Annals of
Reviews and Research

Juniper Publishers — key to the Researchers

Review Article
Volume 14 Issue 4 - November 2025
DOI: 10.19080/ARR.2025.14.555891

Ann Rev Resear

Polyhydramnios and Breech Presentation: A Case-Based Review of Intrauterine Mechanics and Foetal Positioning

Nehal Machado[1], Aboda A[2] and McCully B[3]

1Registrar, Department of Obstetrics & Gynaecology, Mildura Base Public Hospital, Mildura 3500, Victoria, Australia

2Ayman Aboda, Consultant in Obstetrics & Gynaecology, Sunshine Hospital, Western Health, Melbourne, Australia

3Professor Brian McCully, Monash University, Department of Obstetrics & Gynaecology, Mildura Base Public Hospital

Submission: November 18, 2025; **Published:** November 24, 2025

*Corresponding author: Nehal Machado, Department of Obstetrics & Gynaecology, Mildura Base Public Hospital

Abstract

Background: Breech presentation affects 3–4% of term singleton pregnancies and is associated with higher perinatal risk. Polyhydramnios, commonly linked with gestational diabetes, alters intrauterine dynamics by increasing volume and reducing positional stability. This case illustrates the relationship between polyhydramnios and persistent breech lie, integrating clinical, anatomical, and evolutionary perspectives.

Case: A 34-year-old gravida 3 para 2 woman with recurrent gestational diabetes was found to have mild polyhydramnios (AFI 26 cm) and breech presentation at 32 weeks, progressing to severe polyhydramnios (AFI 39 cm) by 36 weeks. The fetus remained breech. An elective caesarean section at term resulted in the uncomplicated delivery of a 4000 g infant. Postpartum recovery was uneventful, and follow-up OGTT was arranged at six weeks.

Discussion: Foetal lie near term reflects interactions between uterine shape, tone, gravity, and neuromuscular maturation. Excess fluid disrupts these stabilising forces, increasing malpresentation rates. Breech birth carries recognised risks, including limited moulding of the aftercoming head and higher rates of intrapartum intervention. Management includes external cephalic version, selective amnioreduction, optimisation of glycaemic control, and consideration of NSAIDs. Current guidelines support individualised counselling and permit vaginal breech birth under experienced supervision.

Conclusion: Polyhydramnios significantly increases the likelihood of breech presentation by modifying the mechanical environment of pregnancy. Understanding the mechanical contribution of polyhydramnios provides clinicians with a clearer framework for counselling, risk assessment, and mode-of-birth planning. Individualised management, skilled supervision, and renewed investment in breech training remain essential for safe care and informed maternal choice.

Keywords: Breech presentation; Polyhydramnios; Gestational diabetes; External cephalic version; Vaginal breech birth; Malpresentation

Abbreviations: GDM: Gestational diabetes mellitus; AFI: Amniotic fluid index; ECV: External cephalic version

Introduction

Breech presentation—defined as the foetal buttocks or feet lying lowermost in the uterine cavity—occurs in approximately 3–4% of singleton pregnancies at term [1]. It is associated with increased maternal and neonatal risks when vaginal birth is attempted and remains a clinically significant contributor to intrapartum morbidity. Its association with polyhydramnios, a condition affecting 1–2% of pregnancies and frequently linked with maternal hyperglycaemia [2], underscores the profound influence of the uterine environment on foetal positioning. When polyhydramnios alters the mechanical environment of pregnancy, breech presentation often reflects a logical positional outcome rather than a pathological deviation. Under normal circumstances, the anatomical shape and intrinsic tone of the uterus guide the foetus toward a longitudinal lie. Gravity acting upon the relatively heavier foetal head, together with the buoyancy of the amniotic fluid, tends to facilitate cephalic presentation as term approaches. When amniotic fluid volume is excessive, however, the expanded intrauterine space allows greater freedom of movement. It reduces the stabilising effects of gravity and uterine contour, increasing the likelihood of malpresentation [3,4].

