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Giant Type II Sacrococcygeal Teratoma in a Neonate: A Case Report

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Abstract

Sacrococcygeal teratomas (SCTs) represent the most frequent congenital tumors in the neonate, and their clinical presentation depends on their size and anatomic extension. Large tumors can present significant diagnostic and therapeutic challenges.

We report the case of a female neonate born at 35 weeks of gestation, admitted on day 1 of life for a giant sacrococcygeal mass. Clinical examination revealed a voluminous lesion in both gluteal regions. Magnetic resonance imaging (MRI) demonstrated a large mass with both cystic and solid components, extending into the pelvic cavity, consistent with a type II sacrococcygeal tumor according to the Altman classification. Surgical excision was performed in the neonatal period.

Histopathological examination confirmed a high-grade immature sacrococcygeal teratoma with close surgical margins. The postoperative course was clinically favorable with good tolerance to oral feeding.

Giant sacrococcygeal teratomas remain rare but potentially severe conditions requiring early diagnosis, accurate imaging assessment, and complete surgical excision. Histopathological analysis plays a key role in determining prognosis and guiding further management.

Categories: Oncology, Pediatric Surgery, Pediatrics
Keywords: early surgical management, immature teratoma, neonate, pediatric giant teratoma surgery, sacrococcygeal teratoma

Introduction

Sacrococcygeal teratoma (SCT) is the most common congenital tumor in neonates, with an estimated incidence varying from 1 in 35,000 to 40,000 live births [1,2]. It is derived from pluripotent germ cells and may contain elements of all three germ layers [3].

These tumors are classified according to the Altman classification based on their anatomic extension, which has important implications for clinical presentation and management [4]. Type I tumors are predominantly external, type II tumors have significant intrapelvic extension, type III tumors extend into the abdomen, and type IV tumors are entirely internal [4]. Large tumors can cause considerable complications due to their size and pelvic extension [5].

The definitive treatment is complete surgical excision with coccygectomy, and histopathological evaluation is important to determine prognosis [6]. Histologically, SCTs may be mature, immature, or malignant, while alpha-fetoprotein (AFP) monitoring is useful during postoperative surveillance [7]. We report a case of a giant type II sacrococcygeal teratoma in a neonate, highlighting the challenges associated with its large size, intrapelvic extension, high-grade immature histology, and postoperative surveillance.

Case Presentation

We report the case of a female neonate born at 35 weeks of gestation to a 34-year-old mother from a non-consanguineous marriage, with limited antenatal follow-up. Delivery was vaginal, with an Apgar score of 10/10. The sacrococcygeal mass was first identified at birth.

The newborn was admitted on day 1 of life for evaluation of a large sacrococcygeal mass. On admission, the neonate presented with reduced activity. Mild respiratory distress was noted with stable hemodynamic parameters. Neurological examination was normal, with preserved urinary and bowel functions.

Physical examination revealed a voluminous sacrococcygeal mass measuring approximately 15 × 20 cm,

occupying both gluteal regions without signs of inflammation and appearing disproportionately large relative to the neonatal body size, as shown in Figure *1*.



FIGURE 1: Clinical appearance of the giant sacrococcygeal mass (approximately 15 × 20 cm) involving both gluteal regions at birth

The initial laboratory workup showed no significant inflammatory syndrome. Tumor marker assessment revealed an alpha-fetoprotein (AFP) level > 20,000 ng/mL and a beta-human chorionic gonadotropin (β-hCG) level of 313.24 mIU/mL. The complete laboratory findings at admission are summarized in Table *1*.

Laboratory parameter	Patient value	Reference range
WBC	10,190/µL	9,000-30,000/µL
ANC	6,510/µL	6,000-26,000/µL
Lymphocyte count	2,460/µL	2,000-11,000/µL
Monocyte count	1,120/µL	500-2,000/µL
Hb	14 g/dL	14-22 g/dL
MCV	111.70 fL	95-121 fL
MCHC	34.20%	30%-36%
Platelet count	208,000/µL	150,000-350,000/µL
CRP	3.93 mg/L	<5 mg/L
PCT	0.11 ng/mL	<0.5 ng/mL
LDH	2,264 U/L	135-750 U/L
AFP	>20,000 ng/mL	15,700-146,500 ng/mL
β-hCG	313.24 mIU/mL	≤50 mIU/mL (birth-3 months)

TABLE 1: Laboratory findings at admission

WBC: white blood cell count, ANC: absolute neutrophil count, Hb: hemoglobin, MCV: mean corpuscular volume, MCHC: mean corpuscular hemoglobin concentration, CRP: C-reactive protein, PCT: procalcitonin, LDH: lactate dehydrogenase, AFP: alpha-fetoprotein, β-hCG: beta-human chorionic gonadotropin

Pelvic magnetic resonance imaging (MRI) showed a large sacrococcygeal mass with cystic and solid components, extending into the pelvic cavity, consistent with a type II sacrococcygeal tumor according to the Altman classification, as illustrated in Figure *2*. The mass was in close contact with the posterior rectal wall, sacrum, and coccyx, with compression and displacement of the genitourinary structures.

