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Antenatal Diagnosis of Sacrococcygeal Teratoma: A Case Report

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Abstract

Sacrococcygeal teratoma represents the most prevalent type of neonatal tumor, with an occurrence rate of approximately 1 in 35,000 to 40,000 live births. The prenatal diagnosis is predominantly conducted through morphological ultrasound and Doppler studies, facilitating early detection and the monitoring of potential complications. In this report, we present a case of sacrococcygeal teratoma diagnosed at 22 weeks of gestation, with no Doppler evidence of fetal hydrops or anemia. Due to a significant risk of premature labor, delivery was conducted via cesarean section at 34 weeks of gestation. Neonatal surgical intervention was carried out on the second-day post-birth. This case allows for an analysis of diagnostic and therapeutic strategies, compared against existing literature.

Keywords

Sacrococcygeal Teratoma, Prenatal Diagnosis, Ultrasound, Neonatal Surgery

1. Introduction

Sacrococcygeal teratoma (SCT) represents the most prevalent form of congenital tumor, exhibiting a notable female predominance with a ratio of 3 to 4 girls for every boy affected [1] [2]. This tumor originates from pluripotent germ cells within the embryonic primitive streak during the 3rd to 4th week of gestation [3]. Altman's classification system categorizes four types of teratomas according to the extent of their intra-pelvic and intra-abdominal involvement [4].

Prenatal diagnosis is primarily based on morphological ultrasound imaging, which facilitates the detection of a mass attached to the coccyx that may have tissue and/or cystic components. Doppler ultrasound is employed to evaluate the vascularization of the tumor and to identify potential complications, such as fetal-

placental hydrops [5]. Magnetic Resonance Imaging (MRI) may be utilized to provide a more detailed assessment of intra-pelvic extension [6]. However, controversies exist regarding the most reliable ultrasound criteria for predicting neonatal prognosis. Furthermore, the impact of maternal and genetic factors on the occurrence of TSC remains a subject of debate in the literature.

In this paper, we present a case of sacrococcygeal teratoma that was diagnosed in utero and subsequently managed postnatally.

2. Clinical Observation

2.1. Maternal History and Case Identification

This is a 34-year-old patient, gravida 3 para 2, with no known family history of teratoma or germ cell tumors, with a history of two cesarean sections, admitted at 22 weeks of amenorrhea for the investigation of pelvic pain. A morphological ultrasound was conducted, revealing a sacrococcygeal mass that raised the possibility of a sacrococcygeal teratoma, myelomeningocele, or meningocele.

2.2. Ultrasound Findings

The morphological ultrasound examination identified a mass attached to the coccyx, characterized by a lobulated appearance and a mixed echostructure. The mass predominantly consisted of a liquid component alongside a tissue component with vascularization seen on Doppler imaging and was associated with a 10 cm cystic formation. There was no evidence of fetal hydrops or cardiac insufficiency. The Doppler ultrasound revealed moderate vascularization, which contributed to the assessment of hemodynamic risk and the monitoring of tumor progression. (**Figure 1**; **Figure 2**)

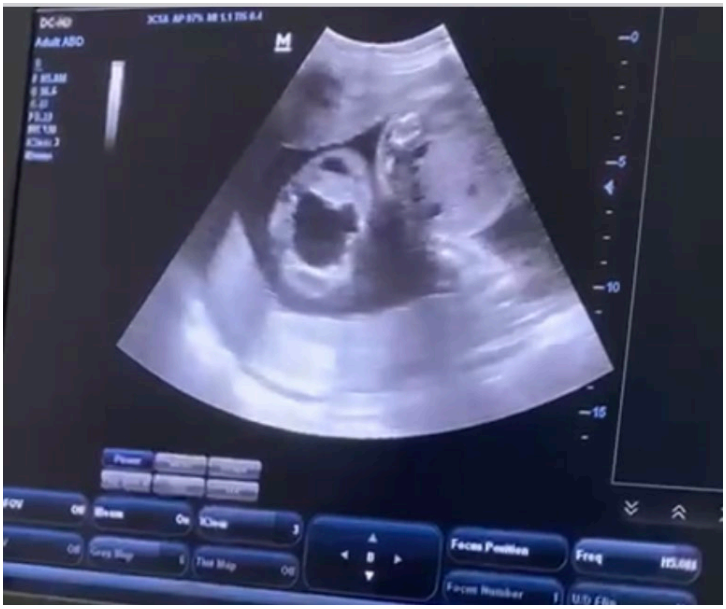

Figure 1. Sagittal ultrasound section showing a heterogeneous sacrococcygeal mass with vascularization detected by color Doppler.