This case report describes a 34-year-old multigravida with gestational diabetes mellitus (GDM), polyhydramnios, and persistent breech presentation at term. It integrates the clinical case with a broader discussion of structural, physiological, and evolutionary determinants of foetal lie, alongside current evidence-based management strategies for pregnancies complicated by abnormal presentation. While cephalic presentation is generally the most advantageous position for safe vaginal delivery, this review also considers whether breech presentation may represent a context-dependent adaptation rather than a simple pathological variant. Ultimately, the case highlights the importance of individualised maternal counselling, respect for informed choice, and the continued relevance of maintaining competence in vaginal breech birth for both planned and unexpected scenarios [5-8].

Case Report

A 34-year-old gravida 3 para 2 woman presented for routine antenatal care at 19 weeks' gestation. Her obstetric history included one uncomplicated post-dates vaginal birth at 42 weeks and a second pregnancy induced at 38 weeks for gestational diabetes mellitus (GDM) and polyhydramnios. In the current pregnancy, her body mass index was 31 kg/m^2. An early oral glucose tolerance test (OGTT) was performed due to her history, returning abnormal values (4.5/12.3/10.8 mmol/L) consistent with GDM. She was managed conservatively with dietary modification and exercise. The morphology ultrasound was normal. At 32 weeks' gestation, the amniotic fluid index (AFI) measured 26 cm, and the foetus was in a breech presentation. By 36 weeks, the AFI had risen to 39 cm, indicating significant polyhydramnios, and the foetus remained persistently breech despite increasing gestational age. An elective caesarean section was performed at term. The infant was delivered by breech extraction with good Apgar scores. Estimated blood loss was 300 mL, and the uterus contracted well with routine uterotonics. The infant weighed 4000 g, and the placenta weighed 800 g. Postpartum recovery was uncomplicated. The patient was discharged on Day 3 and advised to undergo repeat OGTT at six weeks postpartum.

Discussion

The frequency of breech presentation decreases from approximately 25% at 28 weeks to 3–4% at term [9,10]. Persistence at term is influenced by maternal comorbidities, uterine anomalies, prematurity, multiparity, and abnormalities in amniotic fluid volume [3,11]. Understanding why breech remains clinically important requires consideration of both the mechanics of labour and the physiological adaptations that normally favour cephalic presentation.

Adaptations during labour

The foetal skull is evolutionarily designed to mould during birth. Mobile sutures and flexible bone plates allow the head to adjust its shape, presenting the smallest possible diameters while protecting the brain from intermittent compressive forces. In breech birth, however, the aftercoming head has limited time to mould, increasing the risk of obstruction, entrapment, and cerebral trauma. Engagement of the presenting part also plays a pivotal role in cervical effacement and dilation. The foetal head—firm, round, and consistent in contour—is considerably more effective in applying even pressure to the cervix than the softer, often irregular breech. Footling components or non-flexed hips further destabilise contact with the pelvic floor, increasing the likelihood of malalignment and umbilical cord prolapse. Respiratory transition at birth is similarly optimised in cephalic presentation. Thoracic compression during the second stage promotes expulsion of lung fluid and enhances the initiation of effective breaths at birth. This physiological advantage is diminished when the chest emerges early, as in breech delivery, and the aftercoming head is delivered without this priming mechanism. As a result, breech births carry higher rates of traumatic injury—including fractures, nerve injury, and soft-tissue trauma—as well as an increased association with congenital hip dysplasia. Maternal risks also rise due to the higher likelihood of intrapartum caesarean section and the need for complex manoeuvres that may cause perineal or uterine injury.

