While the prevalence of anterior open bite varies among different populations, understanding the specific cephalometric features associated with this malocclusion in a particular ethnic group can provide valuable insights for accurate diagnosis and treatment planning.

In Sudan, there is a scarcity of literature on the cephalometric analysis of anterior open bite. The cephalometric features in Sudanese patients with this malocclusion may differ from those reported in other populations due to ethnic and genetic variations. Therefore, this case study aimed to investigate the cephalometric features of anterior open bite in a sample of Sudanese patients.

METHODS

Patient Selection:

A sample of Sudanese patients diagnosed with anterior open bite was recruited from a local orthodontic clinic. Informed consent was obtained from each participant, and ethical approval was obtained from the Institutional Review Board.

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Cephalometric Radiographs:

Standard lateral cephalometric radiographs were obtained for each participant in a natural head posture. The radiographs were taken using a cephalometric unit with standardized exposure parameters.

Cephalometric Landmarks and Measurements:

Cephalometric analysis was performed by a trained orthodontist using specialized cephalometric software. Standard cephalometric landmarks and measurements were identified and recorded to assess various skeletal, dental, and soft tissue parameters. The selected cephalometric measurements included:

Skeletal parameters: SNA, SNB, ANB, FMA, MP-SN, GoGn-SN, and others.

Dental parameters: Overbite, overjet, incisor inclinations, and molar relationships.

Soft tissue analysis: Facial profile, lip position, and lip incompetence.

Data Analysis:

Descriptive statistics, including means, standard deviations, and ranges, were calculated to summarize the cephalometric measurements. Common trends and variations among the Sudanese patients with anterior open bite were identified.

Case Presentation:

Selected cephalometric radiographs and analyses were presented for illustrative purposes while maintaining patient confidentiality.

This case study contributes to the limited literature on the cephalometric features of anterior open bite in Sudanese patients. By providing insights into the specific cephalometric characteristics of this malocclusion in the Sudanese population, this study aims to support clinicians in accurate diagnosis and personalized treatment planning for patients with anterior open bite in this ethnic group. Additionally, the findings may help improve our understanding of the etiology and pathophysiology of anterior open bite, potentially leading to more targeted and effective orthodontic interventions in the future.

RESULTS

The cephalometric analysis of anterior open bite in a sample of Sudanese patients revealed specific features associated with this malocclusion in the Sudanese population. The skeletal findings showed increased vertical facial height, decreased mandibular plane angle, and altered maxillomandibular relationship, which are consistent with previous studies on anterior open bite in other populations. Dental measurements indicated decreased overbite and overjet, as well as anterior inclination of the maxillary and mandibular incisors. Soft tissue analysis demonstrated potential lip incompetence and changes in the facial profile, with some patients presenting with a more convex facial profile.

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DISCUSSION

The findings of this case study are in line with the existing literature on cephalometric characteristics of anterior open bite in other ethnic groups. The increased vertical facial height observed in Sudanese patients with anterior open bite may contribute to the reduced overlap of the anterior teeth, leading to the malocclusion. The decreased mandibular plane angle and altered maxillomandibular relationship can affect the vertical and horizontal dimensions of the face, further influencing the development of anterior open bite.

The dental measurements indicating decreased overbite and overjet are typical features of anterior open bite, further supporting the diagnosis in this sample. The anterior inclination of the maxillary and mandibular incisors observed in Sudanese patients with anterior open bite could be an adaptive response to the malocclusion, attempting to compensate for the lack of vertical overlap.

Soft tissue analysis showed potential lip incompetence in some patients, which may be a consequence of the malocclusion, influencing lip position and facial aesthetics. The changes in the facial profile, with some patients presenting with a more convex profile, may be attributed to the interplay of skeletal and soft tissue factors in anterior open bite.

CONCLUSION

This case study provides valuable insights into the cephalometric features of anterior open bite in a sample of Sudanese patients. The findings indicate that Sudanese patients with anterior open bite exhibit similar cephalometric characteristics as reported in other populations. The increased vertical facial height, altered maxillomandibular relationship, and dental measurements are consistent with the typical features of anterior open bite.

Understanding these specific cephalometric features can aid clinicians in accurate diagnosis and treatment planning for Sudanese patients with anterior open bite. Personalized orthodontic interventions that address the specific skeletal and dental components of the malocclusion can be devised to achieve optimal treatment outcomes.

It is important to acknowledge that this study is limited by its small sample size, and further research with a larger and more diverse population is warranted to validate the findings. Nonetheless, this case study contributes to the limited literature on anterior open bite in Sudanese patients and serves as a foundation for future investigations in this field.

In conclusion, the cephalometric analysis of anterior open bite in Sudanese patients reveals distinct features specific to this ethnic group. The study underscores the importance of considering ethnic variations in cephalometric analyses for accurate diagnosis and effective treatment planning in orthodontics.

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