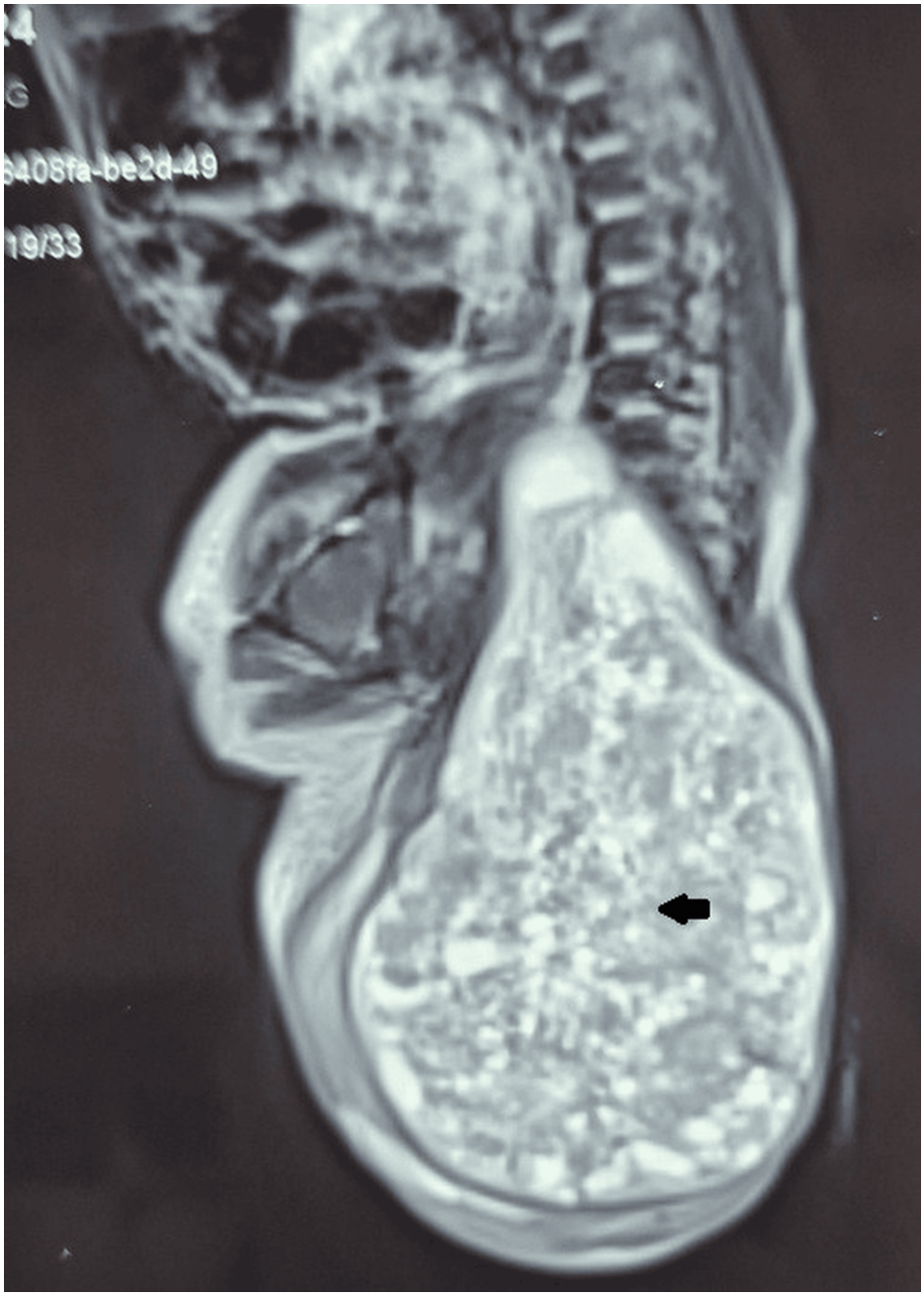


FIGURE 2: Pelvic MRI of the sacrococcygeal mass

Sagittal pelvic MRI demonstrating a large sacrococcygeal mass (arrow) with mixed cystic and solid components extending into the pelvic cavity, consistent with an Altman type II sacrococcygeal tumor

MRI: magnetic resonance imaging

Complete surgical excision of the mass, including coccygectomy, was successfully performed. Histopathological examination confirmed a high-grade immature sacrococcygeal teratoma. The pelvic and coccygeal resection margins were located 2 mm and 1.5 mm from the tumor, respectively.

