

INTEGRATING BASIC SCIENCE AND CLINICAL SKILLS IN MIDWIFERY CARE OF THIRD TRIMESTER PREGNANT WOMEN WITH BREECH MALPRESENTATION

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ABSTRACT

Breech malpresentation in the third trimester of pregnancy represents a significant obstetric complication that contributes to elevated perinatal morbidity and mortality. This study aims to evaluate the implementation of evidence-based comprehensive midwifery care by integrating basic biomedical sciences (Basic Midwifery Science II and III) and Fundamental Midwifery Clinical Skills (KDPK). The method employed is a clinical case study of Mrs. A, a 26-year-old primigravida (G1P0A0) at 34 weeks of gestation, managed at the Healthcare Facility (Faskes) of PT Panca Surya Agrindo. Clinical data collection involved anamnesis, abdominal palpation via Leopold maneuvers, and fetal hemodynamic monitoring using a Doppler transducer. Physical examination confirmed a breech presentation with a fundal height of 30 cm and a normal fetal heart rate of 140 beats per minute. A non-invasive, conservative positional intervention was applied, instructing the patient to perform the knee-chest position. This posture elevates the maternal pelvis above the thoracic cavity, leveraging gravitational forces to create mechanical space within the uterine cavity, thereby encouraging spontaneous cephalic version toward the pelvic inlet. Post-intervention clinical evaluation demonstrated excellent patient comprehension and adherence, with the patient correctly executing the posture independently and safely. The structured integration of fundamental biomedical principles and procedural clinical skills centered on patient safety effectively optimizes antenatal care outcomes and early malpresentation management in primary healthcare settings.

Keywords: *Breech presentation, knee-chest position, midwifery care, basic midwifery science*

INTRODUCTION

Pregnancy is a continuous physiological process; however, it retains an inherent potential to develop pathological conditions that demand prompt detection and precise clinical management. One of the most frequently encountered obstetric complications during the late third trimester of pregnancy is fetal malpresentation, specifically breech presentation.

Epidemiologically, the incidence of breech presentation ranges between 3% and 4% among singleton pregnancies that reach full term gestational age. Fetal malpresentation remains a profound challenge in reproductive medicine and obstetrics because it is directly correlated with an inflation of perinatal morbidity and mortality rates for both the maternal and fetal components. (Hidayah, 2025)

Compared to normal cephalic presentations, neonatal mortality during vaginal breech delivery is exponentially higher, ranging from 10% to 20% in suboptimal clinical conditions. Severe maternal and neonatal complications include birth asphyxia, mechanical birth trauma, tissue hypoxia, and intracranial hemorrhage secondary to complex or forced extractions. To mitigate these risks, repositioning the fetus from a breech to a cephalic presentation can be achieved conservatively during the third trimester through maternal postural interventions, most notably the knee-chest position. This method involves the patient adopting a prone position with the knees and chest resting flat against a firm surface, performed systematically 2–3 times daily for 10–15 minutes. This dynamic movement utilizes gravitational forces to alter the fetal presentation mechanically. (dede Waslia, 2021)

Midwives, as primary care clinicians, play a crucial role in the early detection of fetal malpresentations through meticulous abdominal palpation using Leopold maneuvers and fetal heart rate (FHR) auscultation via Doppler technology. In accordance with the Decree of the Minister of Health of the Republic of Indonesia No. HK.01.07/MENKES/1261/2022 concerning Midwife Competency Standards, healthcare practitioners must possess rigorous clinical reasoning to synthesize fundamental biomedical sciences with procedural competencies to ensure patient safety within primary healthcare ecosystems. (Lubis, 2023)

RESEARCH METHOD

This scientific paper was constructed utilizing a descriptive and analytical clinical case study design focusing on comprehensive midwifery care management. The clinical setting was the Healthcare Facility (Faskes) of PT Panca Surya Agrindo, Kebun Tambusai. Clinical assessment and structured interventions commenced on April 2, 2026. The subject of this investigation was Mrs. A, a 26-year-old primigravida (G1P0A0) at 34 weeks of gestation.

