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ORIGINAL ARTICLE

Impact of the COVID-19 pandemic on the surgical and rehabilitative treatment of patients with cleft lip and palate in a pediatric hospital

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Cleft palate,
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Abstract

Objective: Analyze the impact of the COVID-19 pandemic on surgical and rehabilitative treatment of patients with cleft lip and palate. **Methods:** This is a quantitative retrospective observational study. Based on data collection of surgical approach in the treatment of cleft lip and palate in pediatric patients assisted, in the pre and pandemic period between 2018 and 2021, on the Integrated Fissure Care Center. Three different strands were analyzed for a more in-depth overview: the number of new patients who arrived at the service from 2018 to 2021; the quantitative of rehabilitative surgical procedures performed during the same period; and the number of patients in completion of orthodontic treatment on hold for alveoloplasty with alveolar bone grafting. **Results:** The importance of an integrated multidisciplinary team is indisputable, due to the complexity of patients; in addition to the indispensability of a standardized classification method for future surveys; the prevalence of males was observed; there was a decrease in the admission of new patients in the pandemic period and; a reduction in the total number of surgical procedures (cheiloplasty and palatoplasty) in the pandemic period, while alveoloplasty were completely suspended. **Conclusion:** The pandemic brought aggravating factors: a decrease in the number of patients seen; delay in arriving at the service; decrease in the number of surgical procedures; as a result, the treatment is carried out outside the ideal period, which leads to sequelae, mainly to speech. The impact reflects in consecutive years, with long queues and patients operated outside the ideal period.

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INTRODUCTION

Human embryonic facial development involves complex processes, which may cause the emergence of numerous malformations related to the face. The process of differentiation of the human face occurs between the fourth and eighth week of pregnancy.[1] During this period, there are many factors that can lead to the occurrence of facial defects, such as cleft lip and palate (CLP).[1] Considered to be multifactorial conditions, they result from the interaction between genetic and environmental factors.[2]

From an embryological point of view, they result from the failure of the first branchial arch at the beginning of pregnancy.[2] The literature presents three different types of clefts based on their location: cleft palate, cleft lip and cleft lip and palate.[3]

The first surgery to repair a facial cleft dates back to 390 AD.[4] Since 2001, the Integrated Care Center for Cleft Lip and Palate Patients (NAIF) has been working in a multidisciplinary manner in the rehabilitation and social inclusion of children and adolescents with cleft lip and palate. The team includes professionals from the areas of psychology, nutrition, dentistry, speech therapy, nursing, social work, genetics, neurology, plastic surgery, pediatrics, and otorhinolaryngology.[5] And like other sectors of the health system, this one was also affected by the worldwide spread of the SARS-CoV-2 virus, due to its high transmissibility, which established social distancing, accompanied by the fear of an entire population.[6]

The present study aims to analyze the impact of the COVID-19 pandemic on the surgical and rehabilitation treatment of patients with cleft lip and palate, in the pre-pandemic and pandemic periods, as well as to draw comparisons of the number of cheiloplasty, palatoplasty, and alveoloplasty with alveolar bone graft between the pre- and pandemic periods. In addition, the study aims to point out the change/sequelae resulting from the non-performance or late performance of surgical procedures.

METHODS

This is a quantitative, retrospective and observational study, based on data collection about the surgical approach in the treatment of cleft lip and palate in pediatric patients assisted, in the pre-pandemic and 2018-2021 period, by the Integrated Care Center for Cleft Patients operating in a Pediatric Hospital. The pre-pandemic period was defined as: from January 1, 2018 to February 24, 2020. While the pandemic period begins on February 25, 2020, the date of the first case registered in Brazil, on December 31, 2021.[6]

The sample consisted of data from children and adolescents who were admitted to the NAIF, patients who underwent surgical repair and patients who underwent orthodontic treatment and were on the waiting list for alveolar bone graft surgery from 2018 to 2021.

The inclusion criteria were patients of both sexes, with a type of cleft, with an indication for corrective surgical approach, treated from 2018 to 2021. Patients with incomplete data in their records and patients outside the period analyzed were excluded from the sample.

To perform the analyses, specific information was collected, such as: name, medical records, date of birth, age, place of birth, type of cleft, surgical procedures performed, date of surgical procedure, age at which the patient underwent the procedure, and presence on the waiting list for alveolar bone graft surgery. The data were obtained through physical medical records, the surgical center management system, NAIF registration books, and dental records.

