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The Importance of Early Initiation of Prenatal Care: A Case Report

Valéria Ronsom Bilinski [1,*], **Eduarda Fanhani Cracco** [1], **Maria Clara Marin** [1], **Luiza Maria Nickenig** [1], **Helena Almada Heleno** [1], **Renam Arthur de Sousa** [1]

[1] School of Medicine, Cesumar University (UNICESUMAR), Maringá (PR), Brazil.

* Correspondence: valeriabilinski@hotmail.com.

Abstract: Accurate determination of gestational age is essential for proper prenatal care management, directly impacting maternal and fetal health. This study addresses the importance of a detailed medical history and thorough physical examination in estimating gestational age. The patient was initially classified as being in an early gestational stage; however, due to the absence of a meticulous clinical examination, the actual gestational age was underestimated. The case highlights the need for a complementary diagnostic approach when clinical uncertainties arise, ensuring more accurate follow-up. Early recognition of pregnancy and correct estimation of gestational age are crucial to reducing complications and improving maternal-fetal outcomes. Therefore, this study aims to reinforce the importance of early physical examination and the support of complementary investigations.

Keywords: Prenatal care; Gestational age; Physical examination.

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1. Introduction

Pregnancy is a complex physiological event characterized by anatomical, physiological, and hormonal changes aimed at fetal development and maternal adaptation [1]. The process begins with fertilization. In the first phase of fertilization, the sperm fuses with the oocyte, giving rise to the zygote [2,3]. Following this process, cleavage begins—a phase of intense and rapid cell division that leads to the formation of the blastomere, followed by the morula and, finally, the blastocyst. A few days after fertilization, the blastocyst attaches to the endometrium and gives rise to the embryo, which will develop over the following days [1–3]. One of the earliest signs of pregnancy, and the main reason women seek medical attention, is a missed period. After fertilization and embryo implantation, the uterus prepares for the development of a future human being [1,2]. As a result, there is no drop in hormone levels or endometrial shedding, suggesting the possibility of pregnancy [1,2]. Based on this information, the Date of Last Menstruation (LMP) is a tool used to estimate the gestational age of the pregnant woman.

Pregnancy is divided into three trimesters, each with specific characteristics that support fetal development and maternal body adaptations. The first trimester (0–13 weeks) is marked by embryo formation and organogenesis [2,3]. During this phase, the uterus grows slightly, remaining within the pelvis, while the breasts enlarge due to the development of lactiferous ducts [2]. Women may experience nausea and vomiting, especially in the morning, along with increased blood volume, cardiac output (CO), and respiratory rate (RR) to supply nutrients and oxygen to the fetus [1,2]. Additionally, the skin may show hyperpigmentation and the appearance of stretch marks [1–3].

The second trimester (14–26 weeks) is characterized by fetal growth and maturation. From the 18th week onwards, the mother may begin to feel the baby's first movements

[2,3]. The lungs start producing alveolar surfactant, and the placenta becomes responsible for gas and nutrient exchange and the production of hormones such as progesterone and placental lactogen. Around the 20th week, the uterus expands beyond the pelvis, reaching the level of the umbilical region. As a result, posture and the center of gravity shift, potentially leading to physiological lower back pain; the breasts also continue to enlarge [1,2]. Finally, nausea decreases, and there is greater awareness of the pregnancy with the perception of fetal movements, which strengthens the maternal bond [1–3].

In the third trimester (27–40 weeks), the fetus reaches an average weight of 3000–3500g and a length of 48–50 cm, with around 95% positioning in cephalic presentation for birth. The lungs and central nervous system complete their maturation and begin to function in regulating breathing and body temperature. As the pregnancy nears its end, the body prepares for delivery with further uterine expansion and more intense Braxton Hicks contractions [1,2]. The ever-growing uterus reaches the epigastric region, compressing the diaphragm and abdominal organs, which can lead to nausea, constipation, increased urinary frequency, and even incontinence in some cases [1–3]. Cardiac output, respiratory rate, and fluid retention increase, causing edema, particularly in the lower limbs [1, 2].

As labor approaches, rising oxytocin levels intensify contractions, making them more effective. At the same time, prostaglandins promote cervical maturation, facilitating its dilation and enabling labor, culminating in the birth of the baby [1,2]. In the postpartum period, maternal physiological adaptations continue, promoting recovery and transition into the puerperium [4]. This period involves the regression of gestational changes, hormonal reorganization, and the strengthening of the maternal-infant bond [4].

The following clinical case describes a pregnancy that did not progress as expected in the physiological process, as the patient did not present typical symptoms or notice the usual physical changes associated with each trimester. During the first trimester, for example—when nausea, vomiting, and increased urinary frequency are expected—the patient reported none of these symptoms. Similarly, during the second and third trimesters, when uterine growth, postural changes, and noticeable fetal movements typically occur, these signs were not evident in the patient. This may suggest an atypical pregnancy. The case raises important questions about the variations in gestational processes and the need for careful medical monitoring, even in the absence of symptoms.

