Science Journal of Clinical Medicine
2026, Vol. 15, No. 2, pp. 11–15
https://doi.org/10.11648/j.sjcm.20261502.12

Research Article

Prenatal Ultrasound Diagnosis of Cleft Lip and Palate: A Case Report

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Abstract

Introduction: A cleft lip or palate is a congenital malformation that causes a fissure of the lips or palate, and an antenatal diagnosis is essential for its treatment. Objective: The objective of this study was to present a case of a labial cleft in prenatal diagnosis by ultrasound at the Kalaban Coro reference health center. Materials and Methods: This was a case study of a labial cleft discovered during an obstetrical ultrasound. The examination was performed using a VINNO E30 ultrasound machine. Informed consent was obtained from the patient before her participation in the study. Participation in the study was voluntary. The patient's anonymity and confidentiality were guaranteed. Results: The study focused on a 28-year-old housewife. This was her third pregnancy and second delivery, with a history of stillbirth. No medical or surgical history was found. The patient was referred for an obstetrical ultrasound to evaluate the prognosis of delivery. The examination revealed a 34-week-old intrauterine male fetus with a large cleft lip and palate with umbilical cord interposition in the cleft, which was confirmed after birth. Conclusion: Ultrasound is the method of choice for prenatal screening of cleft lip and palate.

Keywords

Diagnosis, Ultrasound, Antepartum, Labial Cleft, Bamako, Mali

1. Introduction

Cleft lip and palate is a congenital malformation caused by a disruption in the expression of teratogenic factors during early embryonic development, resulting in a cleft of the lip or palate [1]. This condition not only alters physical appearance but can also represent a significant health burden for patients and their families, and have a negative impact on their mental health and quality of life [2].

Ultrasound is the method of choice for diagnosing fetal cleft

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Received: 13 April 2026; **Accepted:** 28 April 2026; **Published:** 30 April 2026

lip and palate starting at the 20th week of gestation. It enables screening, confirmation, assessment of severity, identification of associated anomalies, and preparation for the management of cleft lip and palate before birth [3]. Prenatal diagnosis allows parents to prepare for and come to terms with their future child's facial malformation. The accuracy of the diagnosis has a major impact on prenatal counseling, the explanation of planned surgical treatments, as well as on follow-up and long-term sequelae [4, 5]. However, the success rate of cleft lip and palate (CLP) diagnosis by ultrasound depends largely on various factors such as gestational age, maternal obesity, amniotic fluid volume, associated fetal anomalies, fetal position and mobility, as well as the expertise of the sonographer [6]. According to several studies, 9 to 50% of cleft lip and palate cases are not detected during ultrasound screening [7]. There are other imaging techniques that can provide more information about cleft lip and palate, such as 3D ultrasound and magnetic resonance imaging.

Cleft lip and palate is a common maxillofacial anomaly, with an estimated prevalence of 0.45 per 1,000 births worldwide [8]. In Central Europe, its incidence is approximately 1 per 500 births [9]. Its prevalence is 1.8% in China [10]. In Jordan, its overall prevalence was 1.39 per 1,000 live births, with a higher incidence among boys than girls [11]. In Africa, the prevalence of cleft lip and palate varies widely. In Niger, a frequency of 0.12% of cleft lip and palate cases was diagnosed in the postnatal period [12]. In Mali, a recent study reported a rate of 3.5 per 1,000 live births [13].

The management of cleft lip and palate remains multidisciplinary in order to reduce morbidity and secondary deformities associated with the cleft, and is primarily aimed at improving speech quality [14]. Despite these advances, prenatal ultrasound diagnosis of cleft lip and palate often remains difficult due to several factors, such as fetal position, the quality of imaging equipment, or the operator's experience. However, this diagnosis appears essential to evaluate the role of ultrasound in the early detection of this anomaly and to improve the quality of prenatal screening as well as the management of affected newborns.

The objective of this study was to report a case of prenatal ultrasound diagnosis of cleft lip and palate at the Kalaban Coro referral health center.

2. Observation

This study was conducted at the Kalaban Coro Referral Health Center (Mali). It was a case report of a cleft lip and palate incidentally discovered during an obstetric ultrasound. The examination was performed using a VINNO E30 ultrasound machine with a mini color Doppler and a 3.5 MHz curved sector probe. Participation was voluntary. The patient's verbal consent was obtained prior to her participation in the study. The patient's anonymity and confidentiality were guaranteed.