The diagnostic instruments utilized for objective data acquisition included an examination bed, a linear sphygmomanometer, a stethoscope, a digital thermometer, a fundal height measuring tape, and an ultrasonic Doppler transducer device to monitor fetal cardiac dynamics. The data collection followed a structured workflow, beginning with a comprehensive anamnesis (subjective data) to evaluate chief complaints, menstrual history, and obstetric milestones. This was followed by a focused physical assessment (objective data) encompassing maternal vital signs, abdominal visualization, and Leopold maneuvers (I to IV). Data analysis was performed by corroborating empirical clinical findings with basic midwifery sciences (Biomedical Science) and national midwifery clinical guideli

RESULT

Subjective data evaluation revealed that Mrs. A experienced a distinct sensation of fullness and mild discomfort in the epigastric region beneath the costal margins, paired with anxiety regarding prominent fetal movements localized primarily in the lower abdomen above the symphysis pubis. Objective clinical examination indicated a stable maternal hemodynamic state within physiological homeostasis: Blood Pressure was **110/70** mmHg,

pulse rate was 80 beats per minute, respiratory rate was 20 breaths per minute, and core body temperature was **36.5** °C. (Tauhid & Purnamasari, 2022)

Specific obstetric palpation via Leopold maneuvers yielded definitive diagnostic indices: Leopold I indicated a fundal height of 30 cm, with a round, hard, distinct, ballottable mass located in the fundus, identified as the fetal head. Leopold II demonstrated the fetal back positioned along the left lateral abdominal wall (left occiput transverse axis) with small fetal extremities palpable on the right maternal side. Leopold III identified a soft,

irregular, non-ballottable mass immediately above the maternal symphysis pubis, confirming a breech presentation. Leopold IV demonstrated a convergent finger alignment, confirming that the presenting part had not engaged the pelvic inlet. (Siraj, 2024) Fetal heart rate auscultation via Doppler revealed a regular rhythm of 140 beats per minute, with the punctum maximum localized in the upper right quadrant of the maternal abdomen at the level of the umbilicus.

Table 1. Clinical Findings and Basic Science Integration Summary for Mrs. A

Assessment	Clinical Findings (Mrs. A)	Midwifery Science Integration (BSM & KDPK)
Parameter		
Subjective Data	Epigastric fullness, intense lower abdominal fetal kicking.	Pajot's Law of Accommodation: The rigid fetal cranium exerts mechanical pressure on the maternal fundus and diaphragm.
Leopold Palpation	Leopold I: Rigid mass in fundus; Leopold III: Soft mass above symphysis.	KDPK Procedural Competence: Precision in physical diagnosis without immediate reliance on bedside ultrasonography.
FHR Auscultation	140 bpm, regular rhythm in the right upper quadrant.	BSM III Biophysics: Clinical application of frequency shift principles (Doppler effect) to assess fetal hemodynamics.
Maternal Vital Signs	Blood Pressure: 110/70 mmHg (Normotensive).	BSM III Biomedical Science: Maintenance of cardiovascular homeostasis during third-trimester physiological expansion.

Postural Intervention	Instruction and execution of the knee-chest position twice daily (10-15 mins).	BSM III Biophysics: Manipulation of gravitational biomechanics to reduce uterine lower-segment friction, promoting spontaneous version.
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DISCUSSION

Corroborating the clinical data gathered from Mrs. A, the definitive diagnosis established was G1P0A0, 34 weeks of gestation, single, live, intrauterine fetus with a breech malpresentation. Pathophysiological etiology analyzed from the perspective of Basic Midwifery Science II (structural genetics) confirms that the breech presentation in this case was primary and mechanical, rather than a consequence of genetic congenital anomalies such as fetal hydrocephalus or cerebral calcification often induced by transplacental parasitic infections (Toxoplasmosis). As a primigravida, Mrs. A exhibits robust, firm uterine and abdominal muscle tone. This physiological rigidity imposes physical boundaries within the intrauterine environment, limiting spontaneous fetal rotation and trapping the fetus in a breech orientation at 34 weeks. ([Http://Repository.Unimus.Ac.Id](http://Repository.Unimus.Ac.Id), 2016)

