

# CHALLENGE IN THE MANAGEMENT OF A PERICARDIAL TERATOMA IN A PREMATURE NEWBORN

## DIFFICULTE DE PRISE EN CHARGE D'UN TERATOME PERICARDIQUE CHEZ UN PREMATURE

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### Abstract

Congenital mediastinal teratomas are rare neoplasms that can pose significant diagnostic and management challenges. Congenital pericardial teratomas are rare and potentially life-threatening tumors that can lead to significant perinatal complications. We report the case of a premature newborn diagnosed antenatally with a mediastinal mass, confirmed postnatally as a pericardial teratoma. The case highlights the difficulties in prenatal imaging, differential diagnosis, and the complexities of neonatal management. In our country, it's necessary to improve early diagnosis in utero which sometimes allows antenatal drainage facilitates post-natal treatment, and improves newborn issues.

**Key- words:** Pericardial teratoma; Mediastinal mass; Prenatal diagnosis; Magnetic resonance imaging .

### Résumé

Les tératomes médiastinaux congénitaux sont des tumeurs rares, posant d'importants défis diagnostiques et thérapeutiques. Les tératomes péricardiques, en particulier, sont peu fréquents mais potentiellement mortels et peuvent entraîner des complications périnatales majeures. Nous rapportons le cas d'un nouveau-né prématuré chez qui une masse médiastinale a été diagnostiquée en anténatal, et dont le diagnostic confirmé en post natal était un tératome péricardique. Ce cas illustre les difficultés liées au diagnostic prénatal, au diagnostic différentiel, ainsi que la complexité de la prise en charge néonatale. Dans notre contexte, il est essentiel d'améliorer le diagnostic précoce in utero, lequel permet parfois un drainage anténatal, facilitant ainsi la prise en charge postnatale et améliorant le pronostic néonatal.

**Mots-clés :** Tératome péricardique ; Masse médiastinale ; Diagnostic prénatal ; Imagerie par résonance magnétique.

### ملخص

الأورام المسخية الخلقية في المنصف نادرة وتُشكل تحديات كبيرة في التشخيص والمعالجة. الأورام المسخية التامورية تُعد نادرة ولكنها قد تُهدد الحياة، حيث يمكن أن تؤدي إلى مضاعفات محيط الولادة خطيرة. نعرض في هذا التقرير حالة لمولود خديج تم تشخيصه قبل الولادة بكتلة في المنصف، وتؤكد بعد الولادة أنها ورم مسخي تاموري. تُبرز هذه الحالة صعوبات التشخيص قبل الولادة، والتشخيص التفريقي، وتعقيدات تدبير الحالة في المرحلة الوليدية. في سياقنا، من الضروري تحسين التشخيص المبكر داخل الرحم، والذي قد يسمح أحياناً بإجراء تصريح قبل الولادة، مما يُسهل التدخل بعد الولادة ويُحسّن نتائج الطفل حديث الولادة.

**الكلمات المفتاحية:** الورم المسخي التاموري ; الكتلة المنصفية ; التشخيص قبل الولادة ; التصوير بالرنين المغناطيسي.

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**BACKGROUND**

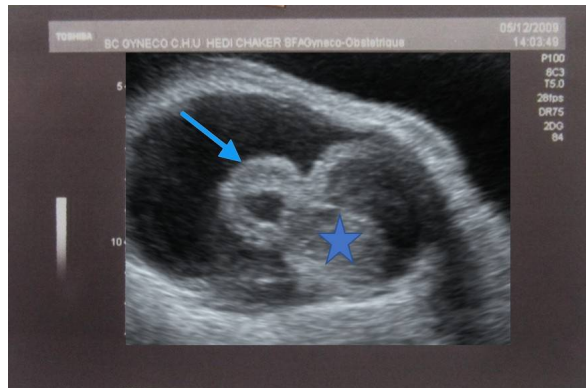
Mediastinal teratomas are uncommon congenital tumors that may cause respiratory distress and cardiovascular compromise in neonates. Pericardial teratomas are rare congenital tumors arising from the pericardium, often presenting as large masses that can compress the heart and surrounding structures[1]. These tumors can lead to pericardial effusion, hydrops fetalis, or fetal demise if not managed appropriately[2]. Prenatal diagnosis is crucial for planning perinatal management. However, distinguishing teratomas from other mediastinal masses remains challenging[3]. We report the case of a premature newborn diagnosed antenatally with a mediastinal mass, confirmed postnatally as a pericardial teratoma. This case report discusses the difficulty of postnatal management of a congenital pericardial teratoma in a premature infant.

**Case**

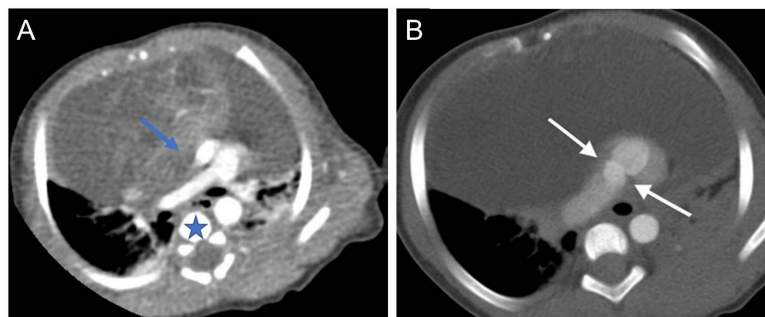
A 25-year-old woman was referred to our institution at 33 weeks of gestation because of a

fetal thoracic mass. Fetal ultrasonography revealed a mediastinal mass with cystic components, large pericardial and pleural effusion, heart deviation, and hydramnios (**Figure 1**).