The patient was Ms. XY, a 28-year-old homemaker. This was her third pregnancy, her second live birth, with a history of stillbirth. She had attended three prenatal visits. We found no history of medical or surgical conditions. She was seen for a routine obstetric ultrasound. The examination revealed a single intrauterine fetus at 34 weeks' gestation. The presentation was a mobile cephalic presentation with spontaneous movement. The heart rate was 143 beats per minute. The placenta was anterofundal, well-inserted, distant from the cervix, grade III maturity, and of normal thickness. The umbilical cord was unremarkable, and the amniotic fluid volume was normal. This obstruction was placed across the slot, making it difficult to inspect. The fetus was male. The Doppler examination was unremarkable with normal values.

The biometric measurements were unremarkable, with the following values: biparietal diameter (BPD): 88 mm; femur length (FL): 67 mm; head circumference (HC): 319 mm; and abdominal circumference (AC): 306 mm. Fetal weight was estimated at 2,800 grams.

Morphologically, the examination revealed, on an anterior coronal section, a wide cleft of the upper lip involving the philtrum and extending toward the nostril, associated with a disruption of the anterior alveolar arch, suggestive of a unilateral cleft lip and palate. The remainder of the fetal morphological examination was unremarkable.

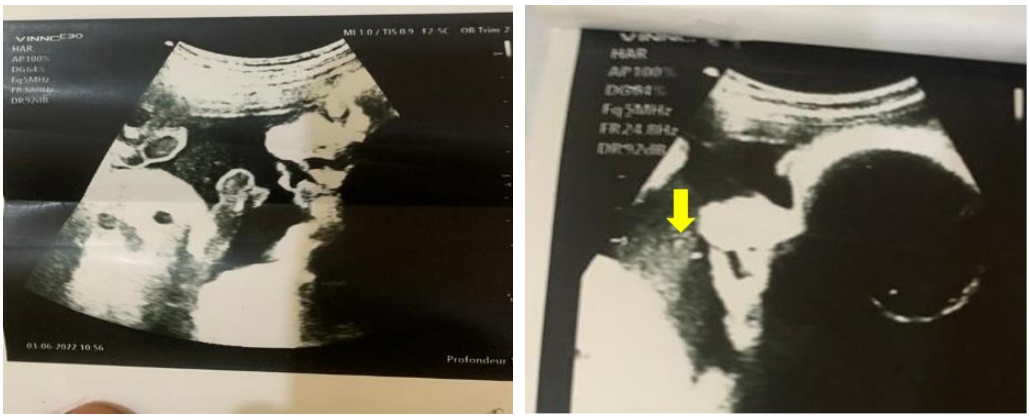

Figure 1. *Ultrasound images showing a wide cleft lip and palate with the umbilical cord interposed within the cleft at 34 weeks' gestation (mustache view).*

At birth, the infant presented with a unilateral cleft lip and palate. The Apgar score was 10 during the first five minutes. There were no associated physical malformations. Transfontanellar and abdominal ultrasounds were performed and revealed no other abnormalities.

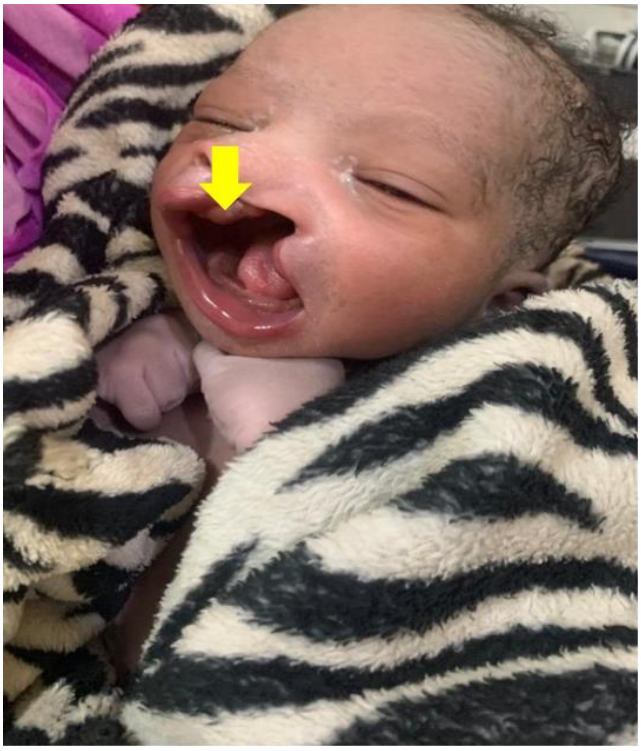

Figure 2. *Postnatal image showing a newborn with a large unilateral left cleft lip and palate.*