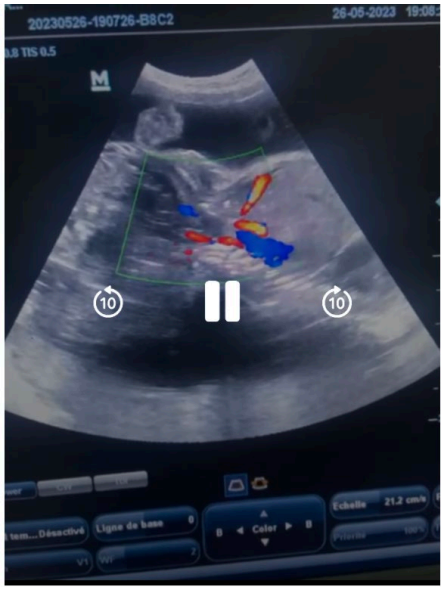

Figure 2. Vascularization of the teratoma on Doppler ultrasound.

2.3. Obstetric and Neonatal Management

A cesarean section was conducted at 34 weeks of gestation due to a significant risk of premature labor. A female newborn weighing 2200 grams, with an Apgar score of 7/10, was delivered. The neonatal examination confirmed the presence of a large sacrococcygeal mass. Surgical intervention performed on the second day of life involved a complete excision of the teratoma along with the removal of the coccyx to reduce the risk of recurrence. The procedure lasted two hours and required close postoperative monitoring due to the risk of hemorrhage and infection. Histological analysis confirmed the mature nature of the teratoma, with no signs of malignancy. (**Figures 3**)

Figure 3. Sacrococcygeal mass after cesarean section.

3. Discussion

3.1. Comparison with Literature Data

This case aligns with existing literature that indicates a higher incidence of sacrococcygeal teratoma in females [1] [2]. Although maternal age was not specified, some studies have noted a higher prevalence in mothers over the age of 30 [7].

The diagnosis was established at 22 weeks of amenorrhea, which aligns with the standard detection period of 18 to 24 weeks of amenorrhea [8]. The mass was 10 cm in size, though there have been reports of masses reaching up to 25 cm [9]. The absence of fetal complications, particularly hydrops fetalis, serves as a positive prognostic indicator. However, the ultrasound criteria for distinguishing benign forms from potentially aggressive ones remain a topic of debate in the literature.

3.2. Management and Outcome

Performing a cesarean section at 34 weeks of amenorrhea complies with the guidelines for managing large teratomas (>5 cm), which helps to minimize obstetric complications. The newborn's weight of 2200 g is within the typical range of 2000 to 3500 g [5].

Performing surgery on the second day of life aligns with guidelines designed to mitigate the risks of hemorrhage and malignant degeneration. Our case highlights the importance of a multidisciplinary approach involving obstetricians, neonatologists, and pediatric surgeons in order to optimize the prognosis. Neonatal survival rates have improved due to advancements in imaging and surgery, with current postnatal mortality around 15%, compared to 35% - 60% during the antenatal period [7].

4. Conclusion

Sacrococcygeal teratoma is a rare tumor, typically benign, but it can lead to severe complications if it is large and hypervascular. Prenatal diagnosis is based on ultrasound and Doppler imaging, while MRI can provide detailed information regarding tumor extension. Rigorous prenatal monitoring facilitates the anticipation of potential complications and allows for the adjustment of delivery methods. Neonatal surgical intervention is crucial for preventing complications and enhancing prognosis.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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