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Cleft Lip and Cleft Palate in Korea

– 2422 cases in 20 years –

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The Department of Plastic Surgery of the Yonsei University College of Medicine in Korea studied 2422 cases of cleft lip and cleft palate patients for 20 years An analysis of the date resulted in the following: 1) of the 33,130 live births in our hospital in 20 years (Jan. 1962-Dec. 1981), 44 of the birth certificates specified cleft lip or palate. This is a ratio of 1.33 cases per 1000 live births. 2) The ratios for left to right to bilateral cleft was 3.4:1.9:1.0. Higher percentage of males than females had cleft lip-palate combined, than cleft lip only. A higher percentage of females had cleft palate only. 3) A positive family history was noted in 151 out of 2422 cases; (6.3%). 4) 4.5% of the patients had an associated congenital malforation of which heart anomaly was the most common. 5) Lip closure was scheduled to be done within 3 months of age; palate closure was scheduled between 12 to 18 months. 6) The triangular flap method was used for the lip repair. The palate was repaired by the Kilner-Wardill method in all cases. The operative results were satisfactory in both lip controur and speech. Noting the lack of published reports about this topic, especially among the oricental population, we believe this paper will serve to enhance the knowledge of the field of cleft lip and cleft palate patients in Asia.

Key Words: Cleft lip and palate, Korea.

During a period of 20 years, from 1962 to 1981, 2422 cleft lip and palate patients were operated on by members of the staff of the Department of Plastic Surgery at Yonsei University College of Medicine.

Within that time, a mobile operative team of surgeons was organized. Operations were performed on cleft lip and palate patients without charge at Korean Red Cross. Thereby, a large population of cleft lip and cleft palate patients who have been operated on, consistently by the same team, became available for analysis.

All of the patients received cheiloplasty by the Tennison-Randall method and palatoplasty by the Wardill-Kilner method.

These patients were followed regularly from early childhood until postoperatively early teens. We have examined clinical statistics on the incidence of clefts, types of cleft, ratio of male to female, other associated abnormalities, and family history. We then concluded the analysis by presenting our operative results.

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MATERIAL AND METHODS

Within a period of 20 years, from 1962 to 1981, 2422 cleft lip and cleft palate patients received surgery form our staff. We examined clinical statistics on the incidence of clefts, types of cleft, ratio of male to female, other associated abnormalities, and family involvement.

All of the patients received cheiloplasty by the Wardrill-Kilner method. We analyzed data on the operative cases as well as the results gathered on follow-up.

FINDINGS

1) Frequency of occurence

Within a period of 20 years, between January 1962 and December, 1981, 44 out of 33130 infants delivered normally at our hospital were born with cleft lip and or cleft palate.

This averages approximately 1.33 infants per 1000 normal delivery. There were only 17 cases of cleft lip, 16 cases of cleft lip and palate combined, and 11 cases of cleft palate only (Table 1).

2) Types of cleft lip and palate

In the total of 2422 cases of clefts, there were: 1222 cases of cleft lip, 717 cases of cleft lip and palate combined, 466 cases of cleft palate, and 17 cases of rare types of facial clefts.

Lateral cleft lip was the predominant type found among the rare cases (Table 2).

Observing the location of clefts, left sided cleft lip was the most common (1046 cases), followed by 585 cases of right sided cleft lip and 302 cases of bilateral cleft lip.

The ratios with respect to left or right or bilateral was approximately 3.4:1.9:1.0 (Table 3).

3) Sex Ratio

As shown in Table 4, the incidence in the male was greater than in the female in the cleft lip group (M:F=1.3:1). The incidence in the male was 3 times greater than that of the in female combined cleft lip and cleft palate group (M:F=3.3:1). On the other hand, there was a higher incidence in the female than in the male in the cleft palate group (M:F=0.7:1).

4) Family history

When a cleft occurred in a relative, it was recorded as a positive family history. Among the 151 cases (6.3% overall) of positive family history, there were 72 (5.9%) with cleft lip, 51 (7.1%) with cleft lip and cleft palate combined, and 28 (6.0%) with cleft palate (Table 5).

5) Associated congenital abnomalities

In 108 out of the 2405 children (4.5%) other associated congenital abnormalities were noted: in the cleft lip group 40/1222 cases (3.3%) in the cleft lip-palate group 26/717 cases (3.6%), and in the cleft palate group 42/466 (9.0%).

