

Patients with total cleft lip and palate have dental abnormalities in their maxillary canines and incisors

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Meurk M. Patients with total cleft lip and palate have dental abnormalities in their maxillary canines and incisors. 2023; 7(2):14-16.

ABSTRACT

The most frequent asymmetric congenital disorder of the orofacial region is cleft lip and palate, which also manifests in dental malformations. The study's objective was to display the dental asymmetries in patients with clefts in the front region of the maxilla. Materials and Techniques: Plaster casts and panoramic X-rays taken of 151 healthy people and patients with complete clefts were examined. Patients with clefts ranged in age from to. The age range in the control group was comparable. The breadth of the teeth was determined using a computerized caliper. Three times each were given for each

measurement. The majority of dental abnormalities in those with clefts involved the lateral incisors and were concentrated on the cleft side. The number of teeth in the cleft region and the width of those teeth both indicate the asymmetry of the incisors. On the person's cleft side, the lateral incisor was absent twice as frequently. The lateral incisor was often larger than the incisor on the opposing side, if it was present. Dental abnormalities were more common on the left side of bilateral clefts. Patients with complete cleft lip and palate experienced dental issues more frequently than healthy people. The lateral incisors were the teeth that were most frequently impacted. Patients with clefts had lateral incisors that were narrower, with a smaller mesio distal dimension.

Key Words: *Incisors; Canines; Symmetry; Complete cleft; Asymmetry; Dental*

INTRODUCTION

The most frequent congenital deformity is Unilateral Cleft Lip and Palate (UCLP), which is the most well-known asymmetrical type. It is crucial to remember that Bilateral Cleft Lip and Palate (BCLP) can also display asymmetry, frequently as a result of the incisive bone rotating. Cleft lip and/or palate etiology is complicated, while genetics plays a significant impact. Patients with clefts and those without this congenital defect have different oral microbiomes, which has also been noticed. These variations can result in microbial imbalances, which can then cause problems with healing, an elevated risk of cavities, and other disorders that have an effect on general health. Patients with cleft lip and/or palate need comprehensive care from experts in many fields. The lip and nose, which are often the areas most afflicted, get the majority of the treatment. The cornerstone of treatment is surgical intervention, and the care of patients with cleft palate is centered on cooperation amongst a variety of professionals, including pediatricians, plastic surgeons, orthographic surgeons, dentists, speech therapists, and orthodontists. Building trust and encouraging cooperation with the patient's family, especially the parents, is crucial to the effectiveness of treatment. Severe malocclusions are one of the difficulties that cleft lip and/or

palate patients frequently encounter. According to recent study, a cross bite is the most common malocclusion seen in people with clefts and has been documented to afflict both people with BCLP and people with UCLP. Class III malocclusions are another common type that are primarily brought on by maxillary hypoplasia. The underlying maxillary hypoplasia in many of these malocclusions may eventually require orthographic surgery. Trials with maxillary traction distractors have been performed in an effort to reduce the need for future orthographic surgery. Given that both asymmetric mandibular growth and maxillary hypoplasia have been identified as genetically based explanations of this phenomena, it is critical to consider which is the actual reason. Dental malformations, in addition to malocclusions, are a serious problem in cleft patients. Along with tooth location, these anomalies also affect tooth shape, quality, quantity, and timing of eruption [1,2]. On the cleft side, dental malformations such supernumerary teeth and enamel hypoplasia are frequently seen. Arch symmetry is difficult to achieve in cases when there are extra tooth buds, there are no teeth at all, or the dental structure is deformed. To restore arch symmetry, obtain ideal dental results, and produce a genuine smile may be difficult for skilled dentists as a result of this. Cleft patients also have a higher risk of dental cavities and poor oral

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Received: 02 March, 2023, Manuscript No. puldcr-23-6497, Editor assigned: 04 March, 2023, Pre QC No. puldcr-23-6497 (PQ), Reviewed: 18 March, 2023, QC No. puldcr-23-6497 (Q), Revised: 21 March, 2023, Manuscript No. puldcr-23-6497 (R), Published: 27 March, 2023, DOI: 10.37532. puldcr-23.7.2.14-16.