After collection, the data were stored in Excel spreadsheets for later submission to descriptive statistical analysis using the Statistical Package for the Social Sciences (SPSS) software. The descriptive statistical analysis presents the profile of patients who entered the service during the sample period. It compares the number of reconstructive surgeries performed before and after the pandemic and shows the list of patients who underwent orthodontic adaptation prior to alveoloplasty surgery. The study was submitted for approval by the Research Ethics Committee (CEP) and approved under opinion no. 5,573,720, on August 10, 2022. The risks inherent to the study were the breach of confidentiality of patients' personal information. To minimize this risk, the data were kept on the researcher's personal storage device, so that they would not be lost. disclosed by unauthorized persons. The research has no direct benefit to the participant; however, there is the indirect benefit of detailing the impact of the COVID-19 pandemic on the treatment of patients with cleft lip and palate.

RESULTS

The study analyzed three different aspects to provide a more in-depth overview. From the number of new patients who arrived at the NAIF service from 2018 to 2021, the number of surgical rehabilitation procedures performed during the same period and, finally, the number of patients completing orthodontic treatment who were already on the waiting list for alveoloplasty with alveolar bone grafting.

NEW PATIENTS

The survey of arrivals at the service, carried out through registration books and physical medical records, provided information on the profile of 584 NAIF patients. The number studied was 583 patients, with one patient being excluded from the sample due to the incomplete registration of the cleft type in the medical records. (Table 1)

REPAIR SURGERIES

The study of the surgical approach included a total of 294 patients who underwent cheiloplasty, palatoplasty or alveoloplasty with alveolar bone graft surgery between 2018 and 2021. (Table 2)

Table 1. Analysis of new patients at the Integrated Cleft Care Center.

	Frequency	Percentage
GENDER		
Male	322	55.2
Female	261	44.8
Total	583	100.0
QUANTITATIVE OF NEW PATIENTS		
Pre-pandemic period	324	55.6
Pandemic period	259	44.4
Total	583	100.0
STATE OF ORIGIN		
Ceará	572	98.1
Maranhão	9	1.5
Piauí	1	0.2
Pará	1	0.2
Total	583	100.0
CLEFT TYPE		
Labial	101	17.3
Palatine	214	36.7
Lip and palate	268	46.0
Total	583	100.0
	Pre-pandemic	**Pandemic**
AGE OF ENTRY IN THE SERVICE		
Quantitative (patients)	324	259
Younger age (days)	1	2
Older age (years)	15	14
	Frequency	**Percentage**
Mean (months)	8	8
Mode (days)	6	9

Table 2. Analysis of patients undergoing reconstructive surgeries.

	Frequency	Percentage
GENDER		
Male	176	59.9
Female	118	40.1
Total	294	100.0
TYPE OF SURGERY		
Cheiloplasty	187	63.6
Palatoplasty	101	34.4
Alveoloplasty	6	2
Total	294	100.0
QUANTITATIVE OF SURGERIES		
PRE-PANDEMIC	181	61.5
Cheiloplasty	112	38
Palatoplasty	63	21.5
Alveoloplasty	6	2
PANDEMIC	113	38.5

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	Frequency	Percentage
Cheiloplasty	75	25.5
Palatoplasty	38	13
Alveoloplasty	0	-
Total	294	100.0
COMPARATIVE OF SURGERIES BETWEEN THE PERIODS		
CHEILOPLASTY		
Pre-pandemic	112	59.4
Pandemic	75	40.6
Total	187	100.0
PALATOPLASTY		
Pre-pandemic	63	62.4
Pandemic	38	37.6
Total	101	100.0
ALVEOLOPLASTY		
Pre-pandemic	6	100.0
Pandemic	0	-
Total	6	100.0
	Pre-pandemic	**Pandemic**
CHEILOPLASTY		
Quantitative (patients)	112	75
Younger age (months)	7	7
Older age (years)	17	8
Mean (months)	34	23
Mode (months)	12	17
PALATOPLASTY		
Quantitative (patients)	63	38
Younger age (months)	8	11
Older age (years)	16	17
Mean (years)	5	3
Mode (months)	17	28
ALVEOLOPLASTY		
Quantitative (patients)	6	0
Younger age (years)	10	-
Older age (years)	16	-
Mean (years)	11	-
Mode (months)	-	-

ORTHODONTIC TREATMENT

The number of patients undergoing orthodontic treatment included 144 children and adolescents. The following items were analyzed: predominant gender among patients referred in writing to the waiting list for alveoloplasty; type of cleft already surgically treated; state of origin and age at which the referral was made. The classification was as follows: unilateral cleft on the right, unilateral cleft on the left and bilateral cleft identified based on the patients' orthodontic records. (Table 3 e 4)

Table 3. Analysis of patients undergoing orthodontic treatment waiting for alveoloplasty surgery with bone graft.