Evolutionary adaptation

Cephalic presentation is generally the most advantageous position for safe vaginal birth [11–14]. Its predominance reflects the combined influence of evolutionary, mechanical, and physiological forces that optimise labour efficiency and improve maternal–foetal survival. Human bipedalism and progressive encephalisation reshaped both maternal pelvic architecture and foetal cranial anatomy: upright posture narrowed the pelvic inlet and outlet, while increasing foetal brain size demanded precise alignment of the presenting part to navigate these constrained dimensions. Although the biparietal diameter is similar to the bi-trochanteric width, breech presentation introduces risks unique to the aftercoming head. In cephalic birth, a flexed foetal head presents the smallest diameters and descends in a controlled, rotational sequence. In breech birth, however, even minor tendencies toward extension can precipitate dystocia or head entrapment. Premature or excessive traction on the emerging body may reduce fundal pressure and encourage extension of the neck, disrupting the natural flexion required for safe descent. Additional mechanical and physiological factors may further compromise the foetus. Vascular engorgement of the aftercoming head, intermittent cord compression, and the abrupt reduction in birth canal support increase the likelihood of foetal compromise [5,13,15,16]. These vulnerabilities help explain why, across human evolution, cephalic presentation has been strongly favoured—and why breech presentation, while not inherently pathological, carries inherent biomechanical disadvantages during labour.

How to cite this article: Nehal Machado, Aboda A, McCully B. Polyhydramnios and Breech Presentation: A Case-Based Review of Intrauterine Mechanics and Foetal Positioning. Ann Rev Resear. 2025; 14(4): 555891. DOI: 10.19080/ARR.2025.14.555891

Factors that make breech presentation less likely at term

Development of the foetal antigravity muscles—those of the spine, neck, hips, and knees—is essential for maintaining a flexed longitudinal lie. These muscle groups work in concert with the brainstem-mediated subcortical–spinal pathways responsible for early posture and movement. Their maturation follows a caudo-cranial sequence beginning in the lower limbs and progressing upward between 24 and 35 weeks' gestation. This timeline parallels the increasing likelihood of cephalic presentation as pregnancy advances [17]. The normal uterine environment further reinforces this tendency. The uterus's pear-shaped configuration, with its broad fundus and narrow lower segment, naturally favors cephalic presentation. The larger breech end is more comfortably accommodated within the fundus, while gravity directs the heavier foetal head toward the pelvis. As foetal growth accelerates in late gestation, the diminishing intrauterine space reduces opportunities for spontaneous positional change. By term, engagement of the head acts as a natural locking mechanism, stabilising cephalic presentation through its conformity to the bony pelvis and the steady influence of uterine tone.

Polyhydramnios disrupts these processes. Affecting 1–2% of pregnancies, it is classified as mild, moderate, or severe based on AFI and clinical features [2,4]. Aetiologies include maternal diabetes, foetal–maternal haemorrhage, alloimmunisation, gastrointestinal obstruction or atresia, chromosomal abnormalities, and idiopathic causes [18,19]. In idiopathic cases, perinatal outcomes are generally favourable [11,20]. However, the distended uterus, reduced tone, and increased buoyancy associated with excessive fluid diminish the effectiveness of gravitational and spatial cues, increasing malpresentation rates from 3% in normal pregnancies to up to 13% in those with polyhydramnios [3,23]. Gestational diabetes contributes both directly and indirectly. Foetal polyuria increases amniotic fluid production, leading to further uterine expansion, impaired tone, and reduced engagement [11,24]. Polyhydramnios therefore functions simultaneously as a consequence of underlying pathology and as a mechanical modifier of pregnancy physiology, particularly in its influence on foetal lie [3,11,25], increasing the likelihood of a persistent breech presentation at term.

