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CASE REPORT

# Phenotype of cleft lip and palate and other oral manifestations in individuals from the same family - Case reports

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## Abstract:

We aim to describe the oral phenotype and manifestations of the cleft lip and palate of individuals from two generations of a family. The family history, information relating to pregnancies, sociodemographic data and pre- and postoperative clinical and radiographic characteristics of the individuals were collected. Four members of the family had cleft lip and palate: the father and three daughters. They had different phenotypes regarding their type and affected side. The individuals underwent medical treatment and received surgical correction procedures. Alteration in the number, shape, positioning and eruption pattern of teeth was registered. The presence of oral clefts between generations of the same family is not a predictable phenomenon nor are their characteristics. Reports of this nature, as well as the psychological and social impact of the condition, are important to emphasize the need aspects of studies involving these individuals.

**Keywords:** Cleft Palate; Pathology, Oral; Tooth Eruption; Reconstructive Surgical Procedures.

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## INTRODUCTION

Craniofacial formation involves coordinated phenomena of cell migration, proliferation and apoptosis[1]. Orofacial cleft lip and/or palate are among the most prevalent birth defects and result from disturbances in one or more of these phenomena[2-4].

The development of facial processes is regulated by complex interactions between genetic and environmental factors[2,4-7]. Genetic mutations appear to be involved and play an important role in malformations[6,8-10]. Therefore, the presence of individuals in the same family with oral clefts reinforces that theory[11].

However, the presence of the phenotype in subsequent generations is not easily predictable[3,8]. Family incidence studies are recommended for better understanding and prediction of inheritance mechanisms[8]. Few reports have focused on the types of cleft and family history of patients with fissure[11]. This information can be useful for genetic counselling and efficient family planning[8].

The aim of this study was to describe the phenotypes of cleft lip and palate and other oral manifestations in two consecutive generations of a family.

## CASE REPORTS

The reported family consisted of non-consanguineous parents and three daughters. The family had a low income (R$ 10,560.00 annually) and lived in northeast Brazil. The patients were treated by a specialist dentist in Buco-Maxillofacial Surgery and Traumatology at a specialized hospital in the state capital, Teresina - PI (São Marcos Hospital). The father (patient 1) and three daughters (patients 2, 3 and 4) had cleft lip and palate. The individuals did not have any other systemic disorders and did not use medications.

Anamnesis revealed that during pregnancy, the mother of the children had not used alcohol, tobacco, illegal drugs or any type of medication and had not been exposed to X-ray examinations. The father's family history assessment revealed that his mother and brother also had clefts, but with a different phenotype than that observed in the reported family. The father also had two male children from an extramarital relationship, none of whom had cleft lip or palate. The family genogram of the patients (Figure 1) and identification and preoperatory characteristics of the patients (Table 1) are presented below.

The patients reported that they had been victims of discrimination before the surgery and that their working conditions and social acceptance had improved after the surgery. The daughters reported that before receiving reparative procedures they had experienced educational problems associated with pronunciation of words, and felt embarrassment during discussions or participation in the classroom. The frontal extra-oral pre-surgical aspect of patients is presented in Figure 2.

The clinical and radiographic follow-up consultations were carried out on patients 1 to 4 at 17 years, 13 years and six months, 10 years and six months and 7 years and six months after the surgery, respectively, and are described below:

For patient 1, Figure 3 shows the frontal extra-oral postsurgical aspect, intraoral frontal aspect; the bone defect in the anterior region of the left maxilla extending to the nasal cavity and asymmetric condyles; the following teeth were missing: in the maxilla, both lateral incisors, central right incisor, first right premolar, third left molar; and in the mandible, the first and second molars; there were residual roots (first maxillary premolars, second right premolar and right lateral incisor); there was also the need for periodontal, endodontic, orthodontic and restorative treatment, surgical need for closure of the oronasal fistula combined with alveolar bone graft and subsequent speech therapy.

For patient 2, Figure 4 shows the frontal extra-oral postsurgical aspect, intraoral frontal aspect; there was a bone defect in the anterior region of the left maxilla extending to the nasal cavity, asymmetric TMJ condyles and the presence of the dental germs of the maxillary third molars; both lateral maxillary incisors and mandibular third molars were missing, the left maxillary canine was distally positioned, there was generalized diastema in the anterior region of the maxilla, and anterior cross-bite. Therefore, the patient required orthodontic and restorative treatment, surgery for closure of the oronasal fistula combined with alveolar bone grafting and subsequent speech therapy.