	Frequency	Percentage
GENDER		
Males	83	57.6
Females	61	42.4
Total	144	100.0
STATE OF ORIGIN		
Ceará	141	97.9
Maranhão	1	0.7
Piauí	1	0.7
Rio Grande do Norte	1	0.7
Total	144	100.0
TYPE OF CLEFT		
LP UNILATERAL R	40	27.8
LP UNILATERAL L	65	45.1
LP BILATERAL	39	27.1
Total	144	100.0

Table 4. Analysis of the age of patients waiting for alveoloplasty surgery with bone graft.

AGE OF ENTRANCE TO THE WAIT LIST	
Quantitative (patients)	144
Younger age (years)	6
Older age (years)	17
Mean (years)	11
Mode (years)	9

DISCUSSION

The study demonstrates the prevalence of males in relation to new patients who arrived at the service between 2018 and 2021. Of the total of 583 analyzed, males were the majority, with a number of 322 compared to 261 females. This is in line with the study by Conway et al.[7], which states that males are more affected, in a proportion of 2:1 compared to females, in the development of cleft lip and palate.[7]

There was a decrease in the number of patients who came to the clinic during the pandemic period due, initially, to the difficulty of access caused by the suspension of services in which only essential services were operating; and, subsequently, to family members' fear of traveling to the hospital during periods of increased cases of COVID-19.

In the period before the pandemic, the 324 patients who reached the service were mostly (mode) 6 days old, with the average age of the new children being 8 months. While during the pandemic, the 259 patients who managed to enter the NAIF had a higher mode of 9 days and the average life expectancy of 8 months was maintained. The pandemic meant that, in addition to the decrease in the number, many patients arrived late, which already makes surgical correction and oral rehabilitation treatments difficult.

Most of them came from the state of Ceará, but the service is a reference center for patients from other states such as Maranhão, Piauí, Rio Grande do Norte and Pará. The prevalence of clefts observed among the new patients was cleft lip and palate (268 patients), followed by cleft palate (214 patients) and finally cleft lip present in 101 patients in the sample.

Through childhood and adolescence, the dentist is required to monitor facial growth and tooth eruption. These patients who enter the service require assistance in planning and timing of surgical procedures. This is particularly important for alveoloplasty with alveolar bone grafting to fill the alveolar cleft.[8] In addition to alveoloplasty, this surgical service also performs cheiloplasty and palatoplasty.

The goals of cheiloplasty are to reconstruct the oral sphincter muscles, lengthen the upper lip, and improve the symmetry and function of the nasal airways. Palatoplasty closes the connection between the nasal and oral cavities, and reconstructs the palatine muscles to enable normal speech development. Alveolar bone grafting aims to fill the alveolar cleft.[2]

Lewis et al.[2] present the protocol generally adopted with cheiloplasty is performed between 2 and 6 months of age; palatoplasty between 9 and 18 months of age and alveoloplasty indicated between 8 and 10 years of age.[2] The surgical protocol established at NAIF converges with that established by Lewis et al.[2], by indicating cheiloplasty and palatoplasty reconstructive surgeries at two distinct times. With cheiloplasty generally performed from 8 months of age; palatoplasty from 1 year and 6 months; and alveoloplasty indicated around 8 years of age.

When comparing the number of reconstructive surgeries recorded in the surgical center's management system, variation was noted between the periods. While in the pre-pandemic period, 181 surgeries were performed, of which 112 were cheiloplasties, 63 were palatoplasties, and 6 were alveoloplasties. In the pandemic period, a total of 113 reconstructive surgeries were performed, of which 75 were cheiloplasties and 38 were palatoplasties. During the pandemic period, no alveoloplasty surgeries were performed.

Regarding the age of patients at the time of surgery, it was shown that there was an increase in the age of patients in both cheiloplasty and palatoplasty. While in the pre-pandemic period, lip correction was performed more frequently in patients aged 12 months, during the pandemic period it increased to 17 months. Palatal correction, previously performed more frequently in patients aged 17 months (1 year and 5 months), became the most frequent age profile for patients aged 28 months (2 years and 4 months). Finally, alveoloplasty, which was performed on average at 11 years of age, was not performed on any patient during the pandemic period.

