

# Parasitic Twins - A Case Report from the University of Maiduguri Teaching Hospital

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## Abstract

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Parasitic twins represent one of the rare forms of conjoined twins. We report the management of a male infant with a parasitic twin joined at the xpho-abdominal region. The host twin was well developed with an omphalocele as the only anomaly. The parasitic twin had multiple gastrointestinal, genitourinary, central nervous and musculoskeletal system anomalies. The junction site consisted of skin, cartilage and muscles. The umbilical vessels served the parasitic twin and adipose tissues. No major organ was shared. Surgical separation was carried out without difficulty and the xpho-abdominal defect in the host twin was primarily closed. The host twin is doing well and has demonstrated normal developmental milestones to date.

## Introduction

PARASITIC or heterotrophic conjoined twins are exceedingly rare, occurring in about one to two per million live births. Hertig<sup>1</sup> demonstrated that six days after fertilization, the cluster of cells constituting the human zygote becomes the blastocyst. The inner cell mass from which the embryo, amnion and yolk sac develop, form an aggregation of cells at one pole of the blastocyst. During this first week of gestation, the cells of the inner cell mass seem to be totipotent, being able to split to form two germinal discs. In turn, these discs can develop into two identical persons. Thus, division of the zygote within the first seven days of gestation yields monozygotic identical twins. Such twins are identical in sex, karyotype, and share an amnion and yolk sac.

Zimmermann<sup>2</sup> has described the embryology of conjoined twins. His studies suggest that conjoined twins result when the inner cell mass divides incompletely after the first seven days of fertilization, when monozygotic twinning is thought to occur (sometime between thirteen

and sixteen days after fertilization). The exact reason why complex fusion results from such late cleavage is still unknown. The range of complex fusion is broad. However, an incomplete division of the embryo seems to be associated with inhibition of complete differentiation of the various organ systems. Conjoined twins with fused organs therefore, usually have incomplete development which may manifest in conjoined heart, gastrointestinal and genitourinary tracts.<sup>3,4</sup> Wilson, Shaub and Cetrulo,<sup>5</sup> first described prenatal ultrasonographic findings in conjoined twins in 1977. Several cases have since been described. Turner,<sup>6</sup> reported the use of magnetic resonance imaging (MRI) as a complementary study but this procedure did not add much to the ultrasonography for gestational evaluation of conjoined twins.

In this communication, we report a case of parasitic twins, the first at the University of Maiduguri Teaching Hospital (UMTH) since its inception in 1982. The hospital serves as a referral hospital for the north-eastern region of Nigeria and the neighbouring countries of the republics of Chad, Niger and the Cameroon. The aim of the report is to add to literature, this rare case of parasitic twins and highlight the value of ultrasound scan in antenatal care.

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## Case Report

The male baby, seen at the age of four weeks, was delivered by a 23-year old para2<sup>+0</sup> housewife. The mother attended antenatal clinic at a health centre during

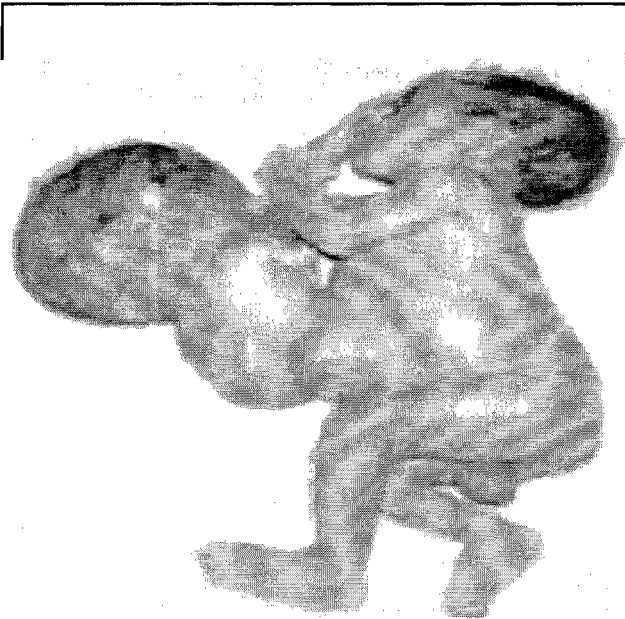


Fig 1: Parasitic twins (right lateral view)