The postoperative course was clinically favorable, with good oral feeding tolerance and no early complications. Postoperative AFP decreased to 6,638 ng/mL one month after surgery and further declined to 17.58 ng/mL at eight months after surgery. Postoperative β-hCG measurements were not available. The corresponding laboratory findings are summarized in Table *2*.

Laboratory parameter	1 month postoperative	Reference range	8 months postoperative	Reference range
WBC	17,580/µL	5,000-19,500/µL	6,450/µL	6,000-17,500/µL
ANC	12,090/µL	1,000-9,000/µL	1,851/µL	1,500-8,500/µL
Lymphocyte count	3,410/µL	2,500-16,500/µL	3,631/µL	4,000-10,500/µL
Monocyte count	1,800/µL	350-1,365/µL	500/µL	300-875/µL
Hb	17.5 g/dL	10.7-17.1 g/dL	12 g/dL	11.3-14.1 g/dL
MCV	87.4 fL	91-112 fL	71 fL	70-85 fL
MCHC	36.50%	32%-36%	32%	32%-36%
Platelet count	158,000/µL	150,000-400,000/µL	279,000/µL	150,000-400,000/µL
AFP	6,638 ng/mL	100-10,000 ng/mL	17.58 ng/mL	≤87 ng/mL

TABLE 2: Laboratory findings during postoperative follow-up

WBC: white blood cell count, ANC: absolute neutrophil count, Hb: hemoglobin, MCV: mean corpuscular volume, MCHC: mean corpuscular hemoglobin concentration, AFP: alpha-fetoprotein

Discussion

SCT is the most common congenital tumor in neonates, although it remains a rare condition overall [1,2]. It originates from pluripotent germ cells and exhibits a wide spectrum of clinical presentations depending on its size, composition, and anatomic extension [3].

The Altman classification is widely used to categorize SCTs into four types based on the relative external and internal components [4]. Type II tumors are characterized by a predominantly external mass with considerable intrapelvic extension, which can complicate both diagnosis and surgical management [4,6].

Large or “giant” SCTs are uncommon but are associated with an increased risk of complications such as compression of pelvic organs, hemorrhage, infection, and, in some cases, high-output cardiac failure secondary to tumor vascularity [5,8]. In our case, the tumor was of significant size (15 × 20 cm) with pelvic extension, highlighting the potential severity of these lesions.

Imaging plays an important role in the evaluation of SCTs. Ultrasound is generally the first-line modality; however, MRI has an additional role in delineating tumor components and their relationship to adjacent pelvic structures, which is crucial for surgical planning [9,10]. In our patient, MRI findings were consistent with a type II SCT with cystic and solid components.

Complete surgical excision with coccygectomy is still the treatment of choice for SCTs and is required to minimize the risk of recurrence [11]. In general, early intervention in the neonatal period is recommended, especially for large or symptomatic tumors [6].

Histopathological examination forms the basis of classification and prognosis. SCTs are categorized as mature, immature, or malignant, with immature forms representing a spectrum of differentiation and carrying a variable risk of malignancy [7,12]. In our case, histology showed a high-grade immature teratoma, which is associated with a higher risk of recurrence and may require close follow-up [7,12,13].

Surgical margins are an important prognostic variable. Incomplete resection has been correlated with an increased risk of local recurrence, emphasizing the necessity of complete resection when possible [2]. Our patient had close surgical margins, and careful postoperative surveillance was indicated.

The overall prognosis of SCT largely depends on tumor histology, completeness of resection, and the presence of complications [2,13]. Reported recurrence rates are low after complete excision but much higher after incomplete resection or immature histology [2,13].

Our case illustrates the diagnostic and therapeutic challenges posed by giant SCTs, particularly when associated with high-grade histological features. It underlines the significance of early diagnosis, proper imaging assessment, and adequate surgical treatment for improved prognosis.

Our patient presented with a particularly large tumor and high-grade immature histology, which may be

associated with an increased risk of recurrence and require close follow-up. Postoperative AFP monitoring showed a progressive decline, supporting a favorable biochemical evolution and the importance of continued surveillance. AFP levels are physiologically elevated in neonates and should be interpreted according to gestational and postnatal age. The progressive postoperative decline in AFP is therefore more informative than the initial absolute value alone.

Conclusions

Giant sacrococcygeal teratomas are rare congenital tumors that may present significant diagnostic and therapeutic challenges in the neonatal period. For the best management and surgical planning, early diagnosis and suitable imaging are crucial.

The mainstay of treatment is still complete surgical excision, while histopathological analysis is crucial for determining tumor grade and prognosis. High-grade immature forms, as in our case, require close postoperative surveillance due to the increased risk of recurrence. This case emphasizes the need for a multidisciplinary approach and meticulous follow-up for better outcomes in affected neonates.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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