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Original Research Article

Assessment of knowledge, awareness, and attitude about the current treatment protocols for newborns with cleft lip and palate among obstetrician-gynecologists and radiologists – A questionnaire survey

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ABSTRACT

Introduction: This study aimed to assess the knowledge, awareness, and attitudes of Obstetricians-gynaecologists and radiologists regarding current treatment regimens for CLP and their perspectives on elective termination of pregnancy for the same cause.

Materials and Methods: A 15-question survey was conducted among 68 gynaecologists and 52 radiologists who were registered with the Medical Council of India. The questionnaire, distributed via social network, contained 19 questions, including knowledge, awareness, and attitude regarding CLP, presurgical orthopaedics, and pregnancy termination. Spearman rank correlation was used to assess construct validity, and a Chi-square test with a significance level of 0.05 was used to compare the responses between both groups.

Results: The study showed that about 89% of gynaecologists and 92.3% of radiologists can identify CLP during the initial assessment of the foetus using ultrasound technique, whereas 30.90% of gynaecologists and 36.50% of radiologists have encountered elective termination of pregnancy due to CLP. While 89.70% of gynaecologists and 88.50% of radiologists do not know pre-surgical orthopaedic procedures for CLP. No statistically significant difference existed in the knowledge level about CLP and its treatment regimens among both groups.

Conclusion: The awareness and attitude among the OB-GYNs, and radiologists on prenatal detection of CLP was found to be highly significant. At the same time, there was limited knowledge among these specialists about CLP and its management.

1. Introduction

Cleft lip and palate (CLP) is the most common congenital deformity, with greater frequency among Asians compared to other ethnic groups having aetiologic variability, with relative contributions from hereditary and environmental factors.[1,2] The World Health Organisation (WHO) reported that CLP affects around 1 in 1000 – 1500 newborns globally its Global Oral Health Status Report 2022.[3] This condition can arise between the fourth and twelve weeks of gestation due to a lack of fusion between the medial nasal and maxillary processes of the primary palate or the palatal units of the secondary palate,[4] and is known to modify the features of the midface and anterior maxillary

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area, which can range from minor to severe alterations.[5] Ultrasonographers, including obstetrician-gynaecologists and radiologists, doing standard 20-week ultrasound screening may detect these abnormalities prenatally.[6]

In the past, early detection of cleft palate was less common; however, over the years, several novel techniques have been developed, such as 3D transabdominal ultrasound, prenatal magnetic resonance imaging (MRI), amniocentesis, and the "equal sign," which has led to an increase in the antenatal diagnosis of facial clefts.[7,8] There are various benefits to detecting orofacial clefts antenatally, including less anxiety before labor and preparedness for the birth of a child with a cleft, and it makes it possible to discuss treatment alternatives before delivery.[9] On the other hand, elective termination of pregnancy (ETOP) may also result from advancements in the prenatal detection of cleft lip or palate.[10]

A multidisciplinary team approach is very much necessary to prevent induced pregnancy termination for cleft patients, who have an excellent prognosis and require optimal treatment.[11] It includes early diagnosis, monitoring facial growth and dental eruption, determining surgical timing, correcting soft tissue and skeletal abnormalities, and ensuring proper positioning of craniofacial structures.[12] The success of this team approach, which includes ultrasonographers, medical and dental specialists including orthodontists,[13] relies on the broad general knowledge possessed by each team member.[14] Therefore, the purpose of this study was to assess the knowledge, awareness, and attitudes of obstetrician-gynecologists, and radiologists regarding current treatment regimens for CLP and their perspectives on elective termination of pregnancy for the same cause.

2. Materials and Methods

A cross-sectional questionnaire survey was conducted on obstetrician-gynecologists and radiologists in the form of a Google Form via social network with a short description of the study, and the responses were collected over 6 months. The Institutional Ethics Committee (IEC) at Sri Rajiv Gandhi College of Dental Science & Hospital Bangalore, approved the study (IEC No. SRGCDS/2023/237). The questionnaire included 19 questions in 2 parts. Part 1 focused on demographic information (Table 1), and Part 2 on knowledge, awareness, and attitude towards CLP and their views on termination of pregnancy for the same cause.