3. Discussion

In this study, we report a case of prenatal ultrasound diagnosis of cleft lip and palate. This result differs from that of Guichoud Y et al. [15], who found an overall prevalence of 44.6% for facial clefts diagnosed prenatally, with an overall diagnostic accuracy of 62.5% postnatally, in their study on the prenatal diagnosis of cleft lip and palate in Switzerland in 2023. Brăila AD et al. [16] noted a prevalence of 0.51% for cleft lip and palate during second-trimester prenatal screening at the clinical center in their study based on the prenatal diagnosis of cleft lip and palate in 2024. In a related study based on data from a prenatal diagnostic center, 15 cases out of 2,944 pregnant women examined during the first trimester were described, with all cases confirmed during a second-trimester ultrasound [17]. According to the literature, an accurate prenatal diagnosis of cleft lip and palate allows for early planning of interventions and better management, and the newborn's prognosis depends heavily on the accuracy of the diagnosis and the presence of associated malformations [18]. This variability in frequency could be explained by various factors, including gestational age, ultrasound protocol, operator expertise, maternal obesity, and the position of the fetus in utero.

In this study, the gestational age was 34 weeks of amenorrhea. Guichoud Y et al. [15] found a mean gestational age of 38.7 weeks ± 1.8 standard deviations in their 2023 study conducted in Switzerland. Zhu Y et al. [19] found a gestational age range of 28 to 36 weeks in 35.5% of cases in their 2018 study on the prevalence of cleft lip and/or palate in China. An average gestational age of 29.42 ± 5.56 weeks was reported by Yan X et al. [20] in their 2018 study on the diagnostic value and application of prenatal MRI and ultrasound in fetal cleft lip and palate in China. According to the literature, which indicates that fetuses with isolated cleft lip and palate who have a gestational age and birth weight comparable to those of full-term newborns have a good prognosis [21]. However, gestational age influences the quality of the ultrasound diagnosis, the prenatal evaluation strategy, and the organization of multidisciplinary care. A second-trimester diagnosis offers the best balance between accuracy and early detection.

In this study, the fetus was male. This finding is consistent with that of Zhu Y et al. [19], who reported a male predominance of 61.1% in their 2018 study in China. According to several studies, cleft lip and cleft lip-palate are more common in male infants, while cleft palate is more common in female infants [22, 23]. These gender differences may be influenced by multiple factors, such as the presence of associated malformations, the number of affected siblings in the family, ethnic origin, and, possibly, paternal age [24].

In this study, prenatal ultrasound revealed a large unilateral left cleft lip and palate. This cleft was confirmed postnatally. In the study by Guichoud Y et al. [15], the types of clefts found were cleft lip and palate (42%), cleft lip and/or palate (29%), and cleft palate (29%). Brăila AD et al. [16] reported a 94.1% prevalence of unilateral cleft lip and palate, with 41.18% on the right and 52.94% on the left, in their 2024 study on the prenatal diagnosis of cleft lip and palate. This left-sided predominance could be explained by its high sensitivity to disturbances (genetic or environmental factors) compared to the contralateral side.

4. Conclusion

A cleft lip and palate is a common congenital malformation that affects physical appearance and represents a considerable health burden for patients and their families, with a negative impact on their mental health. Ultrasonography is the preferred method for prenatal diagnosis and planning treatment.

5. Limitations of the Study

This study is limited by the fact that no genetic testing was performed.

Abbreviations

BPD	Biparietal
FL	Femur Length
FLP	Cleft Lip and Palate
MRI	Magnetic Resonance Imaging
CA	Abdominal Circumference
HC	Head Circumference

Author Contributions

Camara Mody Abdoulaye: Supervision
Mamadou Sylla Traore: Supervision, Validation
Aldjouma Yanogue: Methodology, Supervision, Validation
Bamody Sidibe: Supervision, Validation
Bagnoni Traore: Supervision, Validation
Issa Traore: Supervision
Guindo Ilias: Supervision
Tata Toure: Supervision
Siaka Sidibe: Supervision, Validation

Conflicts of Interest

The authors declare no conflicts of interest.

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