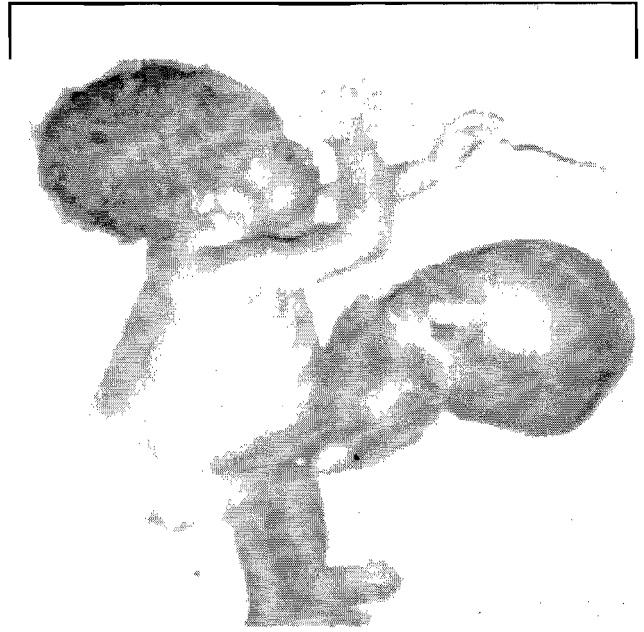


Fig 2: Parasitic twins (left lateral view)

the pregnancy. She denied a history of ingestion of any traditional medicines, but confirmed taking her antenatal medications which were essentially haematinics. She however, noticed that her abdomen was bigger than that of her previous pregnancy. Because there were no facilities for ultrasound scanning at the antenatal clinic she attended, she could not be told if she had a multiple pregnancy. The pregnancy was carried to term. She went into spontaneous labour at home and was not supervised by any medical personnel. The labour was prolonged compared to her previous labour. She gave birth to two babies who were joined together at the trunk and noticed that one was normal while the other was abnormal. When the relatives saw the babies, some of them suggested that the babies should be killed because they were evil. To avoid embarrassing comments and suggestions, the mother started hiding them from visitors. The father, a commercial motorcyclist was confused. The grandfather, who had some formal education, was informed and he advised them to take the babies to the Federal Medical Centre in Yola, Adamawa State, from where they were referred to the University of Maiduguri Teaching Hospital (UMTH).

Examination at UMTH revealed a well formed male host twin. The parasitic twin had the following anomalies- aplastic right lower limb, hypoplastic right upper limb, hydrocephalus, aplastic eyes, ears, mouth, left upper limb, and hypoplastic left lower limb. The twins shared a single umbilical stump. (Fig 1 & 2). A septic lesion was found on the scalp of the parasitic twin. Both babies were febrile. A diagnosis of parasitic twins was made. Investigations carried out included blood culture, which yielded *Staphylococcus aureus* species sensitive to cloxacillin. Ultrasound scan and echocardiography revealed a

normal heart in the host twin, with no major organ such as the heart, liver, or kidneys being shared by the twins. The babies were subsequently prepared for surgical separation, which was carried out at the age of five weeks. The plan before surgery was to sacrifice the parasitic twin because of the severe, multiple congenital anomalies which were considered incompatible with life. Therefore, the operation was carried out under general anaesthesia with only the host twin intubated, in the left lateral position, although the parasitic twin had a well developed respiratory system.