Of the total 120 participants, 68 were gynecologists and 52 were radiologists, of which eighty-four (70.00%) were females and thirty-six (30.00%) were males. Out of which six (5.00%) specialists had an experience of more than 10 years, Thirty (25.00%) of them with 4-8 years, fifty (41.70%) of them with 2-4 years, and thirty-four (28.30%) of them with < / = 2 years of experience respectively. Fifty-one (42.50%) of the specialists worked in medical colleges & hospitals, forty-one (34.20%) of them in private hospitals, seventeen (14.20%) of them in private practice, and eleven (9.20%) of them in public hospitals (Table 1).

The specialists were enquired about the likelihood of a prenatal diagnosis of CLP using ultrasound, the number of abortions resulting from CLP, whether they have encountered CLP-related abortions, whether they have advised parents about available treatment options for CLP, their knowledge of CLP, and the preoperative care of newborns with CLP.

2.1. Statistical analysis

Statistical analysis of the data obtained was performed using SPSS software (SPSS for Windows version 20.0; SPSS Inc, Chicago, IL, USA). Descriptive statistics were generated for the assessed parameters. Categorical variables were analyzed using percentages. Data was analyzed with, Pearson chi-square tests, and multivariable generalized estimating equations. Spearman Rank correlation was used to assess construct validity. Statistical significance was set to P <.05.

Table 1: Sociodemographic characteristics

		N	Percentage
Gynecologist or Radiologist	Gynecologist	68	56.70%
	Radiologist	52	43.30%
Registered with Medical Council of India	Under Medical Council Of Other Country	1	0.80%
	Yes	118	98.30%
Gender	Female	84	70.00%
	Male	36	30.00%
Years serving the profession	< / = 2 Years	34	28.30%
	> 10 Years	6	5.00%
	2 - 4 Years	50	41.70%
	4 - 8 Years	30	25.00%
Workplace	Medical College & Hospital	51	42.50%
	Private Hospital	41	34.20%
	Private Practice	17	14.20%
	Public Hospital	11	9.20%

3. Results

68 gynecologists and 52 radiologists responded to the survey (Table 1). The study showed a statistically significant variation in the number of cases identified by each specialty about 89% of gynecologists and 92.3% of radiologists can identify CLP during the initial assessment of the fetus using ultrasound technique (Figure 1), whereas 30.90% of gynecologists and 36.50% of radiologists have encountered elective termination of pregnancy due to CLP (Figure 2), and 89.70% of gynecologists and 88.50% of radiologists do not know pre-surgical orthopedic procedures for CLP

