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**Case Report**

# Successful delivery of two Nigerian women with severe kyphoscoliosis: a case report

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## ABSTRACT

Severe kyphoscoliosis is rare in pregnancy and increases cardiopulmonary and obstetric risks, including malpresentation and operative delivery. With multidisciplinary care, good outcomes are possible. Two Nigerian women with severe kyphoscoliosis were managed early in pregnancy. The first, a 24-year-old with a Cobb angle of 52.8° and twin gestation, developed respiratory discomfort and delivered healthy twins by caesarean section under spinal anaesthesia at 36 weeks. The second, a 35-year-old with a 75° Cobb angle, remained stable and delivered a healthy term neonate by caesarean under general anaesthesia. Severe kyphoscoliosis is not an absolute contraindication to pregnancy; early multidisciplinary care enables safe outcomes.

**Keywords:** Pregnancy, Severe kyphoscoliosis, Case report

## INTRODUCTION

Kyphosis is an anterior spinal curvature, scoliosis a lateral one; their combination is termed kyphoscoliosis. This deformity restricts chest expansion, causing respiratory difficulty.[1,2] Pregnancy further increases lumbar curvature, making coexisting kyphoscoliosis challenging. Its prevalence in pregnancy is 0.3–15.3%.[3]

Severe cases may reduce total lung capacity to 30%, and physiological respiratory changes in pregnancy increase the risk of respiratory failure, pulmonary oedema, and pulmonary hypertension, potentially requiring ICU care or ventilation.[3] Historically, pregnancy was contraindicated, with early termination advised.[4]

We report the first Nigerian case of severe kyphoscoliosis with twin gestation carried to 36 weeks and delivered by caesarean section under spinal anaesthesia.

## CASE REPORTS

### *Case 1*

A 24-year-old gravida 3, para 1 + 1 (not alive) woman with a lifelong spinal deformity and poor family support booked for antenatal care at 12 weeks' gestation. Initial investigations revealed blood group A positive, genotype AA, packed cell volume (PCV) of 32%, and negative hepatitis B surface antigen and VDRL tests. Urinalysis was normal. An antenatal ultrasound performed at 11 weeks and 5 days confirmed a dichorionic diamniotic twin gestation. She was classified as a high-risk pregnancy and co-managed by the obstetrics, orthopaedics, and anaesthesia teams.

She received routine antenatal vaccinations with tetanus–diphtheria toxoid at 13 and 17 weeks, intermittent preventive treatment with sulphadoxine–pyrimethamine every four weeks, and routine haematinics. During pregnancy, she was treated twice for upper respiratory tract

infections and complained intermittently of epigastric pain. Her PCV ranged between 27% and 28%, while blood pressure remained within normal limits. At 34 weeks' gestation, she developed difficulty sleeping due to discomfort, which was managed with semi-recumbent positioning; oxygen saturation remained stable at 97–98%.

In late pregnancy, both foetuses were in breech presentation, with reassuring foetal wellbeing and estimated weights between 1.9 kg and 2.1 kg. She underwent an elective caesarean section at 36 weeks' gestation through a previous Pfannenstiel incision, during which moderate intra-abdominal adhesions were noted. Two live neonates were delivered from separate sacs: a female weighing 1.9 kg with Apgar scores of 8 and 9 at one and five minutes, respectively, and a male weighing 2.0 kg with Apgar scores of 7 and 8.

Intraoperatively, oxytocin and tranexamic acid were administered. Estimated blood loss was 500 ml, and she received one unit of blood transfusion. Her postoperative course was uneventful; she ambulated by postoperative day two, successfully initiated breastfeeding, and was deemed fit for discharge on day five, although hospitalization was prolonged for social reasons.

Postpartum radiographic imaging demonstrated severe S-shaped scoliosis with thoracic vertebral wedge collapses, generalized osteopenia, and a Cobb's angle of 52.8°. Mild cardiomegaly was noted, with a cardiothoracic ratio of 121/215, while lung fields were clear.