Preterm labor developed at 34 weeks of gestation and a male newborn was born by vaginal delivery. The newborn weighed 1,800 grams at birth. He presented immediately with respiratory distress requiring mechanical ventilation. Chest X-ray showed a widened mediastinum with cardiomegaly. Echocardiography showed a large pericardial effusion with a 35 x 40 mm intrapericardial tumor. Chest tomography showed an intra-pericardial mass and confirmed the large pericardial and pleural effusion (**Figure 2**). The pericardial drain was placed and brought uninfected fluid. The newborn was quickly complicated by ascites, severe hemodynamic disturbances, and heart failure because of tamponade. Despite resuscitation, the infant died at the age of 70 hours. Pathological examination of a pericardial biopsy specimen found an immature teratoma.



**Figure 1 :** Fetal ultrasonography noted a mediastinal mass (blue arrow) with pericardial effusion surrounding the heart (blue star).



**Figure 2 :** Axial chest CT scans. (A) Contrast-enhanced image showing a well-defined pericardial mass (blue arrow) associated with pericardial effusion surrounding the heart (blue star). (B) Non-contrast image demonstrating a mediastinal teratoma containing areas of calcification (white arrows).

## DISCUSSION

The prenatal diagnosis of mediastinal mass remains challenging due to overlapping imaging characteristics with other congenital thoracic abnormalities. Fetal magnetic resonance imaging (MRI) improved diagnostic accuracy, allowing for better perinatal planning [3]. In our case, fetal MRI could not be performed because of the imminent preterm delivery and the emergency clinical situation.

The incidence of congenital teratomas is estimated at 1 of 20,000 to 40,000 live births, they represent 24% of fetal tumors. There is a female predominance [1- 4]. Intrapericardial teratomas comprised approximately 2% of cardiac tumors [5]. Pericardial teratomas are clinically significant due to their potential to cause life-threatening complications. Prenatal diagnosis is suspected in fetal echocardiography and MRI showing a mass with pericardial effusion. Complicated forms with hydrops or fetal death can also be noted [3]. However, differentiating teratomas from other pericardial masses, such as pericardial cysts or rhabdomyomas, can be challenging [6]. Drainage in utero may be proposed at an early term (<29 weeks) [7]. Fetal pericardial teratomas are associated with higher refractory effusions, while neonatal pericardial teratomas have a higher incidence of respiratory distress due to tamponade. Although the all-cause death rate is higher in the fetal group than in the neonatal group [7]. For our patient, no prenatal measurement was programmed because of the delayed diagnosis.

Postnatally, imaging plays a crucial role in the characterisation of pericardial teratomas. Echocardiography remains the gold standard for diagnosis, whereas MRI provides valuable information about the tumour's relationship with adjacent structures [8]. Cardiac ultrasonography helps distinguish cystic from solid components, while contrast-enhanced computed tomography (CT) clearly depicts tumour density, calcifications, and other defining features essential for diagnosis [9]. Pericardial teratomas typically appear as well-defined, lobulated intrapericardial masses, most often attached to the great vessels. On CT, they usually show heterogeneous density due to the presence of solid, cystic, and fatty elements, and may contain calcifications. The identification of lipid or calcific densities provides important diagnostic clues. CT also delineates the intrapericardial location, extent, and relationship of the tumour to neighbouring vascular structures,

which is crucial for surgical planning. On MRI, these tumours appear heterogeneous, with signal characteristics reflecting their mixed tissue composition: cystic areas are hyperintense on T2-weighted images, fatty areas hyperintense on T1-weighted images, and solid components typically enhance after contrast administration [10]. In our patient, CT revealed an intrapericardial mass with large pericardial and pleural effusions. MRI could not be performed because of the patient's unstable clinical condition and the emergency context requiring immediate intervention. Therefore, CT was selected as the most rapid and accessible imaging modality to characterise the lesion.

Postnatal management of pericardial teratoma has greatly improved as technology and resources have advanced. Care involves airway management, typically requiring intubation. Pericardiocentesis is often required as well, with either drain placement or repeat procedures depending on the timing of surgery. Successful excision is occurring in increasingly premature neonates [5, 7, 8]. The surgery wasn't performed in our case because of its severity and refractoriness to any resuscitation. The progression of our patient's condition can be attributed to several factors, including the delayed antenatal diagnosis, the size of the mass, and the severity of heart failure in a premature, low-birth-weight infant.

## CONCLUSION

Congenital teratomas are usually benign, but some locations may worsen the prognosis. Despite their rarity, pericardial congenital teratoma should be considered in the differential diagnosis of mediastinal masses detected prenatally. These tumors are exposed to the risk of tamponade and heart failure. In our country, it's necessary to improve early diagnosis in utero, which sometimes allows antenatal drainage, facilitating post-natal treatment and improving newborn issues.

**CONFLICTS OF INTEREST:** None

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