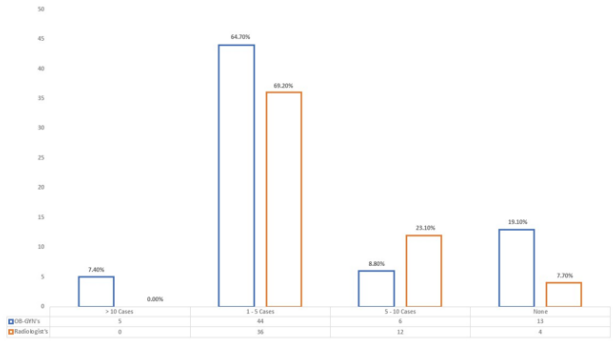

Figure 1: Number of CLP cases encountered by specialists

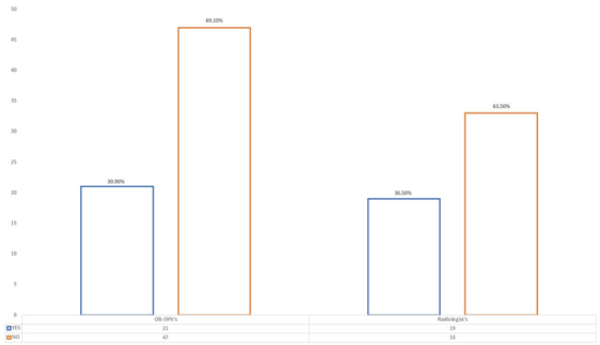

Figure 2: Specialists encountering elective termination of pregnancy

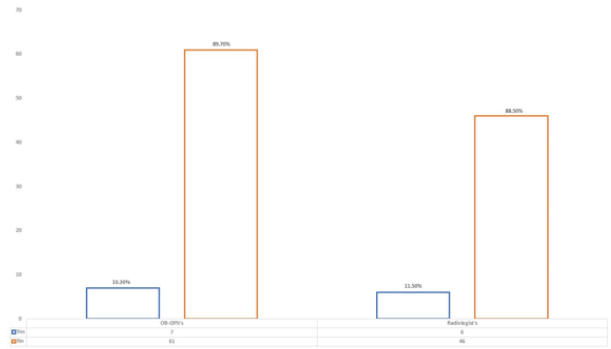

Figure 3: Do specialists know about Pre-Surgical Infant Orthopaedics

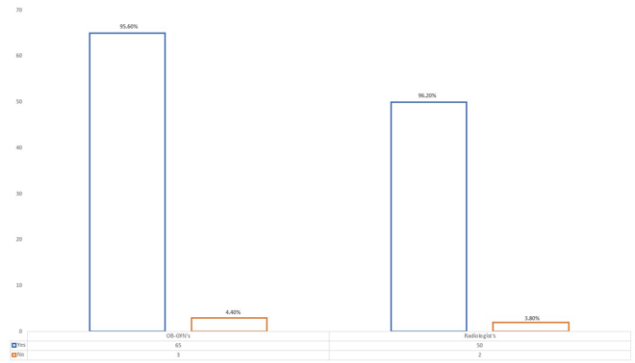

Figure 4: Specialists view on high chance of CLP detection through ultrasonography

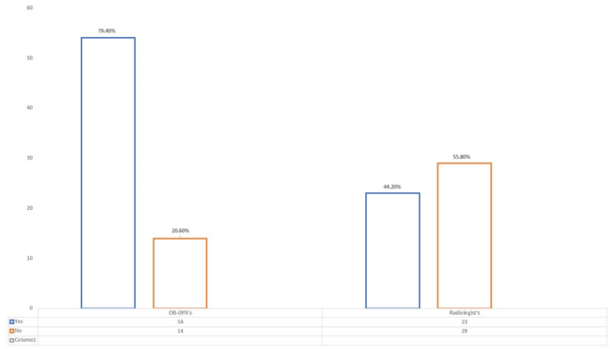

Figure 5: Specialists in providing the first information

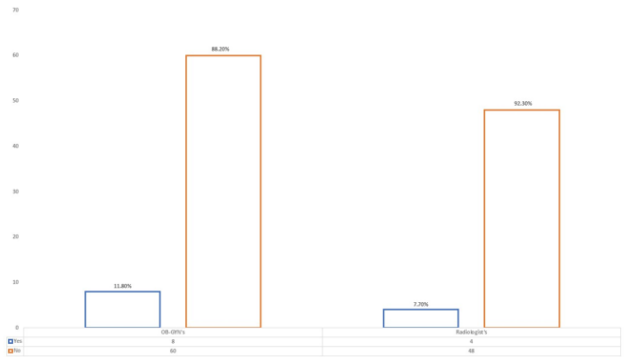

Figure 6: Specialists knowledge on NAM / LATHAM procedure

(Figure 3).