Before the pandemic, alveoloplasty surgery already had a limited number of performances, with 6 in total during the four-year study period. With the pandemic, this number dropped to 0 surgeries. Failure to perform this surgery interferes with the final success of the orthodontic treatment.[8]

It is important to emphasize that the high average age in some analyses is due to the delay in arrival and consequently the delay in performing surgeries in both periods studied. The high ages of these few patients end up establishing a higher age outside the protocol, as well as increasing the average age at which the procedures are performed. Most of the patients studied between 2018 and 2021 are in accordance with the protocol established by NAIF.

The orthodontic component constitutes an important part of the rehabilitation process of cleft patients. The sample included 144 children and adolescents treated by the NAIF orthodontics service. Of these, 83 are male and 61 are female. Most patients came from Ceará, but patients from Maranhão, Piauí and Rio Grande do Norte are also treated.

Using the image files present in the orthodontic documentation, it was possible to visualize the repaired area of the cleft and thus classify it. The largest number of patients underwent repair surgery for unilateral cleft on the left (65 patients), followed by unilateral cleft on the right (40 patients) and bilateral cleft (39 patients).

The objectives of orthodontic and surgical care related to the cleft include improving the child's dental occlusion, the positioning of the teeth, the permeability of the nasal airways and the facial skeletal relationships. Most patients with cleft lip and palate require orthodontic treatment to ensure functional occlusion, long-term oral health and hygiene.[2]

A multidisciplinary team is required because cleft lip and palate involves the surgical, speech therapy, dental, psychosocial and cognitive domains. The goal of this team is to ensure that care is provided in a coordinated manner, maintaining the sequence of assessments and treatments for the overall development of the patient.[2] Aware of the complexity of the public served by the service, NAIF understands and ensures comprehensive and continuous care from early childhood to adolescence.

The consequences of not performing reconstructive surgeries are many. There may be implications for nutrition, since many mothers live with the fear of choking during diet; speech due to the lack of palate sealing, the voice becomes nasal; auditory repercussions such as partial hearing loss or recurrent otitis; compromising facial aesthetics, thus negatively affecting an individual's self-esteem, social skills, behavior and quality of life.[3]

These psychological repercussions are not restricted to the patient alone, but also extend to parents, especially mothers.[9] They mourn the "loss" of their perfect baby. Anger, guilt and fear of the child's future social acceptance are common reactions in the family.[2]

While the wait for reconstructive surgeries to be performed is extended, the period in which the patient and the family have to live with these implications is also extended. Once the appropriate period for performing surgeries is over, speech development is also compromised.[19,20]

More specifically in relation to oral health, there is also a higher prevalence rate of dental cavities in children with clefts when compared to children without clefts in both dentitions.[10,14,15] This generally occurs because they are afraid of brushing their teeth due to limited access to the cleft areas, which compromises oral hygiene.[16,17] The healing of the tissue in the cleft region after surgical repair, dental crowding and reduced oral clearance by saliva and tongue also contribute to this greater susceptibility.[3]

A limitation of the present study was the failure to adopt a single, standardized classification by the service, since there is a detriment to the specificity of the cleft typology for analyses and subsequent comparisons with what is present in the scientific literature.[18] It is suggested that the Spina classification method be adopted. Introduced in 1973, it achieved greater acceptance due to its simplicity.[11,12,13]

In view of the above, the importance of the work of an integrated multidisciplinary team is indisputable, given the complexity of patients with cleft lip and palate; in addition to the indispensability of a standardized classification method for future surveys.

The pandemic has caused a series of disruptions in the treatment of cleft patients. Given that patients require a multidisciplinary team for proper treatment, there is also an ideal time to perform surgical procedures in order to minimize sequelae. In this study, we saw that the pandemic period brought some aggravating factors, including a decrease in the number of patients treated, delays in arrival at the service, and a decrease in the number of surgical procedures. This set of factors often results in treatment being performed outside the ideal period, causing sequelae, especially in relation to palatoplasties, due to functional speech difficulties. Finally, this problem persists in subsequent years, with long waiting lists and patients still undergoing surgery outside the ideal period, given the difficulty in accessing treatment in a timely manner.

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