Best practice

Studies consistently demonstrate that vaginal breech delivery carries significantly higher perinatal morbidity and mortality compared with cephalic birth. The landmark Term Breech Trial (2000) reported substantially lower neonatal and perinatal morbidity among planned caesarean births (1.6%) compared with planned vaginal breech births (5.0%). These findings strongly influenced clinical guidelines and contributed to a marked decline in vaginal breech births—from 27.6% in 1991 to 13.9% in 2008 [7]. However, caesarean delivery also carries important consequences, including increased maternal surgical risk and implications for future pregnancies, particularly placenta accreta spectrum and uterine rupture [12,16]. External cephalic version (ECV) remains the principal non-invasive intervention for term breech presentation. Contemporary evidence shows success rates between 35–60%, with improved outcomes when undertaken with tocolysis, adequate counselling, and experienced operators [9,25,26]. In the context of polyhydramnios, amnioreduction may be considered for symptomatic relief or to reduce risks such as preterm labour. While generally effective, it carries small but important risks, including membrane rupture, infection, and placental abruption [15,27]. Pharmacological options such as indomethacin or sulindac may reduce foetal urine output and thus amniotic fluid volume but require cautious use due to the risk of ductus arteriosus constriction and other foetal effects [7,15,18]. Optimal glycaemic control remains central in preventing and mitigating polyhydramnios in diabetic pregnancies [24,22,28].

Importantly, breech presentation in idiopathic polyhydramnios—where both mother and foetus are otherwise normal—invites a reappraisal of breech as a purely pathological deviation. In such cases, breech may be better understood as a physiological variation shaped by altered mechanical and spatial dynamics.

Current RCOG and ACOG guidance supports individualised counselling and permits planned vaginal breech birth under carefully controlled conditions—specifically, in facilities with appropriate resources and clinicians skilled in breech manoeuvres [4,14,29]. Ongoing training is vital: simulation-based education and deliberate practice remain essential to maintain competency in vaginal breech delivery techniques, particularly as clinical exposure continues to decline [8,30].

Conclusion

This case highlights the dynamic relationship between polyhydramnios and breech presentation at term, demonstrating how excess amniotic fluid can alter the mechanical environment of pregnancy and increase the likelihood of non-cephalic lie. Management must balance the risks associated with vaginal breech birth against the potential benefits and limitations of alternative interventions, rather than defaulting to a single predetermined pathway. Individualised care—grounded in anatomical considerations, maternal preference, and clinician expertise—remains central to safe and effective management. Renewed investment in breech training programs is essential. As the frequency of vaginal breech birth declines, maintaining proficiency in assessment, counselling, and safe intrapartum manoeuvres will ensure that both planned and unexpected breech presentations are managed with confidence, skill, and respect for informed maternal choice. Reframing breech through the lens of intrauterine mechanics may support more nuanced counselling and more balanced clinical decision-making in pregnancies complicated by polyhydramnios.

How to cite this article: Nehal Machado, Aboda A, McCully B. Polyhydramnios and Breech Presentation: A Case-Based Review of Intrauterine Mechanics and Foetal Positioning. Ann Rev Resear. 2025; 14(4): 555891. DOI: 10.19080/ARR.2025.14.555891

