

CASE PRESENTATION

Fetus-in-Fetu in a Bahraini Infant

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ABSTRACT

Fetus-in-fetu, is a rare abnormality of embryonic development, is distinguished from the more common teratoma by the presence of an axial skeleton and the existence of a separate amniotic membrane. In this paper, a case of fetus-in-fetu in a Bahraini male infant is described, the first such case known to have occurred in the Arabian peninsula.

Fetus-in-fetu is a well recognised entity, but there are few detailed descriptions in the literature and most of these do not relate gross anatomical features to histologically identifiable tissues. We report a case with correlation of the macroscopic and microscopic features.

THE CASE

A one week old Bahraini male infant was admitted with upper abdominal mass discovered on routine examination. He was asymptomatic, and was the product of a normal full term delivery. The birth weight was 3.2 Kg. On admission, physical examination revealed a large solid mass in the epigastrium. A plain abdominal X-ray showed the presence of soft tissue and bone, and an abdominal ultrasound demonstrated 5 cm rounded mass with multiple cysts. At operation, the mass was found to be

originating in the upper retroperitoneum, and displacing the stomach and transverse colon forward and the small intestine downward. The mass was surrounded by a thin membrane through which straw coloured fluid and tissue covered by hair could be seen. There was a long feeding artery arising from the abdominal aorta just below the origin of the coeliac artery. The mass was easily dissected and was entirely removed.

MACROSCOPIC EXAMINATION

The specimen measured 6x6x5 cm and comprised of a firm ovoid mass enclosed in a fibrous membrane to which it was attached at one pole. A number of flat nodules were present on the inner surface of the membrane (Fig 1). The main mass was covered by skin with patches of hair, and four separate vestigial limbs were identified. The cut surface of the mass showed organised tissues and spaces, some of which were partly enclosed by bone, reproducing the arrangement of the body cavities (Fig 2).

MICROSCOPIC EXAMINATION

Sections from the separate areas of the mass showed well differentiated tissues which corresponded with the anatomical arrangement noted macroscopically. Thus, cartilage and bone segments

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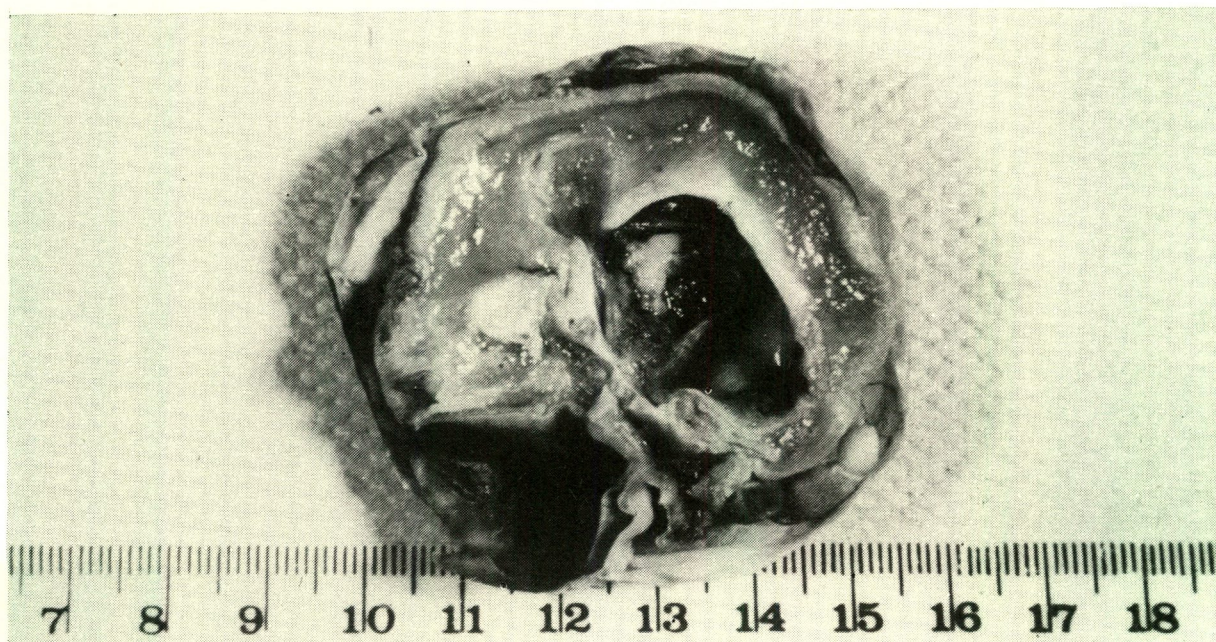
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FIGURE 1



The resected specimen, with reflected outer membrane at left. Several flat nodular masses are present on the inner surface of the membrane, and a vestigial limb with digits can be seen on the right.

FIGURE 2



Cut surface of the specimen, showing the outer membrane (A), laryngeal opening (B), cranial cavity (C), and brain stem (D). Part of a vestigial limb can be seen at the lower right margin.

representing the vertebral column were found within the nodules in the outer membrane near the point of attachment to the main mass (Fig 3A). Adjacent to this was an area of small intestine. A form of tracheal opening was also identified (Fig 3B), with pseudostratified columnar epithelium and underlying cartilage. The central cranial cavity contained nervous tissue (Fig 3C), and portion of the brain stem could also be recognised, partly enclosed by bone (Fig 3D).

