

CASE REPORT OPEN ACCESS

Sutureless Abdominal Closure in Monozygotic Twin With Gastroschisis: A Case Report From Muhimbili National Hospital, Tanzania

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ABSTRACT

Twin gastroschisis pregnancies poses challenges in prenatal diagnosis especially for multiple pregnancies among radiologists, and therefore impacts postnatal care by neonatologists and pediatric surgeons. This case emphasizes the successful management of twin babies born with gastroschisis, highlighting the role of sutureless abdominal closure to the survival of twin babies.

1 | Introduction

Gastroschisis is a congenital malformation characterized by an anterior abdominal wall defect located laterally to a normal umbilicus that results in the evisceration of the contents of the abdominal wall [1]. The severity of the condition can vary depending on its association with gastrointestinal conditions like atresia, volvulus, stenosis, or perforation, which can increase mortality and morbidity [2].

Unlike an omphalocele, the ventral wall defect in gastroschisis is a tiny, normally less than 4 cm, defect that is typically found to the right of the umbilicus; however, it can also occur to the left in rare circumstances [1, 3–7].

In more than 75% of cases, it occurs as an isolated malformation [8, 9] and the average birth prevalence is estimated to be between 3 and 9 per 10,000 live births with male predominance [2, 9, 10]. Exogenous causes include younger maternal age,

medications, and illegal drug use [1]. Twin cases of gastroschisis are extremely rare, and their clinical course is not well documented [11].

The evolution of treatment modalities, particularly sutureless abdominal closure, has improved survival rates in gastroschisis patients, particularly for premature babies, along with improved prenatal diagnosis and treatment of sepsis [11–13].

2 | Case History and Examination

An 18-year-old mother with a history of passive cannabis smoking delivered twin male babies at 38 weeks GA by SVD at a referral facility level. Despite antenatal scans done at 12, 24, 30, and 36 weeks showing twin pregnancy with no abnormalities in the fetuses, both twin babies had gastroschisis, requiring initial resuscitation and NGT decompression. On the day of delivery, they were referred to our facility.

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Summary

- A novel report of twin gastroschisis born by SVD in Tanzania.
- Successful handling involving sutureless abdominal closure in resource limited country.

The first twin was a male baby, alert, not pale, not jaundiced, with a pulse rate of 131, a respiratory rate of 44, and was maintaining saturation in room air at 98%. There was protrusion of viable bowels and viscera per anterior abdominal wall defect right to the umbilical cord, with the defect approximated to be 3.5 cm.

The second twin was also a male baby, alert, not pale, not jaundiced, with a pulse rate of 125, respiratory rate of 48, and was maintaining saturation in room air at 97%. There was protrusion of viable bowels and viscera per anterior abdominal wall defect right to the umbilical cord, with the defect approximated to be 2.5 cm.

3 | Diagnosis, Investigations and Treatment

Each twin was diagnosed with gastroschisis after thorough history and examination at the national hospital level after admission in the Neonatal Intensive Care Unit (NICU). Blood workups including complete blood count (CBC), electrolytes, C-reactive protein (CRP), blood cultures, and blood groupings were done on admission and during follow-ups. For the first twin, all the laboratory results were normal with a normal leukocyte count and raised CRP on admission (244.6 mg/L) that dropped to 44.1 mg/L after 4 days. After sutureless closure, other laboratory results remained normal with a normal leukocyte count and raised CRP of 65.6 mg/L; the blood culture grew 2++

for gram positive cocci that were sensitive to ciprofloxacin and doxycycline.

For the second twin, the laboratory results were normal with a normal leukocyte count and raised CRP of 251.8 mg/L that dropped to 63.7 mg/L after 4 days. After sutureless closure, the results were still normal and blood culture showed no growth.

Both the twin babies had the same blood group, O positive, with echocardiography revealing structurally normal hearts. The clinical impression was gastroschisis for both twins.

After receiving the babies at the neonatal ward, the pediatric surgery team was consulted for review and silo bag insertion.

The procedure involved aspiration, calming babies by giving D10 per mouth using a syringe, cord ligation using vicryl suture, cutting the cord using a sterile surgical blade and cord clamp removal, and silo bag insertion, and then, vital signs were checked. The procedure of silobag insertion was difficult in second twin due to small size of the defect without a need for surgical intervention, and on follow-ups, there were no features of abdominal compartment syndrome (Figures 1 and 2).

Daily bowel reduction and sutureless abdominal closure were performed on the fifth and eighth day for the second and first twins, respectively, post silobag insertion, with the second twin requiring a plaster change 4 days post closure (Figures 3 and 4).

Babies received iv antibiotics and fluid according to age and weight, started breastfeeding, and were discharged 3 weeks post-admission. Follow-up 1 week after discharge showed dry wounds, breastfeeding, and normal stool passage (Figures 5 and 6).