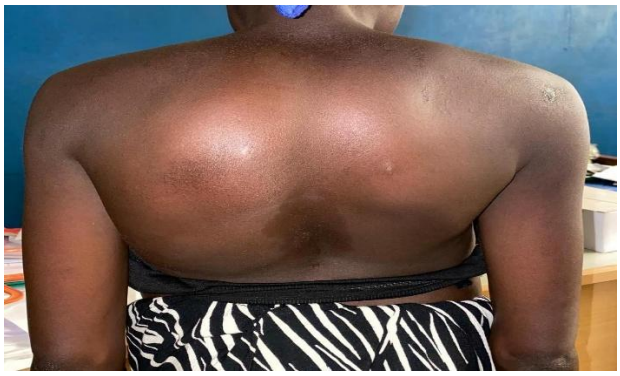

**Figure 1: Dorsal view of the patient 3 weeks after delivery.**

***Case 2***

A 35-year-old primigravida with a prominent spinal deformity booked for antenatal care at 8 weeks' gestation, presenting with spotting per vaginum. Pelvic ultrasound revealed a viable intrauterine pregnancy coexisting with a uterine fibroid located close to the cervical os. She was diagnosed with threatened miscarriage at booking.

On examination, she measured 1.52 m in height and weighed 53 kg, with obvious spinal deformity; other systemic examinations were unremarkable. Baseline investigations showed blood group A positive, genotype AA, PCV of 36%, negative hepatitis B surface antigen and VDRL tests, and normal urinalysis. She received routine antenatal care, including tetanus–diphtheria vaccination at 13 and 17 weeks, sulphadoxine–pyrimethamine prophylaxis every four weeks, and haematinics.

Her antenatal course was largely uneventful, with PCV values ranging from 32% to 35% and consistently normal blood pressure readings. An elective caesarean section was planned at 38 weeks' gestation due to her significant spinal deformity, borderline short stature, and the presence of a uterine fibroid. At surgery, spinal anaesthesia was unsuccessful, necessitating general anaesthesia. Estimated blood loss was 500 ml.

She delivered a live female neonate weighing 2.7 kg with Apgar scores of 8 and 9 at one and five minutes, respectively. Postoperatively, her PCV was 30%, and she was discharged on the third postoperative day. The postnatal period was uneventful, and follow-up care was transferred to the orthopaedic unit.

Postpartum imaging demonstrated thoracic kyphosis with dextroscoliosis and a Cobb's angle of 75° involving vertebral levels T4 to T11. There was mid-thoracic left pedicle hypoplasia, though vertebral body heights and intervertebral disc spaces were preserved. Lung fields were clear, ribs intact, and the mediastinum appeared normal. The overall impression was thoracic kyphosis with dextroscoliosis without evidence of lung parenchymal abnormality.

**Figure 2: Dorsal view of the patient on the day of the surgery.**

## DISCUSSION

The patients described in this report had severe kyphoscoliosis, with Cobb's angles of 52.8° and 75°, respectively. The Cobb angle remains the standard anatomical measurement for the clinical diagnosis and classification of scoliosis. It is defined as the angle formed between two lines drawn perpendicular to the upper endplate of the most cephalad vertebra involved and the lower endplate of the most caudal vertebra involved.[5,6] Based on this classification, scoliosis is considered mild

when the Cobb angle is between 10° and 25°, moderate between 25° and 40°, and severe when the angle exceeds 40°.

Spinal deformities during pregnancy are expected to impact respiratory function, particularly when compounded by the physiological respiratory changes of pregnancy. Consequently, respiratory compromise represents the most feared complication in pregnant women with severe kyphoscoliosis. Such complications may include recurrent chest infections, restrictive lung disease, ventilation–perfusion mismatch, and respiratory failure.[4] The reported incidence of severe kyphoscoliosis in pregnant women is approximately 0.072%.[7]

Despite the severity of spinal deformity in both patients, no respiratory complications were observed during pregnancy or the peripartum period. This finding is consistent with more recent studies reporting no significant respiratory compromise in pregnant women with severe kyphoscoliosis.[7] Multidisciplinary management is generally recommended for such patients and was adopted in the present cases, involving obstetricians, anaesthetists, and orthopaedic surgeons. Ideally, a pulmonologist should also be involved to facilitate lung function testing and arterial blood gas analysis.[4-6,8,9] However, due to the absence of a pulmonologist at the managing facility and financial constraints limiting referral to a higher level of care, management was conducted with available resources. A contingency plan for urgent transfer was nevertheless established should clinical deterioration occur.