The associated congenital abnormalities were the most common in the cleft palate alone group (Table 6).

6) Timing of the primary operation

In this study, only primary repair of cleft lip and cleft palate was included. Closure of the lip was

Table 1. CLP births per 1000 live births in Severance Hospital

	No. of Birth	CL	CL+CP	CP	All Clefts
1962–1969	8872	4	5	2	11 (1.24/1000)
1970–1974	7936	4	3	3	10 (1.26/1000)
1975–1979	10833	5	6	4	15 (1.39/1000)
1980–1981	5489	4	2	2	8 (1.33/1000)
Total	33130	17	16	11	44 (1.33/1000)

CL: cleft lip CP: cleft palate

Table 2. Types of 2422 clefts

Cleft Lip, Palate	
Cleft Lip	1222
Cleft Lip and Palate	717
Cleft Palate	466
Total	2405
Rare Facial Clefts	
Lateral Cleft Lip	11
Oro-ocular Cleft	3
Lower Midline Cleft	2
Upper Midline Cleft	1
Total	17

Table 3. Location of clefts in Cl±CP

Side	No	Ratio
Left	1046	3.4
Right	585	1.9
Bilateral	308	1.0

Table 4. Sex distribution

	Male	Female	Ratio (M:F)
Cleft Lip	691	531	1.3:1.0
Cleft Lip and Palate	552	165	3.3:1.0
Cleft palate	196	270	0.7:1.0

Table 5. Family history

	CL	CL+CP	CP	Total
Father	16	10	3	29
Mother	22	12	6	40
Siblings	25	20	15	60
Relatives	9	9	4	22
Total	72/1222 (5.9%)	51/717 (7.1%)	28/466 (6.0%)	151/2405 (6.3%)

Table 6. Associated congenital abnormalities

	No.	%
Cleft Lip	40/1222	3.3
Cleft Lip and Palate	26/717	3.6
Cleft Palate	42/466	9.0
Total	108/2405	4.5

Table 7. 108 cases of associated abnormalities

	CL	CL+CP	CP	Total
Congenital Heart Disease	13	7	14	34
Hernia	6	5	4	15
Hemangioma	6	3	3	12
Pierre-Robin syndrome	2	5	6	13
Hydrocele	2	1		3
Tonguetie	1	2	7	10
Treacher-Collins syndrome			2	2
Others (Ear, Bone, etc)	10	3	6	19
Total	40	26	42	108

Table 8. Age of initial repair of cleft lip

Age	No. of operations			Total
	1962–1969	1970–1974	1975–1981	
0–3 months	153	311	338	802 (54.1%)
3 months–1 year	97	125	110	332 (22.4%)
1 Year –	94	112	143	349 (23.5%)
Total	344	548	591	1483 (100%)

Table 9. Age of initial repair of cleft palate

Age	No. of operations			Total
	1962–1969	1970–1974	1975–1981	
– 2 year	33	85	212	350 (34.7%)
2 year –	89	121	241	451 (65.4%)
Total	142	206	453	801 (100%)

scheduled to be done within the first 3 months of age in our department according to our surgical time table.

During the period of this study (1962-1981), of the lip operations done, those done between 1-3 months of age were 54.1%, between 3-12 months, 22.4%, and after a year, 23.5%. (Table 8).

Closure of the palatal clefts was preferably performed the age of between 12 and 18 months which is out of the surgical time table. During the period of this study 34.7% of the palatal operations were done under the age of 2 years, while 65.3% were done over the age of 2 years. (Table 9).

COMMENTS

1) Frequency of occurence

It is interesting to note that the frequency of occurence of cleft lip palate has increased in the sixties and seventies.

In other published reports, the incidence of clefts ranges from 1.18 per 1000 according to Loretz (1961), to 2.08 per 1000 reported by Abyholm (1978). Fogh-Andersen (1961) claimed further increases in the incidence of cleft lip and palate. The reasons for the increased incidences are decrease in post-natal mortality and increase in marriage rote of cleft patients.

The authors are also reporting, a gradual increase incidence within the 20 years covered by the study.