For patient 3, Figure 5 shows the frontal extra-oral postsurgical aspect, intraoral frontal aspect; the bone defect in the anterior region of the left maxilla between the left central incisor and left canine extending to the nasal cavity, asymmetric TMJ condyles, partially impacted second molars, and the germs of the left lateral incisor and third right mandibular molar were missing; the right lateral maxillary incisor had microdontia, there was giroversion of the right mandibular canine, diastema between the central maxillary incisors, and dental crowding in the anterior region of the mandible. Therefore, the

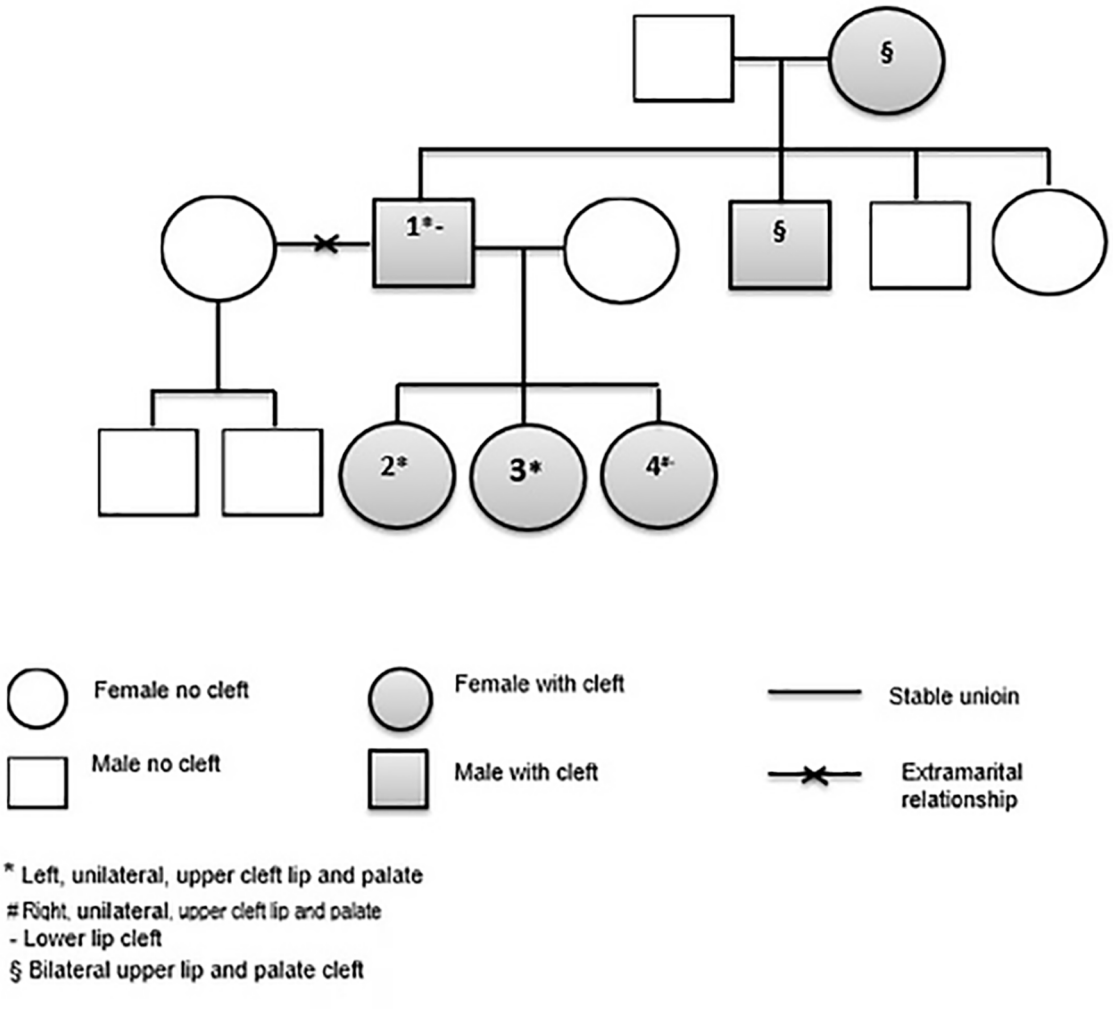


**Figure 1.** The family genogram of the patients.

**Table 1.** Identification and pre-operative characteristics of the patients.

| | Patient 1 | Patient 2 | Patient 3 | Patient 4 |
|---|---|---|---|---|
| **Identification** | Male, multiracial, Brazilian, 35 years-old | Female, multiracial, Brazilian, 15 years-old | Female, multiracial, Brazilian, 12 years-old | Female, multiracial, Brazilian, 09 years-old |
| **Type of cleft** | Unilateral, complete left cleft lip and palate and lower lip cleft | Unilateral, complete left cleft lip and palate | Unilateral, complete left cleft lip and palate | Unilateral, complete left cleft lip and palate and right cleft lower lip cleft |
| **Age at the time of surgery** | 18 years | 3 months | 3 months | 12 months * |
| | 3 months | 18 years | 18 years | 18 months |

* The surgery had to be postponed because the patient acquired visceral leishmaniosis

patient required orthodontic and restorative treatment and surgery to close the oronasal fistula combined with alveolar bone grafting and speech therapy.