At surgery, it was found that the junction site consisted of skin, cartilage of the xyphoid process, and that of the ninth rib and part of the rectus muscles, while the umbilical vessels served the parasitic twin and adipose tissues. The ultrasound findings that no major organ such as the heart, liver, gastrointestinal or the kidneys was shared by the twins, were confirmed. The parasitic twin was thus considered to be an obligate parasite, surviving on the host twin through the umbilical vessels. The parasite became cyanosed immediately the vessels were severed, and died. The separation was successful and the abdominal defect in the host twin was repaired primarily (Figs 3, 4, 5 & 6). The host twin recovered uneventfully and was discharged home after fourteen days. He is being followed up in the paediatric outpatient clinic and continues to develop normally.

### Discussion

This was the first case of parasitic twins seen and managed at the University of Maiduguri Teaching Hospital since its inception in 1982. The case demonstrates some of the behaviours and beliefs in such situations which have fascinated people for centuries. Such twins



*Fig 3: Host twin immediately after surgery and before wound dressing.*

had been worshiped as gods and feared as monsters. They play a role in our myth and are marveled at, in circus side shows.<sup>7</sup> This case also illustrates the myth associated with such twins. Some of the relatives believed that the twins were evil, but fortunately, the grandfather did not. Another problem demonstrated by this case is the lack of facilities in some of our rural health clinics. The twin pregnancy was not detected antenatally because

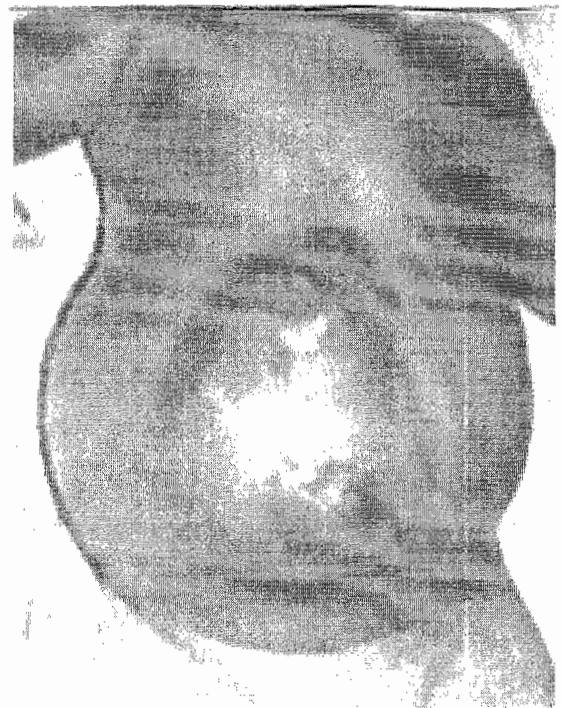


*Fig 5: Host twin Immediate post operative after wound dressing*

the mother could not be scanned for lack of appropriate facilities. Wilson *et al* have described the prenatal ultrasonographic findings of conjoined twins. If the diagnosis had been made antenatally, the mother could have been referred to a higher centre. She was just lucky to have delivered spontaneously.



*Fig 4: Parasitic twin immediate post operation*



*Fig 6: Host twin after suture removal showing incision hernia*

Cywes *et al*<sup>8</sup>, O'Neill *et al*<sup>9</sup> and James and O'Neill<sup>10</sup> suggested age 9-12 months as the best time to perform separation on elective basis because anaesthesia will be easier and blood loss and physiological derangements are better tolerated at this time than in the immediate postnatal period. Urgent or emergency separation before six months of age is usually associated with higher mortality. In our case, the parasitic twin was separated from the host twin as early as five weeks of age because the parasitic twin depended on the host twin; when the parasitic twin developed a septic lesion on the head, the host twin shared in the infection which was presumably the nidus of the septicaemia which both had. It was therefore felt that if they were left together longer than necessary, the host twin might continue to deteriorate. The relatively early separation was therefore necessitated by this perceived threat to the host twin. Timing of operation may therefore be influenced by many factors which can be sociocultural or medical.

In conclusion, we recognize the immense value of ultrasonography in the prenatal care of pregnant women. We suggest that the facility should be provided in every antenatal clinic and manned by experienced ultrasonographers.

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