2. Case Report

A 33-year-old female patient, primigravida (G1P0A0), attended a consultation in May 2024 with a complaint of missed period, which was confirmed by a positive betahCG test. She reported irregular menstrual cycles, intense cramping, and moderate menstrual flow. Based on an unspecified Last Menstrual Period (LMP), the gestational age (GA) was estimated at 4 weeks. First-trimester laboratory tests were requested, and folic acid and ferrous sulfate were prescribed. This was an unplanned pregnancy, with no use of contraceptive methods, but it was accepted by the expectant parents.

Twenty-eight days after the initial visit, the patient returned for prenatal follow-up with a GA of 7 weeks and 2 days, based on the LMP. She denied cramps, bleeding, fluid loss, nausea, or vomiting and continued taking the prescribed medications. Laboratory tests showed no abnormalities, serologies were negative, and she was susceptible to toxoplasmosis (Table 1). Urinalysis revealed Gram-positive bacilli and leukocytosis, and she was prescribed amoxicillin with clavulanate (500 mg + 125 mg) for treatment of asymptomatic urinary tract infection (UTI). On physical examination, a Body Mass Index (BMI) of 30.7 was noted, indicating a risk factor for hypertensive disorders. Prophylaxis was initiated with acetylsalicylic acid (ASA) 100 mg and 1 g calcium, in addition to prescribing symptomatic medications and the Materna supplement. Ferrous sulfate and folic acid were discontinued (Table 1). The patient was advised to update her vaccinations, and a first-trimester ultrasound with nuchal translucency (NT) measurement was requested.

General guidance and warning signs were provided, with a follow-up appointment scheduled for one month later.

Table 1. Patient's consultation history, highlighting the prenatal care evolution, tests performed, and diagnoses identified throughout the pregnancy.

Date	Gestational Age (GA)	Complaints/Observations	Exams/Results	Conduct
Jun/24	4 weeks (based on LMP)	Positive beta-hCG, irregular cycles, intense cramps	Positive beta-hCG test, exams requested	Prescription of folic acid and ferrous sulfate. General guidance and follow-up scheduled in 1 month
Jul/24	-	Collection of oncotic colpocytology	-	-
Jul/24	7 weeks + 2 days	No complaints, denied nausea, vomiting, or bleeding	Urinalysis: Few Gram-positive bacilli, leukocytes: 42,000, epithelial cells: 36,000. Hb: 12.9, Ht: 38.5, WBC: 8,660; Platelets: 215,000. Fasting glucose: 89. Blood type: O. TSH: 2.37. Non-reactive serologies, Toxoplasma IgG non-reactive	Prescribed Amoxicillin + Clavulanate 500 mg + 125 mg for 7 days; ASA 100 mg + calcium 1 g. Discontinuation of ferrous sulfate and folic acid. First-trimester USG with nuchal translucency requested. Vaccination update recommended.
Aug/24	35 weeks + 6 days (via USG)	Sleepiness, heartburn, use of milk of magnesia, fetal movements at night	Obstetric USG: GA 33w+5d, fetal weight 2,438 g. PE: BMI 30.7; BP 120/80 mmHg; HR 82 bpm, FHR 145 bpm; SFH 32 cm. LE: edema 2+/4+	ASA discontinued, third-trimester routine tests and Doppler USG requested. DTPa vaccine administered
Aug/24	37 weeks + 6 days	No complaints, fetal movements present, end-of-day fatigue, dysuria	Hb: 13.1; Ht: 40.4; Platelets: 193,000. Glucose: 81. TSH: 3.53. Negative serologies. Toxoplasma non-reactive. GBS swab non-reactive. Oncotic colpocytology: no malignancy	Doppler USG: GA 35w+5d, fetal weight 2,740 g; normal Doppler flow. Placenta: left lateral wall insertion, grade 1. Guidance on warning signs and labor
Aug/24	38 weeks + 6 days	Fetal movements present, Braxton Hicks contractions, frequent urination	PE: BMI 31.6; FHR 144 bpm; SFH 36 cm. LE: no edema	Guidance on warning signs and labor. Continuation of prenatal care. Follow-up scheduled in 1 week

Sep/24	5th postpartum day	Cesarean delivery due to fetal distress, no complications	Surgical wound healing well, with regular and aligned edges, no signs of inflammation. APGAR 8/9, CPAP for 5h, phototherapy for jaundice	Guidance on breastfeeding, postoperative care, and warning signs

Abbreviations: GA, gestational age; LMP, last menstrual period; β-hCG, beta-human chorionic gonadotropin; Hb, hemoglobin; Ht, hematocrit; BT, blood type; TSH, thyroid-stimulating hormone; ASA, acetylsalicylic acid; US, ultrasound; GBS, Group B Streptococcus; Tdap, adult-type acellular diphtheria, tetanus, and pertussis vaccine.