Even though 95.60% of gynecologists and 96.20% of radiologists claimed a high detection rate of CLP through ultrasonography (Figure 4), only 79.40% of gynecologists and 44.20% of radiologists preferred providing first information to parents after the diagnosis of CLP was confirmed using ultrasonography (Figure 5).

As 88.20% of gynecologists and 92.30% of radiologists' knowledge of the NAM/LATHAM procedure was minimal (Figure 6), 88.20% of gynecologists and 80.80% of radiologists (Figure 7) preferred referring the potential parents for proper counseling regarding the anomaly. Still there existed an ambivalent opinion among specialists on where to refer the patient for the same (Figure 8).

On average, the specialists had sufficient awareness regarding the anomaly of 91.25% with their knowledge of pre-surgical orthopedic procedures being minimal at 18.60%. They exhibited a positive attitude of 89% towards having more knowledge about the same for their further practice (Figure 9), with no statistically significant

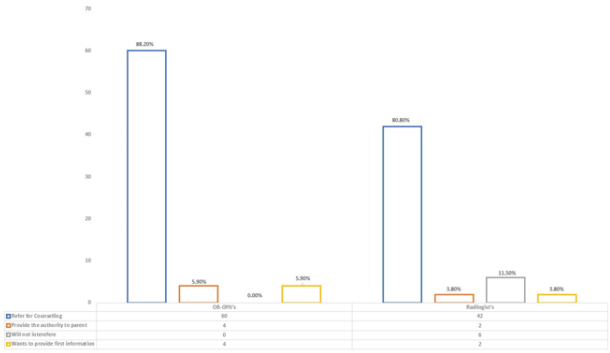

Figure 7: What specialists prefer after diagnosis of CLP

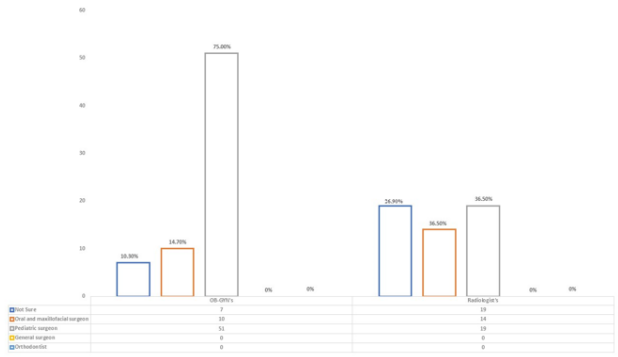

Figure 8: Specialists on further referral after Prenatal diagnosis of CLP

Figure 9: Overall percentage of Awareness, Knowledge and positive attitude among the specialists

difference existing in the knowledge level about CLP and its treatment regimens among both groups (P value >.05).

4. Discussion

CLP is still considered to be a controversial topic in the field of medical and healthcare sectors concerning diagnosis and management due to its distinct facial characteristics when compared to non-cleft patients.[15] Early identification of these facial anomalies that occur in the late first or early second trimester of pregnancy, is very much necessary to have a better prognosis and treatment outcome. In this regard prenatal ultrasonography has become the standard of care, increasing the prenatal diagnosis of anomalies like oral clefts.[16] However prenatal detection of oral clefts is a topic of debate in terms of parental, social, and ethical implications,[17] which also provides numerous benefits for parents, including psychological preparation for the abnormality, information on feeding issues, and effective management of the condition.[18]

Concerns have also been raised regarding the rising rate of pregnancy terminations in cases of fetuses prenatally diagnosed with isolated non-syndromic clefts.[19] Non-syndromic oral clefts are nonlethal birth defects with an excellent functional and aesthetic prognosis; furthermore, they present moral dilemmas surrounding the termination of pregnancy.[20,21]

The prevalence of pregnancy terminations due to a solitary facial cleft alone varies from 0 to 92%.[22] A study on the effect of prenatal diagnosis on the occurrence of oral clefts by Bronshtein et al.,[20] throughout 10 years, including 24,000 scans, 15 cases of cleft lip were identified, out of which 14 were terminated,[19] In contrast, a follow-up study stated that out of 30,000 prenatal ultrasound scans, 24 cases with cleft lips were identified, 23 of which were terminated.

