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Review Article

The Dissimilar Conglomerate-Placental Teratoma

Anubha Bajaj[1*]

Abstract

Apart from trophoblastic placental neoplasms, non-trophoblastic placental tumors are further categorized into primary or secondary non-trophoblastic tumefaction. A frequently discerned category of non-trophoblastic, primary placental tumor is chorangioma discernible in an estimated 1% of gestations. Secondary to a chorangioma, a non-trophoblastic, primary tumor is exemplified by the placental teratoma.

Keywords: Placental neoplasm; Non-trophoblastic; Tumor; Chorangioma

[1]Consultant Histopathologist, AB Diagnostics, A-1, Ring Road, Rajouri Garden, New Delhi 110027, India

[*]**Corresponding Author:** Anubha Bajaj, Consultant Histopathologist, AB Diagnostics, A-1, Ring Road, Rajouri Garden, New Delhi 110027, India.

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Introduction

Placental teratoma is an exceptional, non-trophoblastic, benign neoplasm initially scripted by Morville in 1925 and is comprised of elements derived from multiple germ cell layers [1]. The neoplasm may be challenging to discern upon antenatal ultrasonography. Besides, appropriate prenatal determination of associated placental neoplasms is crucial. Nevertheless, the potential malignant metamorphosis of placental teratoma remains dubious.

Disease characteristics

Teratoma is a germ cell tumor subdivided into

- mature teratoma
- immature teratoma

The neoplasm is incorporated with multiple germ cell layers and diverse tissues such as hair, osseous tissue, or mature adipose tissue. Commonly, teratoma emerges within sites such as the ovary, testis, anterior mediastinum, posterior peritoneum, or pre-sacral region. Of obscure genesis, placental teratoma may originate from anomalous migration of embryonic germ cells. Pertinent germ cells migrate through the umbilical cord and subsequently infiltrate the placenta [2,3]. Besides, placental teratoma is theorized to

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emerge from germ cells that migrate from the dorsal yolk sac wall [2,3].

Of unclear histogenesis, placental teratoma is posited to arise due to an "included twin" hypothesis which enunciates a teratoma to emerge from twin fetuses merging or "included" with the co-twin on account of an embryological anomaly. Also, it is postulated that the teratoma cell line may concur from a fusion of dual germ cells [2,3].

The "germ cell theory" explains the potential mechanism of the emergence of teratoma within the primary phases of embryogenesis wherein the primitive gastrointestinal tract extends into the umbilical cord. Subsequently, germ cells from the gastrointestinal tract migrate and accumulate within the connective tissue of the umbilical cord with the consequent configuration of teratoma of the umbilical cord [2,3].

Germ cell theory postulates the perpetual migration of germ cells towards extraplacental membranes where an extraplacental membrane teratoma is articulated between amnion and chorion [2,3].

Currently, the germ cell theory is accepted as a definitive premise of the origin of placental teratoma [2,3].

Clinical elucidation

Placental teratoma is consistently situated between amnion and chorion within the foetal placental surface although it may be delineated within the membranes. The neoplasm may emerge as an outpouching from the placenta [2,3].

Characteristically, the benign placental teratoma is devoid of adverse maternal or foetal outcomes. Enlarged placental teratoma may engender foetal asphyxia, possibly due to mechanical compression of the umbilical cord [2,3].

The neoplasm is associated with favorable prognostic outcomes [2,3].

Histological elucidation

Grossly, the placenta of varying dimensions may exhibit unremarkable maternal or foetal surfaces. Generally, the extra-placental tumor mass is situated between amnion and chorion. Macroscopically, a singular placenta appears adherent to the umbilical cord and placental membranes. The tumefaction may be cystic, lobulated, of rubbery consistency, adheres to placental membranes through diverse, peripheral vascular articulations, and typically exhibits a magnitude of up to 11 centimeters in greatest dimension [4,5]. Upon microscopy, tumefaction is layered with stratified squamous epithelium incorporated with cutaneous adnexal structures of diverging maturity. Lobules of adipose tissue, hair, and islands of osteoid, cartilage, or smooth muscle appear admixed with myxoid alterations within the stroma. The adherent placenta may appear as unremarkable [4,5]. Microscopic examination enunciates keratinized stratified squamous epithelium with subjacent hair follicles, telangiectatic vascular articulations, and sebaceous glands. Subcutaneous lobules of mature adipose tissue appear traversed by fascicles of fibro-collagenous tissue. Interconnecting bony trabeculae appear rimmed by osteoblasts and are adherent with mature cartilaginous tissue [4,5]. The neoplasm is composed of

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disorganized, mature epithelial and mesenchymal tissues which emerge as derivatives of comprehensive germ cell layers. However, placental teratoma may be constituted of an admixture of mature and immature tissues of the ectodermal and mesodermal origin or neuroepithelial elements. Focal tumor necrosis may be observed [4,5].

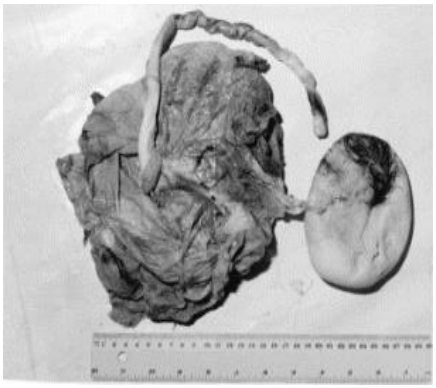

Figure 1: Placental teratoma exhibiting a cystic, lobulated neoplasm adherent to the placenta along with a diverse umbilical cord [6].