Thoracolumbar spinal deformities may lead to abnormal sacral rotation, flaring of the ischial fossae, and inward rotation of the ischial bones, resulting in a reduced transverse diameter of the pelvic inlet, resembling an anthropoid pelvis. These anatomical changes may predispose to fetal malpresentation and malposition, thereby increasing the risk of operative vaginal delivery or caesarean section.[9] In some cases, a classical uterine incision may be required due to difficulty accessing the lower uterine segment.[9]

In the first case, the patient had a twin gestation with both fetuses in breech presentation and underwent caesarean section at 36 weeks' gestation under spinal anaesthesia. Her previous caesarean section had been performed under general anaesthesia due to an abnormal pelvis, although details were unavailable. Spinal anaesthesia was successful in the first patient but failed in the second patient, likely due to more severe spinal deformity. Both patients were positioned in the lateral recumbent position, as the supine position was not feasible because of the severity of the spinal curvature and overlying soft tissue. This positioning approach has been similarly reported in a case from Nepal.[7]

The decision to perform a transverse lower uterine segment incision in the first patient was influenced by the anticipated low fetal weights associated with twin gestation, supported by ultrasonographic estimates below 2.5 kg for both fetuses. Adhesions presumed to be from the previous surgery were encountered but were carefully separated without injury to adjacent structures. Although some studies advocate for classical uterine incision to improve surgical access in such cases, this option was avoided due to concerns about future uterine rupture, particularly in a setting where surgical intervention is often resisted and where the patient lacked adequate family support.[7] For similar reasons, the second patient also underwent a Pfannenstiel skin incision with a transverse lower uterine segment incision.

Both patients were at increased risk of postpartum haemorrhage—one due to twin gestation and background anaemia, and the other due to coexisting uterine fibroids. Consequently, uterotonics were administered immediately following delivery to mitigate this risk.

There is on-going debate regarding whether women with severe kyphoscoliosis should be advised against pregnancy due to concerns about progression of spinal curvature and associated maternal and fetal complications. However, recent studies suggest that with appropriate multidisciplinary care, such women can experience near-normal, uneventful pregnancies and deliveries.[5,6,8,9] In line with this evidence, both patients were counselled on family planning and advised to seek care at least at a secondary-level health facility for future pregnancies.

## CONCLUSION

Both cases demonstrate that severe kyphoscoliosis is not an absolute contraindication to pregnancy. With early multidisciplinary care, careful monitoring, and planned operative delivery, favourable maternal and neonatal outcomes are achievable despite spinal deformity and associated obstetric risks.

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## REFERENCES

1. McCool FD. Diseases of the diaphragm, chest wall, pleura, and mediastinum. In: Goldman L, Schafer AI, editors. Goldman's Cecil Medicine. 24th ed. Philadelphia: W.B. Saunders; 2012.
2. Weinberger SE, Cockrill BA, Mandel J. Disorders of the respiratory pump. In: Weinberger SE, Cockrill BA, Mandel J, editors. Principles of Pulmonary Medicine. 6th ed. Philadelphia: W.B. Saunders; 2014.

3. Shashikiran, Bala R. Management of kyphoscoliotic pregnant patient presenting with impending respiratory failure: a case report. J Obstet Anaesth Crit Care. 2021;11(2):112-4.
4. Kim T, Lee H, Chung S, Hwang S, Kim J. Woman giving birth with kyphoscoliosis spinal cord injury and placenta previa: a case report. J Med Cases. 2012;3:5.
5. Yim R, Kirschner K, Murphy E, Parson J, Winslow C. Successful pregnancy in a patient with spinal muscular atrophy and severe kyphoscoliosis. Am J Phys Med Rehabil. 2003;82(3):222-5.
6. Horng MH, Kuok CP, Fu MJ, Lin CJ, Sun YN. Cobb angle measurement of spine from X-ray images using convolutional neural network. Comput Math Methods Med. 2019;2019:6357171.
7. Chhetry M, Banerjee B, Subedi S, Gharti Chhetri NB, Gupta Y. Challenges in the caesarean section of a severely kyphotic parturient. Case Rep Obstet Gynecol. 2016;2016:8405052.
8. Deshmukh S, Mahanta D, Roshni Y, Jena S. Anesthetic challenges in a pregnancy case with congenital kyphoscoliosis. Cureus. 2024;16(5):e61269.
9. Thompson SK, Williams KP. Kyphoscoliosis and pregnancy: a case report and review of the literature. J Obstet Gynaecol Can. 2000;22(5):363-5.

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