Another study by Berkowitz et al.,[23] concluded that it is a true tragedy that abortions cannot be stopped in these situations.

The present survey involved, a total of 68 obstetricians and 52 radiologists of which 21 obstetricians and 19 radiologists, have faced various cases of elective termination of pregnancy in fetuses who were diagnosed with CLP. Irrespective of the fact that there are cleft centers where the parents are guided by the cleft teams, ultrasonographers, including radiologists and obstetricians-gynecologists, are often the experts who confront prospective parents and provide first information as soon as a diagnosis of CLP is confirmed.

Previous studies have suggested that early prenatal counseling should provide clear and consistent information on CLP, possible treatments, and prognosis to reduce anxiety, confusion, and uncertainty, which was believed to alleviate parents' worries and lower the risk of termination of pregnancy.[17,24–26]

Another study by J. Kuttenberger et al.,[27] in 2010 evaluated parents' experiences with first counseling at a cleft center, focusing on timing, content, and quality of information provided after detecting CLP. The study found that professionals provided the first information about the cleft immediately after birth, with 21% of cases coming from obstetricians.Whereas the result of the present study found that fifty-five (80.9%) obstetricians and forty-eight (92.3%) radiologists detected CLP in prenatal ultrasonography, with sixty-five (95.60%) obstetricians and

fifty (96.20%) radiologists indicating a high detection rate. Additionally, fifty-four (79.40%) obstetricians and twenty-three (44.20%) radiologists provided the first information to parents following prenatal cleft diagnosis. This makes it essential and crucial for them to have sufficient understanding and knowledge regarding the anomaly, which enables them to provide better first information regarding a multidisciplinary approach, including timely referral to an orthodontist specializing in cleft care.

According to Matsuo et al.,[28] the newborn cartilage tissues are softer and more plastic due to increased estrogen levels from the mother. This plasticity allows for the reshaping of fragments, which lasts until 3-4 months, after which estrogen levels decrease and cartilage regains elasticity, making presurgical orthopedics crucial as soon as after birth. Early presurgical infant orthopedics, when used with surgical lip repair, enables a single initial surgery to address the nose, lip, and alveolar complex, reducing the need for secondary surgery.[29]

In 2022, Kurt Demirsoy K evaluated the knowledge and awareness of obstetrician-gynecologists (OB-GYNs) about presurgical orthopedic treatment (NAM) for newborns with CLP. 23% referred newborns for NAM, while 77% did not. Of the 141 OB-GYNs, 42% had never heard of NAM treatment for CLP. 27% had information about NAM, while 73% did not know its purpose. The study highlights the need for increased awareness and education in this area.[30]

While our study showed sixty-one (89.70%) obstetricians and forty-six (88.50%) radiologists were unaware of pre-surgical infant orthopedics, in comparison sixty (88.20%) obstetricians and forty-eight (92.30%) radiologists did not know NAM / LATHAM procedures. The success of presurgical orthopedic treatment is closely linked to its commencement as soon as possible after birth, requiring careful consideration of these ratios.

A study by Bocian and Kaback emphasizes that initial counseling is the most crucial stage for the development of parental adaptability.[31] The absence of clarity and misinformation among specialists can lead to confusion about a baby's future among parents, causing guilt and pressure and potentially leading to elective pregnancy termination. Sixty (88.20%) obstetricians and forty-two (80.80%) radiologists preferred to refer parents for proper counseling regarding the condition, however, there are ambivalent opinions among professionals over whom to refer the parent for the same.

