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Original Article

The Silent Passenger: The Medical Mystery of Fetus in Fetu

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ABSTRACT

Fetus in fetu (FIF) is a rare congenital anomaly characterized by the presence of a malformed parasitic twin enclosed within the body of its host twin. It is believed to result from aberrant monozygotic twinning, where unequal embryonic division leads to the inclusion of one twin within the other during early gestational development. Fewer than 300 cases have been documented globally, most commonly presenting in infancy as an abdominal mass. Diagnostic imaging, particularly CT and MRI, plays a crucial role in identifying vertebral and limb-like structures, differentiating FIF from teratomas and other abdominal tumors. Surgical excision remains the definitive treatment and offers excellent prognosis. This paper explores the diagnostic approaches of FIF, with emphasis on the importance of distinguishing it from neoplastic conditions for appropriate intervention.

Keywords: Fetus in fetu, retroperitoneum, diamniotic monochorionic twin pregnancy

INTRODUCTION

Fetus-in-fetu is an exceptionally rare condition that arises due to abnormal embryonic development in a monochorionic diamniotic twin pregnancy. In this scenario, a non-viable fetus becomes encapsulated within a normally developing sibling. The condition has an estimated occurrence of 1 in 500,000 live births [(1)] and appears to be twice as common in males as in females. [(2)] There are two main theories to explain this rare anomaly: [(3)]

- One suggests it results from abnormal embryogenesis during the development of identical twins, where one malformed twin becomes enclosed within the other.
- Another theory considers it to be a highly organized form of teratoma.

In most cases, the enclosed fetus is found in the abdominal area, particularly the retroperitoneal space (in about 80% of cases). [(4)] Less common locations include the cranial cavity, mediastinum, scrotum, and pelvis. The patient usually present with abdominal mass, vomiting or feeding difficulties, distended abdomen, pain or discomfort.

Case:

During the Antenatal scan done at 28 weeks of gestation, well defined cystic area was noted in the right hypochondriac region of the fetus with partially ossified soft tissue structure within it. The baby was born at 36 weeks of life by normal vaginal delivery. The peripartum period was uneventful. In the postnatal period, the baby was subjected to X ray, Ultrasonography and CECT scan. The spectrum of imaging investigations revealed Fetus in Fetu. On local examination, there was fullness in the right hypochondrium with a round intra-abdominal, non-tender mass of variable consistency.

On ultrasonography performed on day 1 of life:

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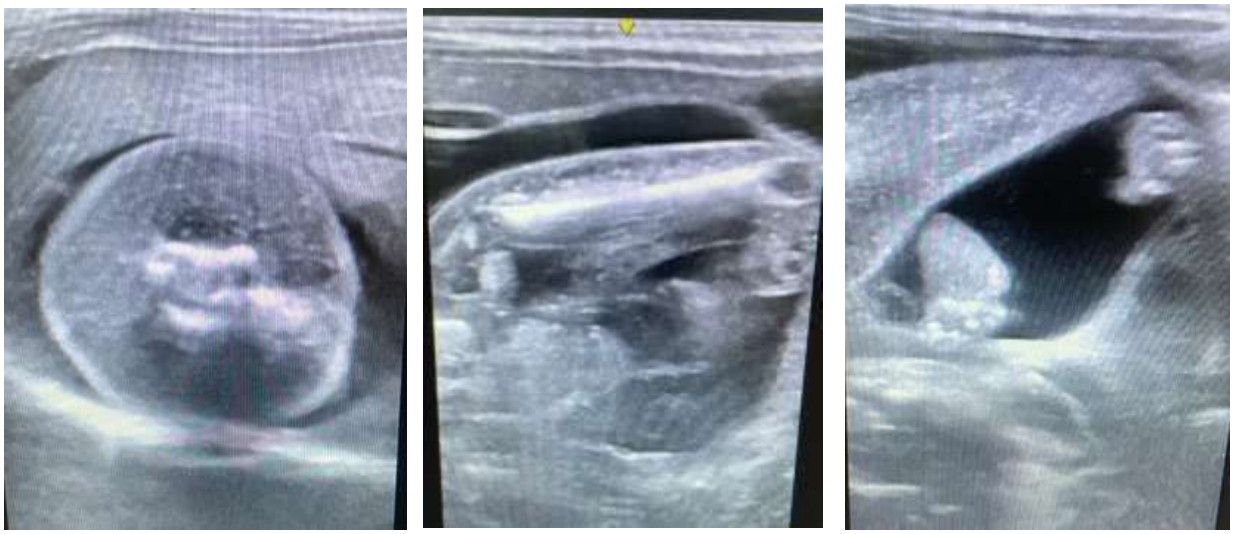
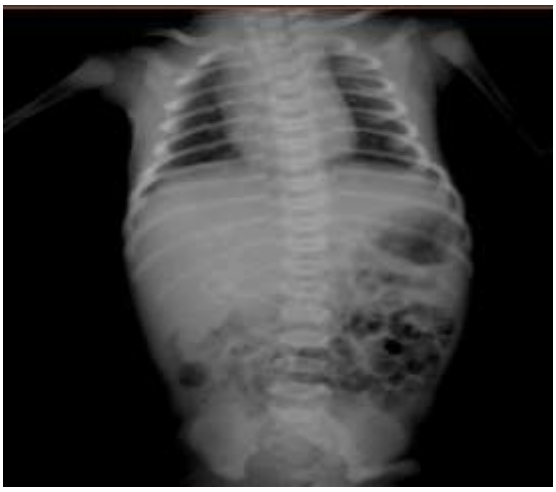


