

# Distribution of types of lip and/or palate clefts among children from Lodz during years 1981-2015

**Authors' Contribution:**  
A – Study Design  
B – Data Collection  
C – Statistical Analysis  
D – Data Interpretation  
E – Manuscript Preparation  
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## ABSTRACT:

**Introduction:** Cleft lip and/or palate are the most common face malformations. The clinical picture of these anomalies is very variable. Cleft can include only the lip and/or alveolus, palate or all of these structures can be clefted.

**Aim:** The aim of this paper is to present all particular types of clefts, their relationship to gender and body side in the group of children born in Lodz during the years 1981-2015.

**Material and method:** The study group included 434 patients with facial clefts (218 males and 216 females) in the age between 4 weeks to 18 years who were born in Lodz during years 1981-2015.

**Results:** In the analyzed group, there were 181 palate clefts (41.7%), 156 lip and palate clefts (36%) and 97 lip clefts (22.3%). A detailed analysis of clefts types showed that isolated palate clefts are definitely more frequent in females than males (112 vs. 69), while lip and palate clefts in boys than girls (96 vs. 60), furthermore left-sided clefts are more common than right-sided.

**Conclusions:** During 35 years, the most common type of anomaly in children born in Lodz were palate clefts, followed by lip and palate clefts and the less frequent lip clefts. Palate clefts are more common in girls, while lip and palate clefts in boys. Left-sided clefts are two times more common than right-sided clefts.

## KEYWORDS:

cleft, lip, palate, type of anomaly.

## INTRODUCTION

Cleft lip and/or palate are the most common congenital defects that occur in the area of the face [1,2]. They account for 65% of all congenital head and neck anomalies [3]. The clinical picture of these disorders is very diverse, the cleft may cover the lip itself or the lip and alveolus, affect the palate alone or cover all of these structures, i.e., lip, alveolus and palate. In addition, unilateral or bilateral, partial or complete clefts are observed. Due to the multifiform nature of anomalies, there are many classifications attempting to systematize cleft lip and/or palate.

Some of the first classifications appeared about 100 years ago and mainly took into account morphological considerations. Such schemes were used, among others, by Davis and Ritchie (1922), Veau (1931) and Fogh-Andersen (1942) [4]. Embryological aspects were taken into account by Kernhan and Stark (1958), Vilar-Sancho (1962), Pfeiffer (1966) and Kriens (1990) [4]. The ability to conduct DNA research has prompted geneticists to present their own classifications; Jones described one of them in 1988 and Hanson and Murray in 1990 [4]. In our Center, we use the classification proposed by Bardach in 1963. According to this proposal, we divide clefts into 5 groups: the first includes cleft lip, the second regards the lip and alveolus, the third - isolated cleft palate, the fourth - cleft lip, alveolus and palate, and the fifth - combined clefts [5]. Additional digits 1 or 2 placed next to the group symbol indicate a one- or two-sided defect [5].

Global data on the incidence of cleft lip and/or palate are divergent; from the literature, it appears that this defect occurs in one child per 500- 2500 live births [1,2,6,7]. From many years of research conducted in our Center, it appears that over the years, a slight

decrease in the occurrence of cleft lip and/or palate among Lodz children has been observed [8]. The average incidence of clefts in newborns born live in Łódź in the years 1981-1990 was 2/1000, and in 1991-2000 - 1.89/1000, while over 30 years/1981-2010/ - 1.93 per 1000 live births [8,9,10].

Clefts are a serious medical and social problem. The appearance of a child's face is of significance (before surgery, but also after, due to scars), and in patients with cleft palate, attention is drawn due to slurred speech caused by frequent nasality. As a result, it causes child's stigmatization and negatively affects the quality of life of an adult patient. The number of people affected is also significant. American statistics say that every day in the United States, 20 newborn babies affected by clefts are born, which gives the number of 7,500 children per year [1, 4]. The above-mentioned issues indicate a large scale of the phenomenon, therefore it is worth knowing which types of clefts are most common, whether there is a dependence between the type of cleft and the gender of the child, whether one- or two-sided defects prevail.

The aim of the work is to characterize particular types of clefts, their distribution depending on gender and the side of the body covered by the defect in the author's material, including children born in the city of Łódź in the years 1981-2015.

## MATERIAL AND METHOD

Of all children with a cleft defect who were treated at the department of Plastic, Reconstructive and Aesthetic Surgery, only the group of patients who were born in the city of Łódź in the years 1981-2015 was selected. Thanks to the analysis, a group of 434 pa-

tients with cleft lip and/or palate was collected.

The study included 218 boys and 216 girls. At the time of referral to the Clinic, patients were aged from 4 weeks to 18 years. Most patients remain under our care until they are 18 or older.