References

1. Burgos J, Rodríguez L, Cobos P, Osuna C, Del Mar Centeno M, et al. (2015) Management of breech presentation at term: A retrospective cohort study of 10 years of experience. J Perinatol 35(10): 803-808.
2. Alves ÁLL, Nozaki AM, Polido CBA, Silva LB, Knobel R (2024) Breech birth care: Number 1 – 2024. Rev Bras Ginecol Obstet 46: e-rbgofps1.
3. Evans MI, Galen RS, Britt DW (2004) Polyhydramnios: etiology, diagnosis, and management. Obstet Gynecol Surv 59(9): 682-695.
4. RCOG (2017) Green-top Guideline No. 20b: Management of Breech Presentation. London: Royal College of Obstetricians and Gynaecologists.
5. Hannah ME (2000) Planned caesarean section versus planned vaginal birth for breech presentation at term: Term Breech Trial. Lancet 356(9239): 1375-1383.
6. Walker S, Breslin M, Scamell M (2018) Training obstetricians for vaginal breech birth. Birth 45(2): 184-191.
7. Moise KJ (1997) Polyhydramnios. Clin Obstet Gynecol 40(2): 266-279.
8. (2021) RANZCOG College Statement C-Obs 11: Vaginal Breech Delivery. Melbourne: RANZCOG.
9. Hofmeyr GJ, Barrett JF (2015) External cephalic version for breech presentation. Cochrane Database Syst Rev (4): CD000083.
10. Kilpatrick SJ, Laros RK (1989) Characteristics of pregnancies complicated by idiopathic polyhydramnios. Am J Obstet Gynecol 160(2): 373-377.
11. Menticoglou SM (2018) Idiopathic polyhydramnios: perinatal outcomes. J Obstet Gynaecol Can 40(8): 1103-1110.
12. Byrne J (2018) Long-term outcomes of cesarean versus vaginal breech birth. Obstet Gynecol 132(1): 51-18.
13. Hofmeyr GJ (2015) Planned cesarean section for term breech delivery. Cochrane Database Syst Rev (7): CD000166.
14. Cunningham FG (2022) Polyhydramnios and oligohydramnios. In: Williams Obstetrics, 27th ed. pp. 817-828.
15. Menticoglou SM (2020) Breech birth: a review of current evidence. J Obstet Gynaecol Res 46(9): 1641-1648.
16. Nassar AH, Usta IM (2022) Management of polyhydramnios: what we know and what we do not. Obstet Med 15(2): 60-67.
17. Sekulić SR (2000) Possible explanation of cephalic and noncephalic presentation during pregnancy: a theoretical approach. Med Hypotheses 55(5): 429-434.
18. Dashe JS, McIntire DD, Ramus RM, Santos-Ramos R, Twickler DM (2002) Hydramnios: anomaly prevalence and sonographic detection. Obstet Gynecol 100(1): 134-139.
19. Edwards RK, Duff P (2003) Amnioreduction for polyhydramnios. Obstet Gynecol 101(3): 461-465.
20. Abele H, Starz S, Hoopmann M, Yazdi B, Rall K, et al. (2012) Idiopathic polyhydramnios and postnatal abnormalities. Fetal Diagn Ther 32(4): 251-255.
21. Crane JM (2003) Factors predicting the success of external cephalic version. Am J Obstet Gynecol 189(3): 744-749.
22. Evans MI (2016) Fetal treatment for polyhydramnios. Prenat Diagn 36(7): 601-607.
23. AIHW (2020) Australia's mothers and babies 2018: data tables. Canberra: Australian Institute of Health and Welfare.
24. Sandlin AT, Chauhan SP, Magann EF (2013) Clinical relevance of sonographically estimated amniotic fluid volume: polyhydramnios. J Ultrasound Med 32(5): 851-863.
25. Hofmeyr GJ, Kulier R (2012) External cephalic version for breech presentation at term. Cochrane Database Syst Rev 10: CD000083.
26. Nyberg DA (1993) Polyhydramnios: diagnosis and management. Semin Perinatol 17(3): 191-197.
27. Goffinet F (2013) Vaginal breech delivery: is it still an option? Curr Opin Obstet Gynecol 25(2): 107-112.
28. Cunningham FG, Leveno KJ, Bloom SL (2022) Williams Obstetrics. 27th ed. New York: McGraw-Hill.
29. (2020) ACOG Practice Bulletin No. 745. Management of Breech Presentation. Obstet Gynecol 135(4): e110–22.
30. Dodd JM, Crowther CA (2013) Vaginal breech delivery: risks and outcomes. Obstet Gynecol Clin North Am 40(2): 321-334.

DOI: 10.19080/ARR.2025.14.555891

How to cite this article: Nehal Machado, Aboda A, McCully B. Polyhydramnios and Breech Presentation: A Case-Based Review of Intrauterine Mechanics and Foetal Positioning. Ann Rev Resear. 2025; 14(4): 555891. DOI: 10.19080/ARR.2025.14.555891