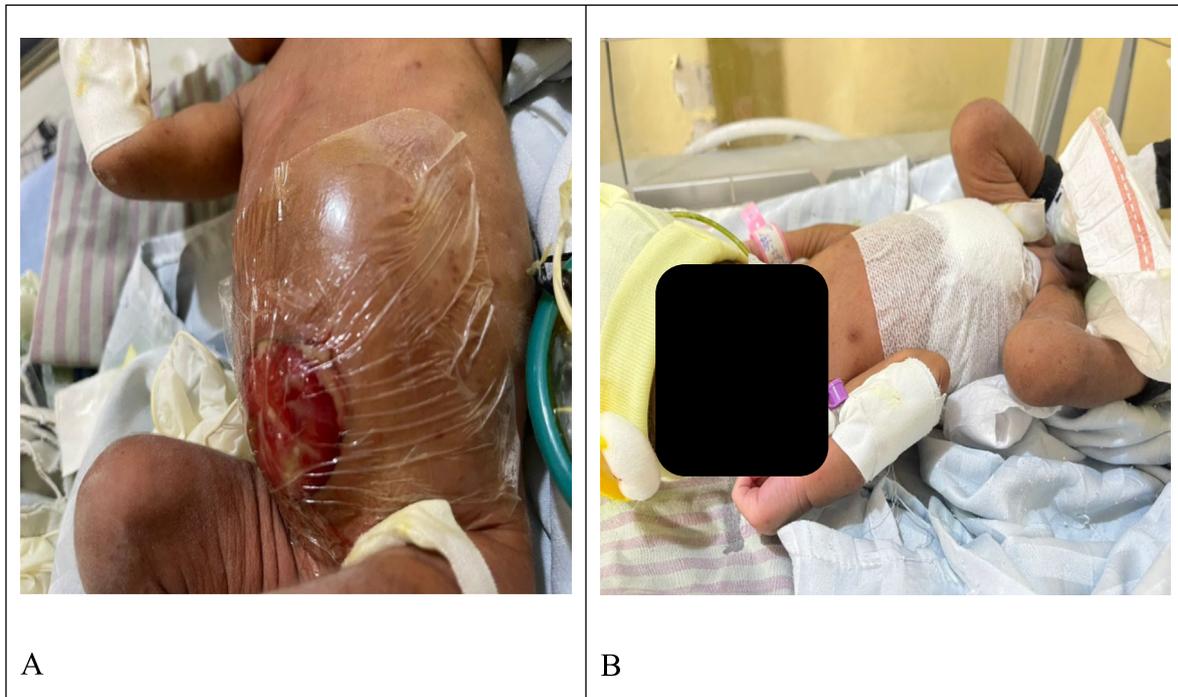
FIGURE 1 | Images showing the twin babies day 1 post silobag insertion. To the left is the first twin and to the right is the second twin.



A

B

FIGURE 2 | Images showing twin gastroschisis babies with (A) being a first twin and (B) being a second twin on fifth day post silobag insertion. For the second twin complete reduction was achieved and sutureless closure done.



A

B

FIGURE 3 | Images showing a sutureless abdominal closure in second twin with a tegaderm plaster in (A) and the compressive dressing after sutureless closure in (B).

4 | Conclusion and Results

Gastroschisis, especially in twins, presents challenges for prenatal diagnosis and postnatal care. The case report emphasizes the importance of early detection, hereditary nature, and the young age of the mother in the twin babies. The success of the babies'

survival is attributed to sutureless closure, as all treatments were performed as bedside procedures. The babies survived to discharge, and they were readmitted at the age of 2 months in the pediatric ward due to pneumonia. On long-term follow-up, both babies developed umbilical hernias scheduled to be closed at the age of 4 years.



FIGURE 4 | Images showing a complete reduction in (A) and a sutureless abdominal closure with a tegaderm plaster in (B) in first twin.



FIGURE 5 | Images showing twins post sutureless abdominal closure. To the left of each image is the first twin (A) and to the right is the second twin (B).

5 | Discussion

Gastroschisis in monozygotic twins is rare, with extrinsic risk factors like medications, drugs, alcohol, smoking, and motherhood before 20 years [1]. In our case, the monozygosity was confirmed by same sex and blood group without any genetic testing [14]; the mother's age and cannabis consumption were the only known risk factors [15].

It has been demonstrated that the prenatal USS examination is crucial for organizing the baby's delivery in a facility with the necessary equipment. Verifying multiple congenital anomalies is crucial when dealing with twin pregnancy. In our instance,

antenatal USS were done four times with the first done at 12 weeks GA, but no congenital abnormalities were found in the fetus [7]. This can be explained by less experience among operators in those facilities where antenatal scans were done and inaccurate timings of the antenatal scans [16].

Gastroschisis, previously closed with sutures, leads to high mortality due to the risk of abdominal compartment syndrome [1]. Also, suture closure of the gastroschisis increases the exposure to anesthesia and surgical site infection in neonates, leading to increased mortality. Post suture-less closure, complications like abdominal compartment syndrome and umbilical hernia require early or late intervention, respectively [2]. In our cases, the



A



B

FIGURE 6 | Images showing twins post sutureless abdominal closure. (A) and (B) are first and second twin, respectively.

only complication was umbilical hernias in both twins, which were planned to be surgically addressed at a later age.

Author Contributions

Rajabu Athumani Bakari: conceptualization, investigation, software, writing – original draft, writing – review and editing. **Alfred Chibwae:** software, writing – review and editing. **Rajab Siaba Msemu:** investigation, writing – review and editing. **William W. Kahabi:** investigation, writing – review and editing. **Caroline S. Kanuti:** software, visualization, writing – review and editing. **Salma J. Ali:** investigation, writing – review and editing. **Godfrey Sama Philipo:** supervision, writing – review and editing. **Zaitun M. Bokhary:** conceptualization, investigation, project administration, resources, supervision, writing – review and editing. **Judith Lindert:** resources, supervision, writing – review and editing. **Kokila Lakhoo:** resources, supervision, writing – review and editing.

Consent

Written informed consent was obtained from parents to publish this case report in accordance with the journal's patient consent policy.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that supports the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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