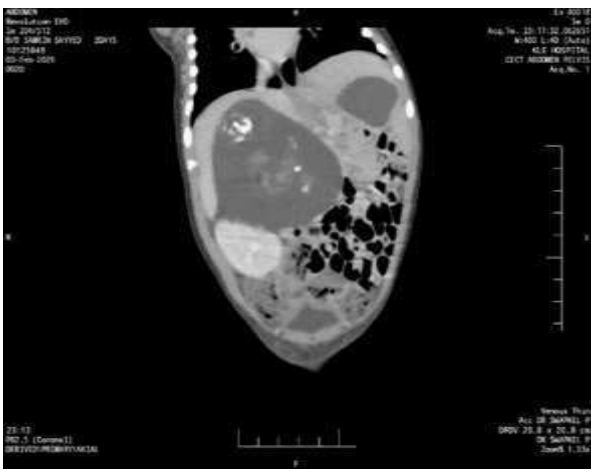
Anechoic gestational sac like cystic area noted in the right hypochondriac region with a soft tissue structure with ossified component (fetus like structure) within the it. The structure shows well- formed lower limbs with a malformed cranial portion.

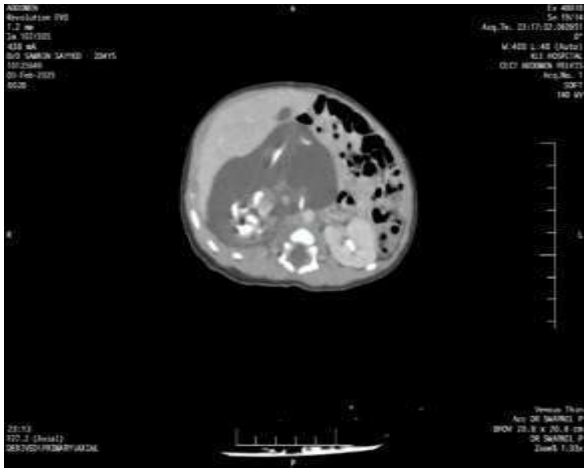
On X-ray abdomen (AP view) performed on day 1 of life:



Plain radiograph reveals an ill-defined calcified bony structure in the right hypochondriac region overlying the liver. However, the visualised bones and soft tissues appear normal.

On CECT abdomen and pelvis performed on day 2 of life:





Well defined large cystic area in the subhepatic region of the retroperitoneum. The lesion shows a soft tissue mass with malformed ossified elements (resembling fetal parts) The lesion is seen to cause mass effect and inferior displacement of the right kidney. Anteriorly, the lesion is seen to cause anterior displacement of the IVC Posteriorly, the lesion is seen to closely abut the abdominal aorta.

Follow up:

On day 3 of life, baby was operated and complex removal of amniotic cyst with the fetal parts was performed. Baby recovered well post-surgery.

DISCUSSION:

Fetus-in-fetu, a term quoted by Lewis, [5] the term was first introduced by Johann Friedrich Meckel in the 18th century, and later formally defined by Willis in 1935, who emphasized the presence of an axial skeleton as a key distinguishing feature from teratomas. This condition results from an abnormality in diamniotic, monochorionic, monozygotic twinning, where the inner cell mass of the developing blastocyst divides unevenly, causing a smaller cell mass to become enclosed within its sibling embryo. With modern imaging techniques, it can often be accurately identified before surgery. Surgical removal through careful dissection is typically curative and provides a definitive diagnosis. [6] It is important to differentiate this condition from teratoma which is a germ cell tumour. Teratoma is lesion with elements derived from different germ cell origins. It has malignant potential and do not exhibit organogenesis or vertebral segmentation. While fetus in fetu does not have malignant potential. The diagnosis of fetus in fetu can be made when vertebral column or limb structures are identified

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