

## PLACENTAL TERATOMA: A CASE REPORT AND REVIEW OF THE LITERATURE

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Teratoma is a complex tumor composed of a collection of heterogeneous cells and/or organoid structures reminiscent of normal derivatives of the germ cell. It occurs in both male and female genital systems and other organs along the midline of the body, with similar morphology and classification. Ovarian teratomas constitute 15%-20% of all ovarian tumors, yet teratomas are very rare in the placenta. Benign mature teratoma has mature tissue deriving from two or more germ cell layers, while immature malignant teratoma has both mature and immature elements, especially immature neuroepithelial elements. Furthermore, the third variant, the monodermal teratoma, is composed of only one specialized tissue, such as thyroid tissue.

Benign mature teratoma is the only variant described in the placenta. The main interest in this tumor of the placenta is to differentiate it from fetus acardius amorphus. This paper reports the first case of benign placental teratoma in Saudi Arabia.

### Case Report

A 31-year-old Saudi female, G4 P1+2, presented at 37 weeks of pregnancy with labor pain, with no regular contractions and decreased fetal movements. The patient had undergone regular follow-up since the 15th week of pregnancy for gestational diabetes, which was controlled with insulin. Her last baby had been delivered by cesarean section because of fetal distress.

The patient's blood group was O +ve, and she had been immunized for rubella. There was no other relevant medical or family history. The blood sugar was 6.2/4.9 mmol/L, hemoglobin was 12.1 g/dL, and blood pressure was 113/76 mm Hg. CBC and blood work-up were normal, and urine analysis and cervical culture were negative.

The mother was in labor for 10 hours, and advanced normally through all stages of labor to give birth vaginally to a healthy baby boy weighing 2410 g. The Apgar scores were 9 and 10 at 1 and 5 minutes. The placenta and membranes were delivered spontaneously 4 minutes later.

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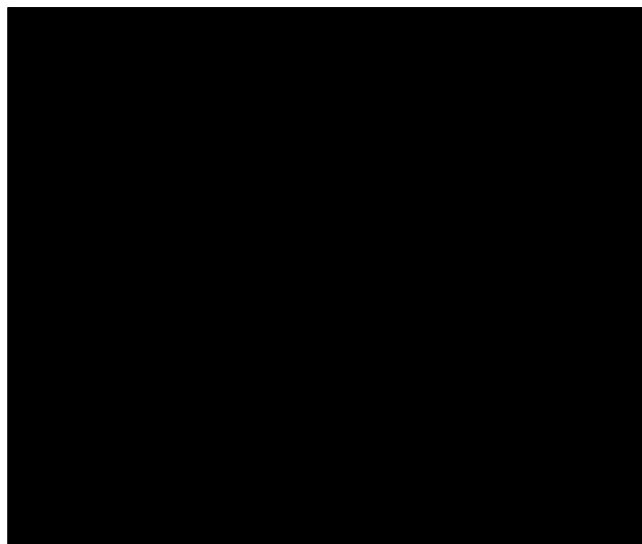


FIGURE 1. Solid teratoma with central osteocartilagenous tissue.

A large ovoid mass was observed along the edge of the placenta between the fetal membranes.

On gross examination, the placental disc was complete, with intact placental membranes and marginally inserted umbilical cord with three blood vessels. The specimen weighed 580 g. A small, smooth oval nodule, measuring 5.5 cm in diameter, was identified between the amnion and chorion at the placental margin. The cut surface of the nodule was light-brown and fleshy, and had a solid 1.6 cm cartilaginous bony center (Figure 1).

On microscopic examination, the sections of the placenta and cord revealed mature placental tissues with villous edema. The umbilical cord contained three blood vessels. Sections of the nodule showed keratinizing epidermis with skin appendages, including hair follicles and sebaceous glands. Mature disorganized osteocartilagenous tissue was present, as well as nerves and glands of undeterminate type. All the tissue types identified (ectoderm, mesoderm and endoderm) were mature, confirming the lesion as a benign mature solid teratoma (Figures 2 and 3).

### Discussion

Morville reported the first case of placental teratoma in 1925.<sup>1</sup> Since then, fewer than twenty cases<sup>1-9,15-17</sup> have



FIGURE 2. Keratinizing squamous epithelium with hair follicles and mature fat.

been reported in the literature, the last one by Elagoz et al.<sup>15</sup> in 1998. This paper reports another case of these rare tumors and the first in Saudi Arabia.

Placental teratomas have to be distinguished from fetus amorphus, which is a blighted fetus arising from a multiple pregnancy. The main distinguishing features of the fetus amorphus are the presence of some growth organization with central skeletal development, and with partial or complete formation of a vertebral column. Secondly, a separate, poorly developed umbilical cord is either attached to the placenta or to its twin, or to a separate placenta. These two characteristics are not seen in placental teratomas. Some authors have criticized the distinguishing criteria used to differentiate between the two conditions, while other authors believe the distinction between fetus amorphus and placental teratoma is meaningless.<sup>10</sup>

Sex chromatin and ploidy examination was not undertaken in our case (neither were they done in previously reported cases). The explanation is that the diagnosis of teratoma is usually not anticipated, and the specimen is usually placed in formalin, precluding any further studies. Hunter and Lennox<sup>11</sup> found female sex chromatin in all female non-placental teratomas, and in approximately half of male non-placental teratomas. Whether placental teratomas have the same sex as the fetus remains to be determined.

The histogenesis of placental teratoma is still a topic under discussion, and has not yet been determined.<sup>12</sup> Nicholson<sup>13</sup> proposed the "included-twin hypothesis," in which he suggested that the teratoma originates from a twin fetus that becomes "included" or incorporated in its co-twin through some embryological mishap. Tavares and Oporto<sup>14</sup> speculated that the teratoma cell line arises from two fused germ cells. Fox<sup>2</sup> has suggested the "germ cell theory" as a possible mechanism. In his opinion, in the early stages of embryogenesis, the primitive gut evaginates into the umbilical cord, and germ cells from the primitive



FIGURE 3. Intradermal bone, cartilage, fat, and nerve.

gut migrate out and are deposited in the connective tissue of the cord, giving rise to a teratoma of the cord. If the germ cells continue to migrate until reaching the extra-placental membranes, they develop into an extra-placental membrane teratoma between the amnion and chorion. The aberrant migration of germ cells is the favored theory. Further studies are needed to shed light on this rare occurrence.

Placental teratoma is a benign tumor, and its malignant variant has not yet been described. It occurs in women of childbearing age, and it has no clinical consequences. The interest of this condition from the pathological point of view is to include it in the differential diagnosis of benign placental nodules in order to be able to learn more about this rare lesion, and perform further ancillary studies.

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