

An Unusual Case of Bandl's Ring in a Dichorionic Diamniotic Twin Gestation

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INTRODUCTION

Bandl's ring is a rare but potentially life-threatening complication for both mother and fetus. It is a pathological constriction between the thickened upper uterine segment and the thinner lower segment, which can lead to labor dystocia with entrapment of the fetal head and/or shoulders. Associated risks include cerebral palsy, long-term neurodevelopmental deficits, and uterine rupture.¹

The etiology remains unclear, though prolonged labor and multifetal gestation have been proposed as risk factors.¹ However, no published cases have described Bandl's ring in twin pregnancies. The reported incidence is approximately 0.02% (1 in 5,000 live births), likely an underestimate due to diagnostic challenges.¹ Earlier reports cite rates as high as 1.67%.²

Historically, fetal mortality exceeded 50% in the early twentieth century. The condition was first described in cadaveric studies in 1872 and later characterized in a living patient by Ludwig Bandl in 1875.¹ Descriptions may date as early as 1743.² Advances in obstetric care, particularly increased cesarean delivery, have likely reduced mortality.³ Despite its clinical significance, data remain limited, especially in twin gestations and cases involving mixed modes of delivery.

We present a case of a 31-year-old G1P0 at 28.0 weeks' gestation with dichorionic-diamniotic twins and preterm premature rupture of membranes. Twin A was delivered vaginally, while Twin B required low transverse cesarean delivery for malpresentation, during which Bandl's ring was identified intraoperatively.

CASE REPORT

The patient was a 31-year-old G1P0 with a body mass index of 32 who was admitted at 28.0 weeks' gestation for expectant management of preterm premature rupture of membranes. On admission, she received latency antibiotics, neuroprotective magnesium sulfate, and a rescue course of antenatal corticosteroids. She reported vaginal bleeding, and the cervix was visually dilated to 2-3 cm. The pregnancy was further complicated by diet-controlled gestational diabetes and a shortened cervix (4 mm at 27 weeks), for which she had previously received an-

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tenatal corticosteroids and was using vaginal progesterone. Magnesium sulfate was discontinued after 12 hours.

On hospital day 4 (28.3 weeks' gestation), the patient developed increased cramping. Speculum examination revealed complete cervical dilation with Twin A's head in the vagina. Magnesium sulfate was restarted, and she was transferred to the operating room. Following epidural placement, she delivered Twin A after one push via spontaneous vaginal delivery. The infant was a viable male in cephalic presentation with a single nuchal cord and clear amniotic fluid. Apgar scores were 8 at 1 and 5 minutes, and birth weight was 1233 g.

Twin B was in transverse presentation with reassuring fetal heart tones. External cephalic version was unsuccessful, and a primary low transverse cesarean section was performed. Upon entering the peritoneum, a circumferential indentation between the upper and lower uterine segments was noted, consistent with a Bandl's ring. Sevoflurane was administered for uterine relaxation. A low transverse uterine incision was made; however, delivery *en caul* was unsuccessful. An inverted T incision was then created by extending vertically through the Bandl's ring, allowing delivery of a viable male infant in complete breech presentation 54 minutes after Twin A. Apgar scores were 7 and 8 at 1 and 5 minutes, respectively, with clear amniotic fluid. Birth weight was 1213 g. Estimated blood loss was 600 mL. Both infants were admitted to the neonatal intensive care unit.

Postoperatively, the patient's hemoglobin decreased from 12.9 to 9.8 g/dL, and oral iron therapy was initiated. She was discharged on postoperative day 4. Twin A was discharged from the neonatal intensive care unit at 36.5 weeks' corrected gestational age, and Twin B at 35.5 weeks.

DISCUSSION

This case highlights the importance of early recognition and prompt management of Bandl's ring. The patient's multifetal gestation is a proposed risk factor; however, this case is notable in that Twin A was delivered vaginally, while Twin B required cesarean delivery for malpresentation and was subsequently found to be complicated by Bandl's ring.

Current management includes administration of uterine relaxants, such as terbutaline or nitroglycerin, and surgical incision through the ring.¹ In this case, sevoflurane was successfully used to achieve uterine relaxation.

Given that this patient is a G1P1 who may desire future pregnancies, an important clinical question is whether a history of Bandl's ring increases the risk of recurrence. The literature is limited, with only two case reports (Shirazi et al.⁴ and Turrentine et al.⁵) describing recurrent Bandl's ring. There is currently insufficient evidence to guide recommendations for surveillance in subsequent pregnancies, representing a significant gap in knowledge.

Ultrasound may offer a potential tool for earlier recognition. Buhimschi et al.⁶ described Bandl's ring as a palpable uterine indentation with ultrasound findings of a thickened upper uterine segment, thinning of the lower segment, and a constricting ring compressing the fetus, unchanged with contractions. Gupta et al.¹ further suggest that ultrasound identification of uterine contracture may facilitate earlier and more accurate diagnosis.

Importantly, Bandl's ring may develop prior to labor and has been associated with fetal head compression and adverse neurologic outcomes. Lauria et al.³ reported two cases diagnosed at cesarean delivery for non-reassuring fetal heart tones, in which both infants were subsequently diagnosed with cerebral palsy. In these cases, imaging suggested that the injury occurred at least 21-24 hours prior to delivery.³

Given the potential for severe maternal and fetal morbidity, further research is needed to better define risk factors, recurrence risk, and optimal strategies for early detection. Improved understanding may enhance clinical suspicion, guide management, and inform counseling for future pregnancies.

CONCLUSIONS

Bandl's ring is a rare but potentially catastrophic obstetric complication. We report a novel presentation in a dichorionic-diamniotic twin pregnancy with mixed delivery, in which the first twin was delivered vaginally and the second required cesarean delivery complicated by intraoperative identification of a constriction ring. To our knowledge, this is the first reported case of Bandl's ring identified during delivery of the second twin following successful vaginal delivery of the first.

This case highlights that Bandl's ring may develop despite apparently normal labor progression and should remain a critical consideration in multifetal gestations, particularly

in the setting of labor dystocia. Rapid intraoperative recognition and decisive management, including uterine relaxation and vertical incision, were essential to optimizing maternal and neonatal outcomes.

Given the potential for severe morbidity, heightened clinical awareness and suspicion are imperative. Further investigation is needed to define risk factors, improve early detection, and clarify recurrence risk to better inform management and counseling in future pregnancies.

ARTICLE INFORMATION

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