For patient 4, Figure 6 shows the frontal extra-oral postsurgical aspect, intraoral frontal aspect; the bone defect in the anterior region of the right maxilla extending to the nasal cavity with impactation and alteration in the shape of the right central incisor, asymmetrical TMJ condyles, and the germs of both maxillary lateral incisors, the maxillary left third

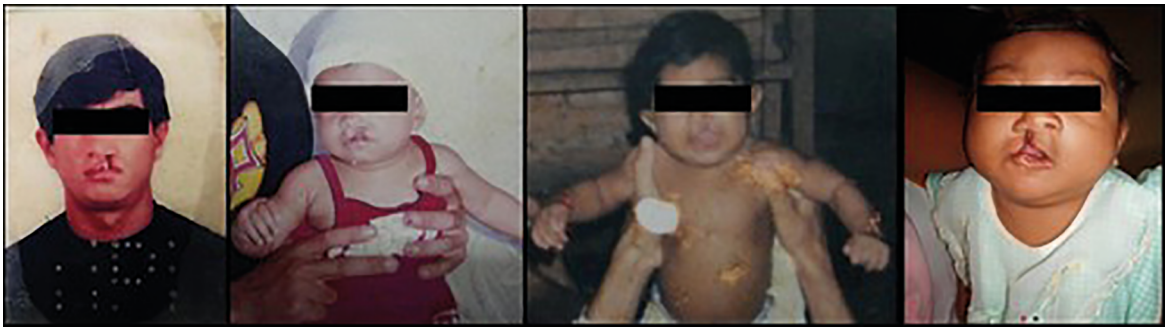

**Figure 2.** Initial aspect of patients 1 to 4.

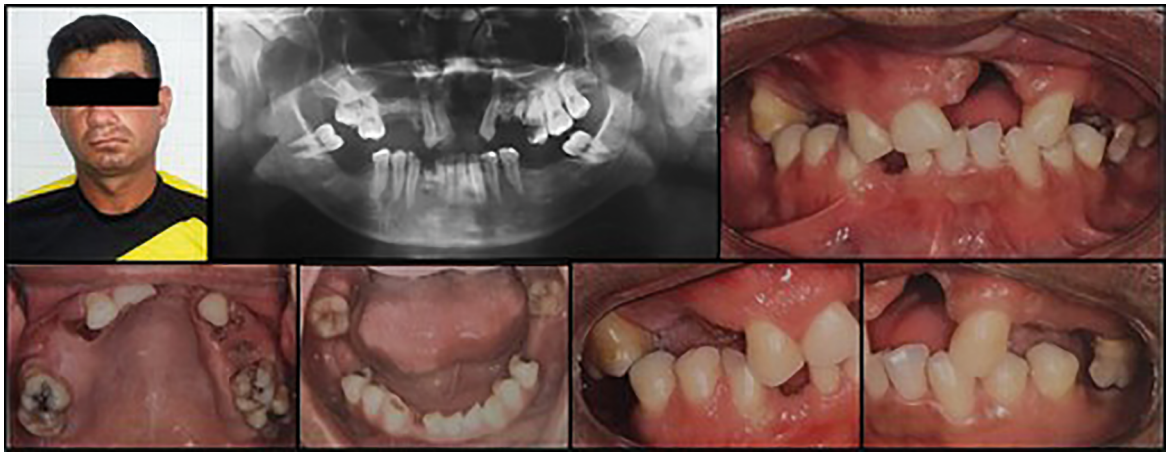

**Figure 3.** Frontal, radiographic and intraoral aspects of patient 1.

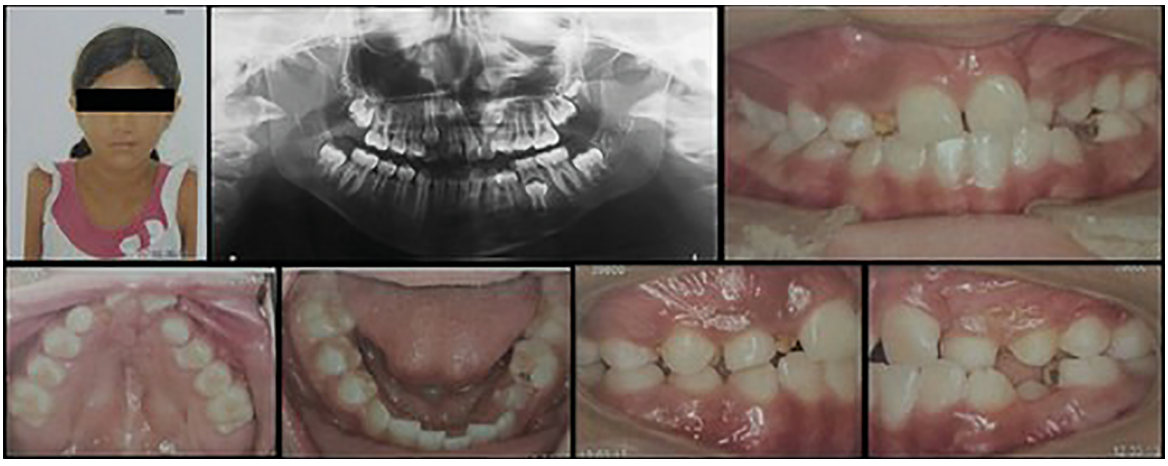

**Figure 4.** Frontal, radiographic and intraoral aspects of patient 2.

molar and both mandibular third molars were missing; dental crowding in the anterior region of the mandible and anterior crossbite. Therefore, the patient required orthodontic and restorative treatment, surgery of the impacted teeth and closure of the oronasal fistula combined with alveolar bone grafting and subsequent speech therapy.

Surgical corrections were carried out using the Unilateral Lip Repair Technique, Palate Repair Technique (Langenbeck variant) and rotation/advances and variants (Millard), in all individuals. There were no complications during the postoperative period and satisfactory aesthetic and functional results were achieved, according to the perception of the individuals.

