

## Mermaid baby

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### Abstract

We were recently intrigued by a baby born at Kalafong Hospital with fused lower extremities resembling a mermaid, which caused us to search for the background and origin of this entity called sirenomelia.

### Case report

A 40-year-old woman delivered a baby at 36 weeks with fused lower limbs. There was no maternal history of ingestion of teratogenic agents or diabetes mellitus. Initial X-rays (Figs 1 and 2) showed fused feet, lower limbs with 2 tibiae, 2 femurs and a single fibula. There was a single femoral head and incomplete development of the pelvis with absent acetabulum, ischium and pubic bones. The neonate did not survive this

lethal abnormality and died a few hours after birth. The parents declined a postmortem examination.

### Discussion

Mermaids or sirens have been part of the cultural tradition of sailors since the earliest maritime expeditions in the Western world. The siren myth was recorded for the first time by Homer, who described in the *Odyssey* alluring singing creatures that lured sailors to their deaths.<sup>1</sup>

The etymology of the word 'siren' is unclear; it may derive from the Greek seirios (hot, weak), seira (rope) or seirazein (to bind – because sirens 'bind' sailors to them).<sup>1</sup> The origin in Latin and other languages centres on serene, from the word 'serenus' (without cloud, clear), implying the peaceful sea on which sirens usually appeared.<sup>1</sup> Historical texts of around 2 500 BC found in several European countries include references to female hybrids.<sup>1</sup> It can be assumed that these creatures were probably individuals affected by sirenomelia, which is a rare and lethal congenital anomaly characterised by rotation and fusion of the lower extremity with medial position, fusion or absence of the fibulas, and abnormalities of the lumbar and sacral spines.<sup>1-3</sup> Other abnormalities include imperforate anus, renal agenesis or dysgenesis, internal genital organ agenesis except for the gonads, absent or hypoplastic renal arteries, oligohydramnios and presence of aberrant vasculature. There are 3 known variants of the different degrees of lower extremities fusion:



Fig. 1. Photo's of a siren with fused lower limbs.





Fig. 2. Antero-posterior radiographs of the upper chest and abdomen and the lower extremities show complete fusion of the lower limbs and feet with 2 femurs, 2 tibiae and a single fibula. There is fusion of both feet, which partially concurs with symelia limbis. Note also the dysgenesis of the pubic and ischial bones and agenesis of the sacrum.

**1. symelia apus:** No feet are present and the limbs are completely fused into a single limb; one femur and one tibia are present.

**2. symelia unipus:** One foot is present (a partial fusion of both feet), 2 femurs, 2 tibiae and 2 fibulae.<sup>1</sup> Our case partially fits into this category.

**3. symelia dipus:** Two feet are present giving the appearance of fins, hence the term 'mermaid fetus' for this condition. The fusion of the limbs extends only as far as the ankles.

The embryological and pathological causes of the condition occur before the 4th week to the structures derived from the caudal mesodermal axis of the embryo, extended to various cranio-caudal levels.<sup>1,4-6</sup> Various teratogenic agents, maternal diabetes, caudal regression syndrome and nutritional deficit have been suggested as possible aetiological factors.<sup>1,2</sup> It was previously thought that caudal regression syndrome and sirenomelia were manifestations of the same syndrome, but it seems that syrenomelia is the result of vascular steal phenomenon that causes severe ischaemia of the caudal portion of the fetus.<sup>1,2</sup> Prenatal diagnosis is possible in the first trimester with the important role of colour and power Doppler to estimate vascular abnormalities including aberrant iliac vessels, abnormal small abdominal aorta, and two-vessel umbilical

cord.<sup>1-3</sup> In rare cases of surviving neonates, angiography, CT and MRI can also be used to document anatomical findings.

Although syrenomelia has been described as a rare lethal pattern of congenital anomalies, 9 mermaid cases surviving after reconstructive surgery have been reported.<sup>1</sup> The most important characteristic that seems to allow survival of the affected individuals is the presence of a functional kidney. Our patient only survived for a few hours after birth, implying possible other severe anomalies of the internal organs.

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