## RESULTS

The analyzed group consisted of cleft palate (181 patients, 41.7%), followed by cleft lip and palate (156 patients, 36%), and the smallest one - cleft lip (97 children, 22.3%) (Tab. I). In the group of lip and palate clefts, one-sided defects were more frequent than bilateral ones (105-67.3% vs. 51 - 32.7%) (Tab. II). Considering the distributions of individual types of clefts over the years, it is noteworthy that in the decade of 1981-1990, the largest group were cleft lip and palate (80), followed by isolated cleft palates (73), and the smallest - cleft lip alone (37). In the following periods (1991-2000, 2001-2010, 2011-2015), the system remained relevant for the entire analyzed material, i.e., cleft palate was the most numerous (57, 31 and 20 patients, respectively) followed by cleft lip and palate (41, 28 and 7 patients), and the least numerous groups were patients with cleft lip alone (31, 11 and 18) (Tab. I). Over 30 years (1981-2010), one-sided cleft lip and palate have always been more frequent compared to bilateral defects; in the last five years (2011-2015), bilateral cleft lip and palate occurred in 4 patients and unilateral in 3.

When examining gender distribution in the whole group of cleft patients, one could say that the frequency of cleft lip and/or palate is equal between boys and girls (218 vs. 216). However, a detailed analysis of defect types shows that isolated cleft palate is definitely more common in females than males (112 vs. 69), while total cleft lip and palate are inverse (96 boys vs. 60 girls) (Tab. II). The incidence of isolated lip cleft is similar in both genders (53 boys vs. 44 girls) (Tab. II). Characteristically, such a system remains unchanged over the period of the analyzed 35 years (Tab. II).

In the group of 97 children with a defect including the lip alone, the left side was covered by a cleft almost twice as often as the right side (60 vs. 37). A similar relation was observed among children with cleft lip and palate - the defect affected the left side in 70 patients, whereas the right side in 35 patients.

## DISCUSSION

From global literature, it appears that among the so-called typical facial clefts, the most common is the defect of the lip, alveolus and palate, then isolated cleft palate and the rarest, cleft lip alone [11]. Tolarova and Cervenka in their study on the population of California children, found that the percentage of cleft lip and palate reaches 44.8%, while cleft palate - 28.8%, and cleft lip - 26.4% [4]. Pavri and Forrest's Canadian studies showed more frequent occurrence of isolated cleft palates (41%) in comparison to American studies, however the defect including the lip and palate was the most frequent (42%) and lip cleft alone was the rarest (17%) [2]. European publications state that the most frequently found form of defect is isolated cleft palate, followed by cleft lip and palate, while the rarest one is cleft lip alone [12-16]. One example of this may be the work of Dehlii et al, who evaluated the distribution of types of clefts in children affected by these defects in the

Tab. I. Particular type of clefts in a group of children from Lodz in years 1981-2015.

YEARS	TYPE OF CLEFT			
	I + II	III	IV <sub>1</sub>	IV <sub>2</sub>
1981-1990	37	73	52	28
1991-2000	31	57	27	14
2001-2010	11	31	23	5
2011-2015	18	20	3	4
TOTAL	97	181	105	51

I - cleft lip  
 II - cleft lip and alveolar bone  
 III - cleft palate  
 IV<sub>1</sub> - one-sided cleft lip, alveolar bone and palate  
 IV<sub>2</sub> - two-sided cleft lip, alveolar bone and palate

Tab. II. Particular type of clefts in relationship to child's gender.

YEARS	TYPE OF CLEFT							
	I + II		III		IV <sub>1</sub>		IV <sub>2</sub>	
	♂	♀	♂	♀	♂	♀	♂	♀
1981-1990	22	15	29	44	32	20	16	12
1991-2000	14	17	23	34	16	11	11	3
2001-2010	7	4	11	20	12	11	2	3
2011-2015	10	8	6	14	3	0	4	0
TOTAL	53	44	69	112	63	42	33	18

city of Asturias in Spain in 1990-2004. Their data was distributed as follows: palate clefts related to 44.8% of patients, lips and palate defects - 28.3%, and cleft lip alone - 26.9% [17]. An even higher percentage of isolated cleft palates is shown in studies by Lithovius et al. from Finland; this type of defect was 68.7%, whereas cleft lip and palate - 18.7%, and cleft lip - 12.6% [16]. The European results are consistent with the data obtained from our research. Over a period of 35 years of observation among children from Lodz, the most common form of cleft defect was isolated anomalies of the palate (41.7%), followed by clefts affecting the lip and palate (36%), and the rarest defects were that of the lip alone (22.3%). Importantly, our research indicates the lack of a tendency to change over the years. Variable distributions in individual types of clefts may result from the high role of ethnic and climate-environmental factors in the etiology of clefts.

In the literature, the authors agree on the fact that palate cleft is more frequent in girls, and cleft lip, alveolus and palate in boys [2,13,15,17,18]. This is in line with the results we received; Cleft palates are almost twice as common in girls as in boys, while defects in the lip and palate are one and a half times more common among male children rather than female.

Some researchers also pay attention to the proportions, i.e., in the case of unilateral clefts, which body side is more often anomalous [3,16,19]. All analyzes show that left-sided defects are twice as frequent as right-sided. Similar observations come from our research.

## CONCLUSIONS

1. Over 35 years, the most frequent among children of Lodz were cleft palate, then lip and palate defects, and the rarest - lip cleft.

2. Cleft palates occur more often in girls, while cleft lip and palate in boys.

3. In the case of unilateral disorders, left-sided defects are twice as frequent as right-sided.

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