Twenty-one days after the last consultation, the patient returned with an ultrasound report indicating 33 weeks and 5 days of gestation (Table 1), while the calculated GA was 35 weeks and 6 days—25 weeks and 4 days beyond the initial estimate based on the LMP. She reported sleepiness and heartburn, self-medicating with milk of magnesia without relief. She maintained proper use of prescribed medications. Due to the significant discrepancy in GA, the patient was questioned about the reasons for the late discovery, such as amenorrhea or any symptoms suggestive of pregnancy. She stated that before May, she experienced no delayed periods, maintaining her usual pattern of irregular cycles. She denied nausea, vomiting, noticeable fetal movement, or significant abdominal growth—reporting only lumbar and hip pain.

In response to this pain, she sought medical care and was prescribed Flanclox, Miosan, ODT, and Permese. A lumbar X-ray was performed, showing no abnormalities, and the fetus was not visualized. At the time, the pregnancy was around 20 weeks based on ultrasound, raising concerns about the use of medications and the imaging exam. On physical examination, the patient presented with moderate lower limb edema, BMI of 31.6 kg/m², blood pressure of 120/80 mmHg, fetal movements present, fetal heart rate (FHR) of 145 bpm, and symphysis-fundal height (SFH) of 32 cm (Table 1). Routine third-trimester labs and Doppler US were requested. ASA and calcium were discontinued, and the Tdap vaccine was recommended.

Fourteen days later, the patient returned with a GA of 37 weeks and 6 days. She reported mild end-of-day fatigue and lower limb edema, denying other symptoms. Laboratory tests were unremarkable. Vaginal swab for Streptococcus agalactiae (GBS) was nonreactive, and Doppler US was within normal limits (Table 1). On examination, BMI was 32.6 kg/m², BP 110/70 mmHg, fetus was mobile, FHR 148 bpm, and SFH 34 cm. The patient was counseled on mode of delivery, labor signs, and general warning signs. At the next consultation, the patient was at 38 weeks and 6 days GA. She reported episodes of abdominal tightening throughout the day but denied pain or other complaints. On physical exam, no abnormalities were noted. BMI was 32.6 kg/m², FHR 144 bpm, and SFH 36 cm. She received additional guidance on labor warning signs and prenatal care follow-up (Table 1).

Twelve days after the last visit, the patient returned postpartum, with no complaints. She reported a cesarean delivery due to acute fetal distress triggered by thick meconium-stained amniotic fluid (MSAF). The newborn had APGAR scores of 8/9, required CPAP for 5 hours, and underwent phototherapy for neonatal jaundice. Birth weight was 3225 g, and discharge weight was 3115 g. Neonatal screening results were normal, and vaccinations were updated according to the National Immunization Program (PNI) (Table 1). On physical exam, the surgical wound showed proper healing, with regular and aligned edges and no signs of inflammation. Counseling was provided regarding adequate breastfeeding, general care, and alarm signs.

3. Discussion

Cases in which pregnancy is discovered late are more common than one might expect. A study conducted in Germany revealed that, on average, one pregnancy is identi-

fied beyond 30 weeks of gestation in every 475 births, and in 1 out of 2,455 cases, pregnancy is only recognized at the time of delivery. This leads to inadequate or, in some cases, absent prenatal care throughout pregnancy [5]. In Brazil, reliable epidemiological data on this phenomenon are lacking, with most accounts coming from media reports rather than scientific literature [5, 6].

Factors contributing to late recognition of pregnancy include psychological elements such as stress and anxiety, which hinder the association of symptoms with pregnancy. In addition, socioeconomic insecurity, irregular contraceptive use, absence of noticeable abdominal growth, and irregular menstruation may act as psychological defense mechanisms that prevent early diagnosis [5].

Accurate determination of gestational age is essential for appropriate prenatal care. Estimations are generally based on the last menstrual period (LMP), which may be imprecise due to recall bias or irregular menstrual cycles [7]. Therefore, ultrasound becomes a fundamental auxiliary method, with higher accuracy when performed between the 11th and 14th gestational weeks [2,7]. However, the accuracy of ultrasound diminishes as gestation progresses, with an error margin of up to one week in the first trimester and approximately two and a half weeks after 30 weeks [7,8]. Thus, in late discovery cases, a detailed medical history and physical examination play critical roles in identifying clinical signs suggestive of a more advanced gestational age [4,6]. Symphysis-fundal height, typically assessed between the 16th and 20th week, and perception of fetal movement may indicate more advanced gestation [2,9]. However, clinical assessment may be compromised by maternal obesity, which was also the case for the patient in this report [10].