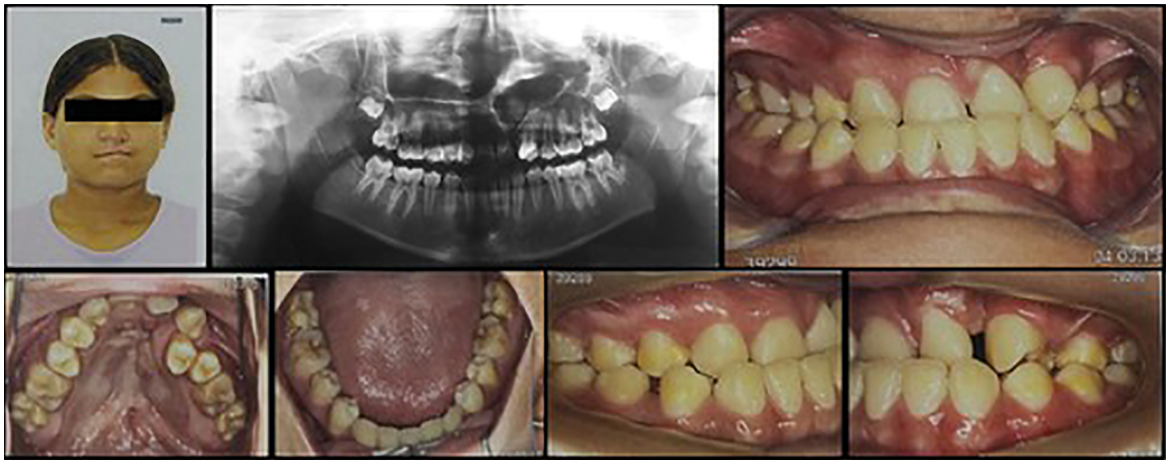

**Figure 5.** Frontal, radiographic and intraoral aspects of patient 3.

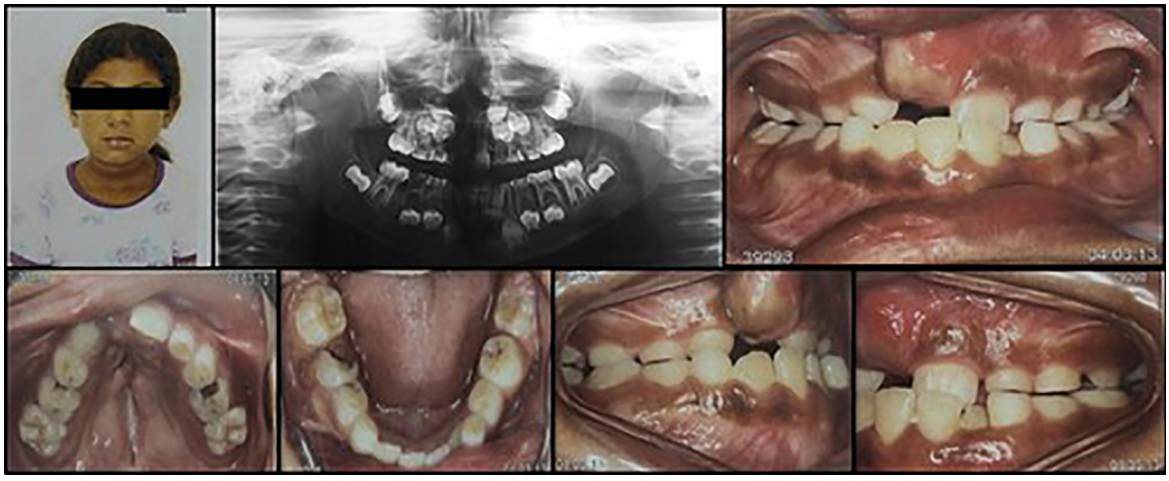

**Figure 6.** Frontal, radiographic and intraoral aspects of patient 4.

After they reached 18 years of age, the daughters underwent rhinoplasty.

## DISCUSSION

The three main subgroups of cleft lip and palate are those that involve the lip only, the lip and palate or the palate only[6,11-13]. About 50% of patients with cleft lip also have cleft palate[3]. All members of the reported family had both phenotypes. Available evidence suggests that the defect of the lip may be deep enough to affect the primary palate and the closing of the palatine suture[3].

The presence of isolated cleft is more frequent than cleft combined with other congenital anomalies or syndrome[3,6,11,13]. The mean rate of occurrence of oral non-syndromic cleft is about 1 in 700 newborns and varies according to ethnicity, geographical distribution and family history[3,4,5,6,9,13-15].

Generally, the manifestation of clefts in individuals of the same family is less severe when compared with isolated cases. Inherited genetic factors may be directly responsible for the development of a cleft or confer susceptibility, as well as for the side of the face affected and extension of the cleft[3,11]. In our report, hereditary influence was suggested due to the involvement of the three daughters, although the individuals presented distinct phenotypes (type and affected side). We were unable to find any evidence to justify the different manifestations in members of the same family because of the difficulty of carrying out genetic mapping in this part of Brazil.

The father and only one of the daughters had cleft in the lower lip. Unlike the upper lip and palate, which are commonly affected, lower lip and mandible clefts are rare and vary widely in severity[16-18]. The father and two of the three daughters had a complete cleft lip and palate. One of the daughters had a right cleft. The prevalence of cleft on the left side is higher[4].