FIGURE 3 A

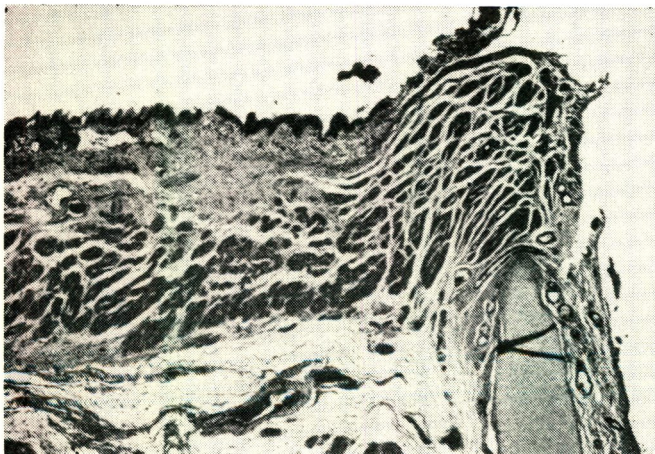
Photomicrographs of tissues taken from the sites indicated in Fig 2.

Vertebral column (right) and small intestine (left).



FIGURE 3 B

Opening of tracheal bud with surface glandular epithelium and underlying cartilage.



DISCUSSION

Willis¹ describes "fetus-in-fetu as a parasitic twin included within the abdomen of its fellow. The diagnosis should be restricted to specimens showing a definite vertebral column, and should not include abdominal or retroperitoneal teratomas". According to Willis, teratomas regularly lack the essential part of a vertebrate organism, a spinal axis, and have no true organs or body

FIGURE 3 C

Cerebral white matter within cranial cavity.

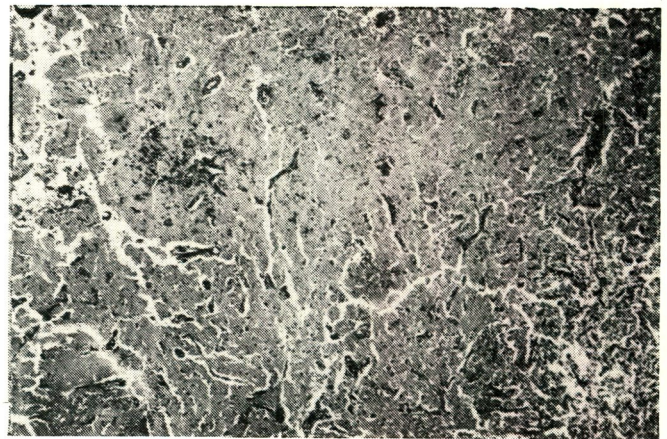
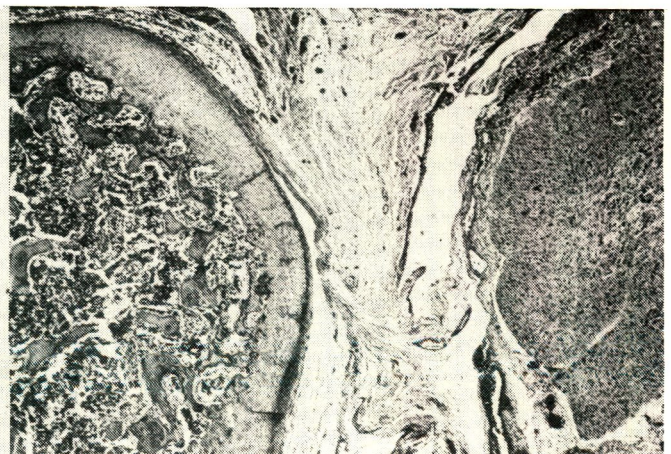


FIGURE 3 D

Portion of vertebral body (left) and brain stem (right). All HE x 25



regions, thus precluding their derivation from orderly germ layers. Willis admits, however, that "a highly reduced amorphous and aspinous parasitic twin included in the retroperitoneum would be indistinguishable from a fully mature benign cystic teratoma, especially one with highly organised parts."

The usual sites of origin of teratomas are the ovaries, testes, anterior mediastinum, retroperitoneum, pre-sacral and coccygeal region. In contrast, most cases of fetus-in-fetu reported in the literature have occurred in the upper retroperitoneum². The explanation for this lies in the theory of origin of fetus-in-fetu, which proposes that the abnormality results from an anomalous inclusion of monozygotic twins as a consequence of the anastomosis of the vitelline circulation.

CONCLUSION

Fetus-in-fetu is described as having a high degree of structural organisation³. In the present specimen, several histologically identified organs and tissues, including brain partly enclosed in a cranial cavity, vertebral column with brain stem, and foregut with tracheal bud, were structurally organised in a manner closely resembling a developing fetus.

REFERENCES

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3. Janosvski NA. Fetus in fetu. *J Paed* 1962;61:1:100-104.