From the domains of reproductive immunology and microbiology, a breech presentation carries a heightened risk of Premature Rupture of Membranes (PROM). The fetal breech lacks the uniform spherical shape of the cranium, failing to occlude the pelvic inlet securely (poor application of the presenting part). This anatomical discrepancy causes an irregular distribution of hydrostatic pressure within the amniotic sac during subclinical contractions. The concentrated hydrostatic force triggers focal cellular mechanical stress within the decidual membranes, upregulating a cascade of pro-inflammatory cytokines (interleukin-6 and TNF- α) that induce matrix metalloproteinase (MMP) secretion.

Enzymatic degradation of the extracellular collagen matrix follows, rendering the amniotic sac fragile and susceptible to premature rupture. In the event of PROM, this mechanical deficit exacerbates the risk of ascending infections by vaginal microflora (chorioamnionitis) and precipitates obstetric emergencies such as umbilical cord prolapse. Therefore, detailed counseling on genital personal hygiene constitutes a critical microbiological prophylactic measure within this care regimen.

The knee-chest position intervention introduced to Mrs. A is a practical application of physical mechanics and biophysics (*Basic Midwifery Science III*). Governed by Newton's law of

universal gravitation, when the maternal chest is positioned lower than the pelvis, the uterine body shifts away from the pelvic cavity due to gravitational drag. This displacement minimizes the friction between the uterine walls and the fetus, disengaging the breech from the pelvic inlet. Consequently, the fetus gains enhanced mobility within the amniotic fluid. Given that the fetal head has a higher specific gravity and mass density compared to the breech, it naturally gravitates toward the lowest dependent portion of the uterus. The efficacy of this intervention is strongly validated by evidence-

based midwifery research, demonstrating success rates of 60–70% in stimulating spontaneous cephalic version when performed consistently between 32 and 36 weeks of gestation. (Siagian et al, 2023)

Micronutrient pharmacotherapy (Basic Midwifery Science III), including iron (Fe) 60 mg and calcium 500 mg, was prescribed with precise consideration of their pharmacokinetic and pharmacodynamic pathways. The midwife educated the patient that iron absorption across the duodenal mucosa requires an acidic gastric environment, making it highly bioavailable when

co-administered with Vitamin C, whereas its absorption is significantly impaired by inhibitors like tannins found in tea. Calcium serves to support fetal skeletal mineralization and stabilize myometrial contractility. Rooted in the principles of Fundamental Midwifery Practice (KDPPK), the overall care plan was delivered through empathetic therapeutic communication to reduce maternal anxiety, adhering to the professional PACER framework (Professional, Accountable, Collaborative, Empathetic, Reliable) to ensure optimal maternal and neonatal clinical outcomes

CONCLUSION AND SUGGESTION

In summary, the clinical management of a breech presentation for Mrs. A at the Healthcare Facility of PT Panca Surya Agrindo successfully integrated fundamental scientific theory with advanced clinical practice. Early identification of the malpresentation at 34 weeks facilitated a non-invasive, safe, and conservative approach using knee-chest postural therapy, exploiting gravitational biophysics. Understanding the pathophysiological, immunological, and microbiological underpinnings sharpened the clinician's foresight, allowing proactive mitigation of complications like PROM and ascending infections through robust hygiene counseling.

It is recommended that pregnant women perform the knee-chest position diligently at home as instructed (twice daily for 10–15 minutes) and maintain regular compliance with micronutrient supplementation. For clinicians within primary care networks, it is advisable to sustain high-precision antenatal screening and formulate structured, collaborative referral pathways with obstetric specialists by week 36 should the malpresentation persist. For midwifery educational institutions, it is critical to continually incorporate case-based contextual learning that bridges basic biomedical sciences with clinical applications to produce graduates with superior clinical reasoning capabilities.

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