Individuals with orofacial clefts have a higher prevalence of dental anomalies when compared with the general population[4,10,12,19]. Teeth number, shape, positioning, and eruption sequence alterations were observed in the patients reported.

All types of cleft have been associated with dental agenesis. The most affected teeth are the maxillary lateral incisors[4,19]. Two of the three sisters had agenesis of both maxillary lateral incisors. In one of the patients there was agenesis of the left lateral incisor and microdontia of the right lateral incisor.

Disorders in the tooth eruption pattern are common findings in these individuals and more frequent in the maxilla[4,19]. One of the patients, for instance, had an impacted maxillary central incisor. Problems of such nature may be caused by genetic factors associated with the clefts or may be a physical consequences of the surgical repair.

Furthermore, orofacial defects can affect the social and psychological aspects of individuals[14,20]. Difficulties in feeding, speech and social integration are the most frequently reported occurrences[5,7,14]. Studies of members of the same families are important especially if multiple members of the family are affected. An impact on family quality of life is expected.

In this report, we emphasized the aesthetic and functional results achieved after surgery. Greater benefits are achieved with an experienced multidisciplinary team, consisting of a plastic and maxillofacial surgeon, otolaryngologist, speech therapist, psychologist and social worker, as in this reported case[3,5,9].

The transmission pattern between generations of the same family is not a predictable phenomenon regarding the phenotypic manifestations of cleft and other manifestations. Thus, it is important to report this type of occurrence in the same family generation in order to corroborate that the hereditary aspect may be associated with this type of deformity. Due to the strong psychological and social impact of this condition it is important to carry out studies involving these individuals.


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