In the reported case, when pregnancy was discovered, it was believed that the patient was still in the first trimester. However, subsequent tests revealed she was already in the third trimester, resulting in inadequate and incomplete prenatal care. Lack of structured prenatal follow-up increases maternal-fetal risks, including congenital malformations and maternal complications such as excessive weight gain, pregnancy-induced hypertension (PIH), and urinary tract infections (UTIs) [11]. In this case, the patient was diagnosed with asymptomatic UTI during her second visit, and the delayed start of treatment may have contributed to complications during labor, such as acute fetal distress [12]. There is also a risk of complications such as preterm labor, premature rupture of membranes, and intrauterine growth restriction (IUGR) [12,13].

A significant risk factor for obstetric complications is urinary tract infection (UTI), which, during pregnancy, can trigger a cascade of events that compromise maternal and fetal health [12]. The activation of the maternal inflammatory axis increases pro-inflammatory cytokines, causing physiological stress and affecting the autonomic nervous system through excessive release of cortisol and adrenaline. This can stimulate fetal intestinal motility and lead to the passage of meconium [12,13]. Another extremely important risk factor is maternal obesity. Excess adipose tissue poses a challenge for both the diagnosis and management of pregnancy. It hampers abdominal palpation, compromises proper assessment of pelvic structures such as the uterus, and can mask signs like edema and changes in amniotic fluid volume [14]. These obstacles may delay the detection of serious conditions—such as fetal distress—and lead to delayed interventions. The difficulty in conducting an accurate clinical assessment can compromise the early identification of such conditions, increasing the risks for the fetus [14,15].

Furthermore, during pregnancy, the woman's body undergoes hormonal changes that alter metabolism, triggering a state of chronic inflammation [2]. This process can be exacerbated by obesity, which increases the availability of glucose and free fatty acids in the maternal system. These substances can cross the placental barrier [16,17], potentially raising the fetal metabolic rate, increasing oxygen demand, and predisposing the fetus to intrauterine hypoxia.

In terms of fetal repercussions, in response to hypoxia, the fetus may release meconium into the amniotic fluid (AF), increasing the risk of aspiration and the development

of meconium aspiration syndrome (MAS) [16,18]. Aspiration of thick meconium may result in airway obstruction, and the resulting hypoxia may require ventilatory support. Continuous Positive Airway Pressure (CPAP) is most commonly used to improve oxygenation in newborns [19], and in more severe cases, mechanical ventilation may be necessary [19].

Additionally, acute fetal distress may be triggered by thick meconium-stained amniotic fluid (MSAF), especially in pregnancies beyond 38 weeks. A cohort study demonstrated an increased risk of MSAF starting at this gestational age [20]. This supports the hypothesis that the advanced gestational age, combined with inadequate prenatal monitoring, contributed to the fetal distress that led to the emergency cesarean section. In the reported case, the outcome was an emergency cesarean section due to fetal distress. It is well known that emergency cesarean deliveries are performed when there are unfavorable conditions for either the mother or the fetus, being indicated in cases such as vasa previa, placental abruption, umbilical cord prolapse, failure to progress in labor, or abnormal fetal heart rate patterns [15,21]. However, the rate of such procedures has increased significantly in recent years, without being associated with more favorable outcomes—instead correlating with increased maternal and neonatal morbidity [20,21].

A study conducted by the Universidad Nacional de Huancavelica analyzed cesarean sections performed at the Hospital de Pampas in Peru between 2018 and 2019. Of these, 79.1% were emergency cesareans, while only 20.9% were elective [22]. Among the complications resulting from emergency cesarean sections in 2018, 50% were due to meconium aspiration syndrome, 16.6% due to respiratory distress syndrome, 16.6% due to perinatal asphyxia, and 16.7% resulted in fetal death [22].

In summary, the correlation between anamnesis, physical examination, and complementary tests is essential for ensuring appropriate prenatal care [4]. In the reported case, difficulty in clinical assessment led to a late recognition of pregnancy and potentially suboptimal management, thereby increasing maternal and fetal risks. In light of this scenario, it is recommended that healthcare professional training policies be implemented, focusing on the early identification of factors that may compromise the accuracy of gestational diagnosis—especially in high-risk populations such as pregnant women with obesity. Protocols for gestational age assessment and maternal infection screening should be improved, including the use of complementary technologies such as ultrasonography.

Therefore, evidence-based strategies can help minimize diagnostic challenges and promote better outcomes for both mothers and newborns, reinforcing the importance of individualized prenatal care, the involvement of multidisciplinary teams, and ensuring continuous and personalized obstetric assessment. In doing so, we ensure proper pregnancy monitoring, reduce complications, and promote improved maternal-fetal outcomes.

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