To deliver appropriate information regarding clefts and avoid needless mother-child separation, J. Kuttenberger believes that continuous training and education for these specialists with the qualifications to provide initial information is crucial.[27]

Our study revealed some interesting findings: 94.10% of obstetricians and 96.20% of radiologists prefer to have more knowledge on the management of CLP for their further practice and Overall awareness among the specialists on prenatal diagnosis of CLP using ultrasonography was high, whereas overall knowledge among the specialists on presurgical infant orthopedics, including NAM and LATHAM, was minimal and showed an overall positive attitude to have further knowledge on the same.

The study had a few limitations that might be attributed to the fact that a wider sample, including specialists from various countries and other specialties, could have been included. Larger sample sizes, higher participation rates, and worldwide involvement should be prioritized in future investigations.

5. Conclusion

Timely interventions along with a multidisciplinary approach of CLP, including specialists involved in diagnosis, early presurgical infant orthopedics, surgeries, and supportive care provide better aesthetic and functional outcomes. In the present study, it was shown that the awareness and attitude among the OB-GYNs, and radiologists on prenatal detection of CLP was found to be highly significant while there was limited knowledge among these specialists about CLP and its management.

However, to ensure that decisions are made in the best possible way, it is crucial to increase further the knowledge, awareness, and attitude among various medical specialists about evolving concepts, advanced technologies, newer procedures, and interventions in which the orthodontist will also play a significant role in the success of diagnosis and management of CLP.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Perillo L, Vitale M, Apuzzo F, Isola G, Nucera R, Matarese G. Interdisciplinary approach for a patient with unilateral cleft lip and palate. *Am J Orthod Dentofac Orthop*. 2018;153:883–94.
2. Mcintyre GT, Mossey PA. Asymmetry of the craniofacial skeleton in the parents of children with a cleft lip, with or without a cleft palate, or an isolated cleft palate. *EurJ Orthod*. 2010;32(2):177–85.
3. World Health Organization. Action plan for oral health in South-East Asia 2022-2030: towards universal health coverage for oral health. Available from: https://www.who.int/publications/i/item/9789290210061.
4. Kim NY, Baek SH. Cleft sidedness and congenitally missing or malformed permanent maxillary lateral incisors in Korean patients with unilateral cleft lip and alveolus or unilateral cleft lip and palate. *Am J Orthod Dentofac Orthop*. 2006;130(6):752–60.
5. Dyck JV, De Llano-Pérula M, Willems G, Verdonck A. Dental development in cleft lip and palate patients: A systematic review. *Forensic Sci Int*. 2019;300:63–74.
6. Smarius B, Loozen C, Manten W, Bekker M, Pistorius L, Breugem C. Accurate diagnosis of prenatal cleft lip/palate by understanding the