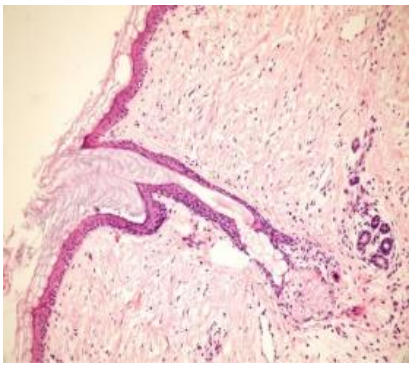

Figure 2: Placental teratoma exemplifying stratified squamous epithelium with hyperkeratosis and mature cutaneous adnexal structures [7].

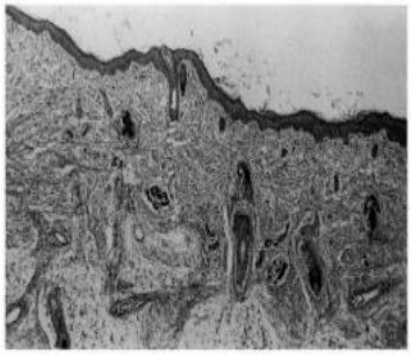

Figure 3: Placental teratoma depicting a stratified squamous epithelial layer with orthokeratosis, hyperkeratosis, and subjacent mature cutaneous adnexal structures with focal stromal hyalinization [8].

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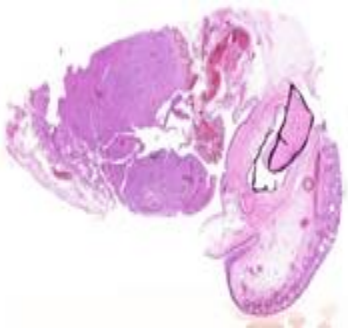

Figure 4: Placental teratoma demonstrating an epithelial and mesenchymal configuration with prominent stroma along with cystic configurations [9].

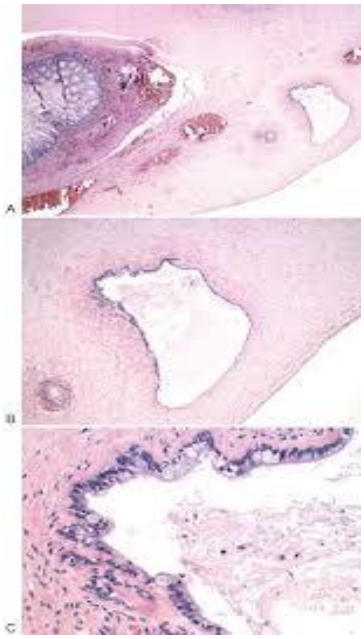

Figure 5: Placental teratoma enunciating impacted cystic articulations surrounded by abundant mesenchymal stroma [10].

Differential diagnosis

Placental teratoma predominantly requires segregation from foetus amorphous which is comprised of blighted foetus emerging from multiple gestations. The neoplasm may simulate foetus amorphous although umbilical cord and centric skeletal structure are absent in placental teratoma [11,12].

Foetus amorphous exhibits pertinent organized growth along with the development of the centroidal skeletal region and partial or complete configuration of a vertebral column. Foetus amorphous can preponderantly be discerned by ultrasonography. Typically, evidence of the skeletal axis is lacking [11,12]

A disconnected, inadequately developed umbilical cord may adhere to the placenta, to the twin or a disparate placenta may be delineated [11,12].

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Investigative assay

Appropriate prenatal discernment of placental teratoma is contingent on the occurrence of diverse tissues of varying echogenicity such as mature adipose tissue within the neoplasm Adequate prenatal detection of the benign placental teratoma is pertinent to the possible emergence of congenital malformations or complications of normal pregnancy remains invariable [12,13].

Placental teratomas exceeding >10-centimeter magnitude necessitates regular prenatal and intrapartum foetal monitoring for foetal wellbeing and exclusion of potential foetal hypoxia [12,13]. The placental neoplasm can represent an echogenic tumefaction of variable magnitude which may abut diverse foetal segments. The neoplasm may be cystic, lobulated, or septate [12,13].

Ultrasonography can be beneficially employed for cogent prenatal determination of the neoplasm. Upon ultrasonography, foci of calcification and fluid may be discerned. Also, tumor-associated abnormalities may be situated upon or appear adjacent to the placenta. Prenatal tumor diagnosis is contingent on the occurrence of various echogenic tissues such as focal calcification, mature adipose tissue aggregates, or accumulated fluid. Evaluation of focal calcification is beneficial in segregating teratoma from common placental neoplasms as chorangioma or diverse tumors of trophoblastic origin [12,13].

Color Doppler is advantageous in discerning minimal vascularity confined to the tumor surface [12,13].

Magnetic resonance imagining (MRI) is an optimal, recommended investigation for ascertaining diverse placental neoplasms [12,13].

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