2) Types of cleft lip and cleft palate

Wilson (1972) reported ratios for left to right to bilateral of 3.0:1.5:1.0 while Abyholm (1978) reported rations of 2.6:1.2:1.0.

It appears that the left side is the most frequent site (twice that of the right) and the bilateral sites are the least. Our finding is similar to other reports.

3) Sex Ratio

All previous reports agree that cleft lip alone and cleft lip palate combined are more common in boys than in girls. Cleft palate alone is more common in girls.

4) Family history

Family incidence as reported by other workers varies from 6.9% (Gilmore and Hofman, 1966) to 46.0% (Möller, 1965). Approximately 25% of each the cleft lip and the cleft palate groups a positive family history while 34% of the cleft lip and cleft palate-combined group had a positive family history. In our series, many patients and their families are believed to have attempted to conceal the positive history and this can explain the very low incidence.

The positive family history of the cleft lip and cleft palate combined group is also noted to be high in our report.

5) Associated congenital abnormalities

Congenital heart disease is the most commonly associated abnormality. The rest include hernia, Pierre Robin Syndrome, hemangioma, and tonguetie (Table 7). Other figures reported are 27.7% by Emaneul et al., and 7.5% by Knox and Brainthwaito. All workers found the most common abnormalities in the cleft palate gorup and the least common in the cleft lip group. In associated abnormalities, Greene (1964) reported that heart anomaly is the second most common finding and Abyhom (1978) reported that heart anomaly is also the second most common only to mental retardation. In our series, heart anomaly is the most common of the associated abnormalities.

6) Timing of the primary operation and operative results

The optimal time for the primary operations in CLP surgery is a matter of discussion among cleft surgeons. As a general principle, a congenital defect should be corrected as soon as possible after birth. On the other hand, good arguments exist for postponing the operation. First, the cleft deformity is fully developed before the 10th week of fetal life. Secondly, infants born with CLP have a much higher mortality during the first year of life than the average newborn (6.5% versus 1.3%, Abyholm, 1978). Thirdly, the most important fact is that at 3 months, the baby is more fit to withstand the risks of anesthesia, blood loss, aspiration etc. associated with an operation.

Also, the region of the cleft and palate have grown considerably since birth making a meticulous repair easier. Perhaps the most important factor to consider for the timing of palatal closure is the development of speech. We consider the chances of achieving normal velopharyngeal function to be better when the entire palate is closed before the most active phase of speech development, starts between 1-2 years of age. The benefits of early palatal surgery must be weighed against an increased surgical risk and also against a potentially greater inhibition of maxillary growth. (Graber, 1949, 1964; Slaughter & Brodie 1949, Pruzansky, 1955, Stubtelny & Sakuda, 1966).

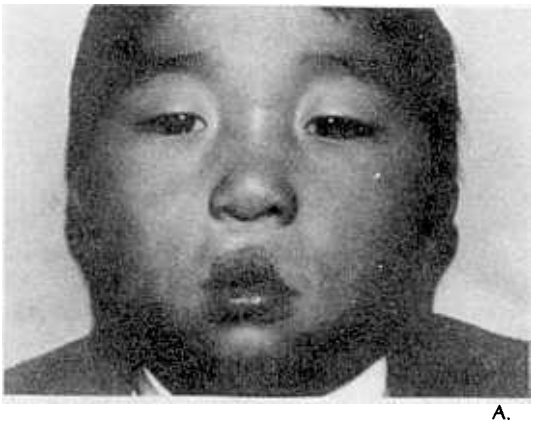
The supporters of delayed palatal closure claim that it leads to a more normal facial development. However, conclusive evidence demonstrating a better long-term growth pattern has not been provided so far.

In operative results, we have random follow-up studies of the CLP patients after surgery. The shape of the repaired lip, the vermillion, white line, cupid bow appeared satisfactorily.

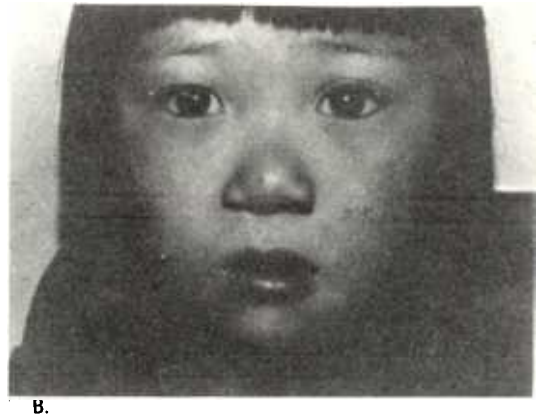
The long lip appearance which sometimes results from the repair of lip on the side of the lip repaired was prevented if the design was precisely planned and executed and the orbicularis oris muscle appropriately placed.