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hygiene, making them candidates for prosthetic and cosmetic dentistry in the future. Teeth impaction is a typical issue, particularly in the cleft region. Patients with clefts typically have impacted canines. Treatment for this illness may also be complicated by the presence of dentigerous cysts. Patients are acutely aware of their teeth's asymmetry, highlighting how crucial it is to address it and restore symmetry as a crucial component of orthodontic, prosthetic, and restorative treatment. Successful prosthetic restoration necessitates both ideal function and aesthetics, frequently requiring the use of face bows and articulators. However, due to a variety of malocclusions and a propensity for relapse after orthodontic treatment, attaining aesthetic and functional restoration in patients with cleft palates can be difficult. Simon art's band and other soft tissues complicate the therapeutic approach further. Adult surgical-prosthetic treatment is necessary for many cleft patients. Dental implant implantation is frequently required in situations when tooth buds are absent. This surgery can be difficult, especially when there is a substantial bone deficit in the cleft region. Fractal dimension analysis and bone index assessment are two methods that should be taken into consideration for gauging amounts of bone loss prior to implantation planning. In addition to tooth color, appropriate prosthetic treatment should take gingival aesthetics into account. Despite the fact that cleft individuals' gingival margins are often thinner and their bone levels are lower, a skilled surgeon and prosthodontist can work together to produce acceptable aesthetic results [3,4]. This study was conducted with the intention of highlighting the issue of dental asymmetry seen in cleft lip and palate individuals. Given that restoring smiling aesthetics and establishing symmetry for individuals is most difficult in the maxillary front region, we chose to concentrate on this area in the current study. There are the highest expectations for the restorative outcome in the front area of the maxilla, which is easily accessible. With surgeries, orthodontic braces, and prosthodontic treatment as the last step, rehabilitating the oral cavity in cleft patients is a difficult process. This study sought to shed light on the issue of dental asymmetries and highlight prospective tooth restorations that may be included in treatment planning because occlusal issues are frequently present in cleft patients. Our experience indicates that after the orthodontic treatments are finished, the majority of these individuals need dental restorations. Since the frontal portion of the maxilla is the area most commonly impacted by dental defects, we chose to concentrate on it for this research. To forecast the viability of upcoming aesthetic restorations and foresee potential issues brought on by asymmetries in tooth quality and quantity, we concentrated on the presence or absence of teeth and their mesiodistal breadth.

Therefore, the primary goal of this study was to demonstrate dental anomalies in the front maxillary region, including both qualitative and quantitative characteristics, such as deformations and hypodontia and hyperdontia. Additionally, we aimed to draw attention to the variations in tooth widths as a certain indicator of asymmetry. The study looked at the medical data of a total of cleft patients and healthy people. These records were acquired from three Polish medical institutions: Polanica Zdroj Hospital, Poznan Medical University, and Wroclaw Medical University. Two researchers worked on the study, and BK served as their supervisor. The trial lasted for four years. People with congenital disorders and concomitant deformities were not included in the study since they might have

caused further dental defects. Only comprehensive medical records were taken into account, including panoramic X-rays for determining the number of teeth (hypodontia, hyperdontia), as well as for identifying any impacted teeth. Patients with isolated complete clefts of the lip, alveolar bone, and palate were the only patients in the study. Only people with dental casts and panoramic X-rays from the same time period (with a maximum month-to-month variance between records) were included. People without dental casts or panoramic X-rays were not included in the study [5-7]. This qualifying selection was put in place to guard against mistakes where the lack of a tooth bud on a dental cast does not always indicate hypodontia. The study aims to provide a more accurate depiction of the prevalence of dental malformations among the evaluated patients by removing such inaccuracies. Patients with a mean age between years participated in the study. We intentionally selected patients in this age range who were enrolled in the orthodontic care program for craniofacial abnormalities and had not previously had treatment with fixed orthodontic appliances. The control group had a similar age range, with a mean age of years. To ensure comparability with the cleft patient group and include randomly chosen persons in need of orthodontic treatment, the control group's age range was chosen to be similar to that of the cleft patient group.

Plaster models and panoramic X-rays were also used in the study to assess the subjects' dental records. These data contained details about the absence of tooth buds and any extra teeth. They made it easier to determine if the central and lateral incisors, as well as the canines, are anatomically symmetrical or asymmetrical. All measurements were made indirectly on the subjects' plaster casts since the researchers looked at medical records [8]. A computerized caliper was used to gauge each tooth's mesiodistal breadth at its widest position. Each measurement was made three times to reduce the chance of an error, and the arithmetic mean of these measurements was determined.

DISCUSSION

The examination of numerous dental malformations, including tooth impaction, microdontia, and teeth deformities, as well as the assessment of tooth widening or narrowing, were made possible by these measurements. The document follows the STROBE principles, guaranteeing proper planning and construction. To highlight the investigative approach, the quality measurements were carried out using a caliper, and the measurement techniques are demonstrated.

CONCLUSION

This study's objective was to raise awareness of the problem of dental asymmetry in people who have cleft lip and palate. We chose to concentrate on the maxillary front area due to the volume of data that was available. The difficult element of restoring a person's symmetry and aesthetics to their smile is this, which is why many dentists focus on it. The majority of cleft lip and palate patients have left-sided clefts, which is the researchers' first finding. Due to the right side of the maxillary bone attaching to the premaxilla segment sooner during embryology, a longer period of time is needed to close the gap. The result is that if the closure process fails during the eighth week in utero.

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