embryology. *World J Methodol*. 2017;7(3):93–100.
7. Cash C, Set P, Coleman N. The accuracy of antenatal ultrasound in detecting facial clefts in a low-risk screening population. *Ultrasound Obstet Gynecol*. 2001;18(5):432–6.
8. Wilhelm L, Borgers H. The 'equals sign': a novel marker in the diagnosis of fetal isolated cleft palate. *Ultrasound Obstet Gynecol*. 2010;36(4):439–44.
9. Hens K, Hens G. Pregnancy termination in the case of an orofacial cleft: An investigation of the concept of reproductive autonomy. *Cleft Palate Craniofac J*. 2020;57(9):1134–9.
10. Emodi O, Capucha T, Shilo D, Ohayon C, Ginini JG, Ginsberg Y, et al. Trends in cleft palate incidence in the era of obstetric sonography and early detection. *J Matern Fetal Neonatal Med*. 2022;35(25):9350–5.
11. Cho IS, Shin HK, Baek SH. Preliminary study of Korean orthodontic residents' current concepts and knowledge of cleft lip and palate management. *Korean J Orthod*. 2012;42(3):100–9.
12. Lewis CW, Ose M, Aspinall C, Omnell ML. Community orthodontists and craniofacial care: results of a Washington state survey. *Cleft Palate Craniofac J*. 2005;42(5):521–6.
13. Abu-Hussein M. Cleft lips and palate; the roles of specialists. *M Pediatr*. 2011;63(3):227–32.
14. Thornton JB, Nimer S, Howard PS. The incidence, classification, etiology, and embryology of oral clefts. . *Semin Orthod*. 1996;2(3):162–8.
15. Grayson BH, Garfinkle JS. Early cleft management: the case for nasoalveolar molding. *Am J Orthod Dentofac Orthop*. 2014;145(2):134–42.
16. Bronshtein M, Mashiah N, Blumenfeld I, Blumenfeld Z. Pseudoprognathism-an auxiliary ultrasonographic sign for transvaginal ultrasonographic diagnosis of cleft lip and palate in the early second trimester. *Am J Obstet Gynecol*. 1991;165(5):1314–6.
17. Strauss RP. Beyond easy answers: prenatal diagnosis and counseling during pregnancy. *Cleft Palate Craniofac J*. 2002;39(2):164–8.
18. Matthews MS. Beyond easy answers: the plastic surgeon and prenatal diagnosis. *Cleft Palate Craniofac J*. 2002;39(2):179–82.
19. Bronshtein M, Blumenfeld I, Blumenfeld Z. Early prenatal diagnosis of cleft lip and its potential impact on the number of babies with cleft lip. *Br J Oral Maxillofac Surg*. 1996;34(6):486–7.
20. Blumenfeld Z, Blumenfeld I, Bronshtein M. The early prenatal diagnosis of cleft lip and the decision-making process. *Cleft Palate Craniofac J*. 1999;36(2):105–7.
21. Hager C. Termination of pregnancy with a prenatal diagnosis of cleft lip: cultural differences and ethical analysis. *Plast Surg Nurs*. 2002;22(1):24–8.
22. Johnson N, Sandy JR. Prenatal diagnosis of cleft lip and palate. *Cleft Palate Craniofac J*. 2003;40:186–95.
23. Berkowitz S, Bronshtein M, Blumenfeld I, Blumenfeld Z. Early prenatal diagnosis of cleft lip and its potential impact on the number of babies with cleft lip. *Br J Oral Maxillofac Surg*. 1997;34(6):486–7.
24. Jones MC. Prenatal diagnosis of cleft lip and palate: detection rates, accuracy of ultrasonography, associated anomalies, and strategies for counseling. *Cleft Palate Craniofac J*. 2002;39(2):169–73.
25. Shaikh D, Mercer NS, Sohan K, Kyle P, Soothill P. Prenatal diagnosis of cleft lip and palate. *Br J Plast Surg*. 2001;54:288–97.
26. Davalbhakta A, Hall PN. The impact of antenatal diagnosis on the effectiveness and timing of counselling for cleft lip and palate. *Br J Plast Surg*. 2000;53(4):298–301.
27. Kuttenberger J, Ohmer JN, Polska E. Initial counselling for cleft lip and palate: parents' evaluation, needs and expectations. *Int J Oral Maxillofac Surg*. 2010;39(3):214–20.
28. Matsuo K, Hirose T, Tomono T, Iwasawa M, Katohda S, Takahashi N, et al. Nonsurgical correction of congenital auricular deformities in the early neonate: A preliminary report. *Plast Reconstr Surg*. 1984;73(1):38–51.
29. Hotz M, Gnoinski W. Comprehensive care of cleft lip and palate children at Zürich university: A preliminary report. *Am J Orthod*. 1976;70(5):481–504.
30. Demirsoy K, Calış K, Büyük S. Obstetrician-gynecologists' knowledge and awareness on nasoalveolar molding in newborns with cleft lip and palate. *Turk J Orthod*. 2022;35(1):16–21.
31. Bocian ME, Kaback MM. Crisis counseling, the newborn infant with a chromosomal anomaly. *Pediatr Clin North Am*. 1978;25(3):643–50.

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