With time, we have observed a moderate degree of nostril flaring. During the operation, the nostril should be designed a little smaller than expected. The orbicularis oris muscle of the cleft side should be fixed enough to the base of columella to approximate the appropriate nostril size.

A cleft-lip nose deformity was observed in every case of cleft lip. Although skillful cheiloplasty lessened the degree of severity of the nose deformity, in most cases, correction of the cleft-lip-nose deformity

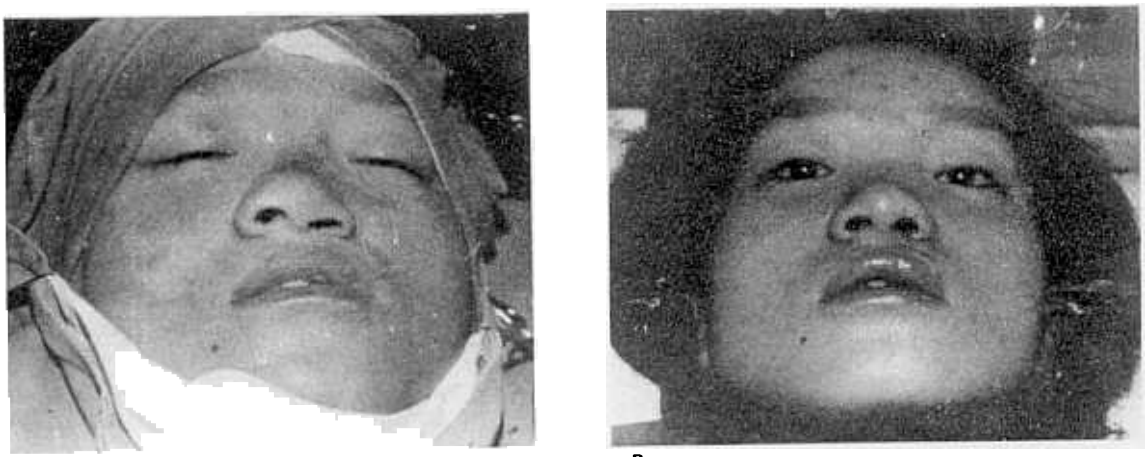


A.



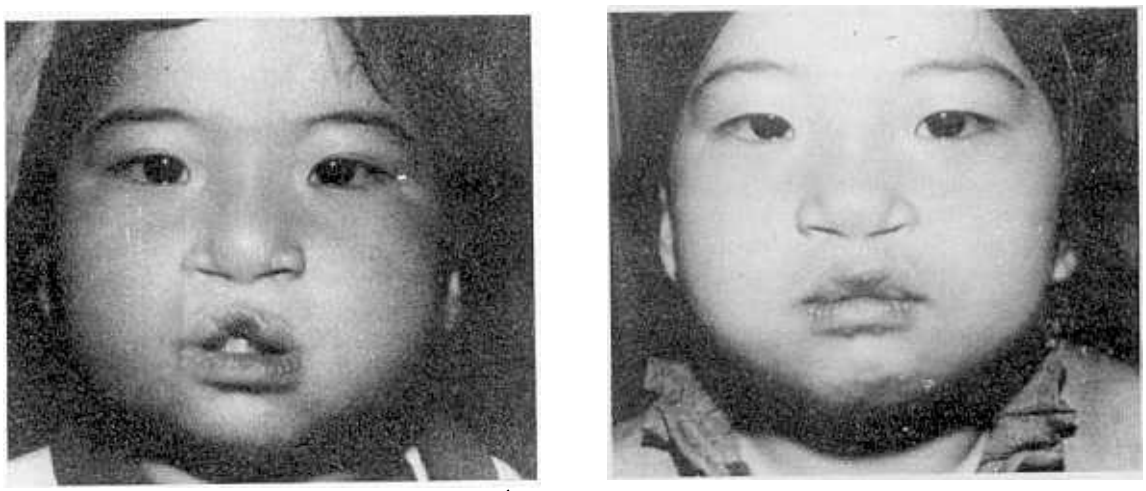
B.

Fig. 1. A: Long lip, Rt. side on postoperative 7 years.
B: Appropriate balanced lip, Rt. side, postoperative showing 6 years.



A. B.

Fig. 2. A: Show cleft lip nose deformity, Lt. side.
B: Show corrected cleft lip nose, Lt. side.



A.

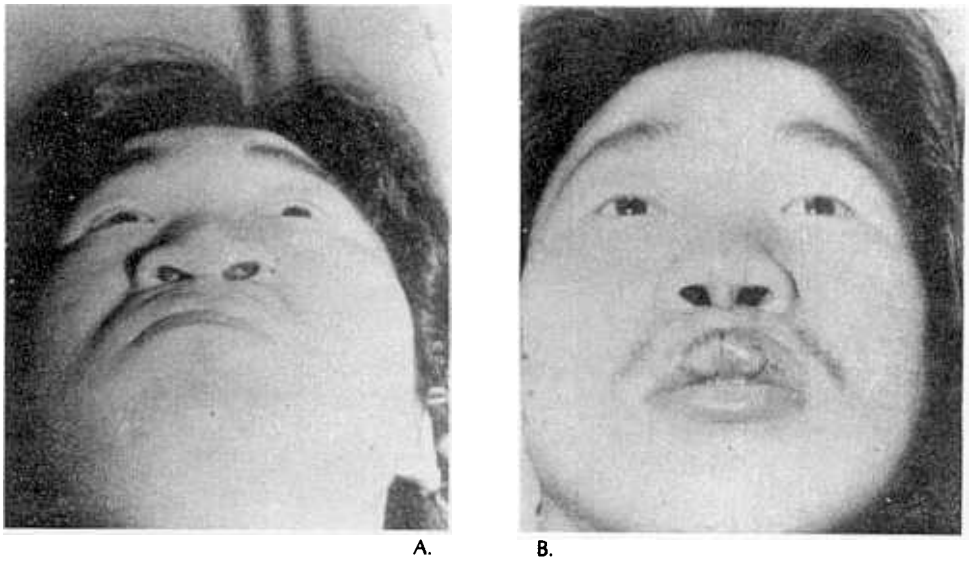
Fig. 3. A: Show preoperative whistling deformity following bilateral cheiloplasty.
B: Show whistling deformity postoperative.

was necessray (Fig. 2).

Postoperative scarring is not troublesome if the contour of the lip is satisfactory; the less satisfactory contour of the lip results in the more distinct scar.

In bilateral cleft lip, whistling deformity and short columella were corrected successfully (Fig. 3 and Fig. 4 respectively). The question is debatable whether the anterior part of the palate should be closed simultaneously with the lip or closed separately later. It is technically much easier to obtain a good closure of the alveolar region and anterior palate if this is done in continutiy with the lip closure. If only the lip is closed during the first operation, the risk of a subsequent oronasal fistula through or just behind the alveolar process is much higher.

In some hospital centers, early surgery interfering with the periosteum of the maxillary complex is considered to be an important growth-retarding factor, and the surgical program has been changed according to this view. The palato-vomerplasty has been abandoned, and the primary operation is confined to the closure of the lip. When the palate is repaired,



A. B.

Fig. 4. A: Show preoperative short columella in repaired bilateral cleft lip.
B: Shw postoperative elongated columella.

only the soft palate is closed. The cleft of the hard palate is left open up to the age of 4-5 years (Schweckendiek H., 1955); Schweckendiek, W, 1967, 1973, 1978; Friede & Johanson, 1977: Perko, 1979; Friede, Lilija & Johanson, 1980).

A cephalometric study of maxillary growth following cleft lip and palate repair was done on 65 CLP patients in our clinic, using Steiners cephalometry (1984. Kim).

In this present study, we have found that there was a disturbance of maxillary growth and development even though a palatal repair was performed after the age of 4 years.

The maxillary growth retardation was definite when compared to a normal control group. Maxillary retrusion was not evident due to relative mandibular retrusion, which was a common phenomenon in cleft palate patients.

Therefore, this one stage of pushback procedure is recommended in cleft palate repair.

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