

## CASE REPORTS

# Sudden Diastasis of Rectus Abdominis During Labor: A Case Report

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We present a case of a nulliparous patient with a sudden diastasis of rectus abdominis (DRA) during labor. DRA is defined in literature as a separation of 2 muscle bellies of rectus abdominis of more than 2 fingerbreadths either 4.5 cm above or below the umbilicus.<sup>1</sup> DRA is clinically recognized; however, there is limited knowledge on the prevalence, risk factors, and complications of DRA. Here, we present a patient who had an abrupt DRA during labor with herniation of bowel anterior to the fundus with associated abdominal pain. Due to similarity in presentation as uterine rupture, this case resulted in an elective cesarean delivery. Thus, this case report highlights the need to review DRA and uterine rupture and the associated risk factors to help health care professionals make prompt diagnoses and avoid elective primary cesarean delivery in an otherwise healthy, nulliparous patient.

## Introduction:

We present a case of a nulliparous patient who underwent sudden DRA with herniation of bowels anterior to the fundus leading to a suspicion for uterine rupture. DRA is cited clinically to be a common finding in pregnancy and postpartum; however, the lack of a universal definition of DRA contributes to the range of prevalence cited in literature. This prevalence also depends on the trimester in which the DRA is measured. A prospective cohort study by Sperstad et al<sup>2</sup> showed that in 300 primiparous women, the prevalence of DRA was 33.1% by the second trimester. Another study by Boissonnault and Blaschak<sup>3</sup> noted DRA to be present in 27% of women who were in their second trimester of pregnancy.

The risk factors of DRA are thought to be linked to a hormonally mediated process involving relaxin, progesterone, and estrogen, which causes softening of connective tissue.<sup>3</sup> Other factors that cause increased strain on the abdominal muscles, such as uterine enlargement throughout pregnancy and increased fetal weight, have been cited clinically as risk factors of DRA as well.<sup>3</sup> However, this was not supported by studies by Mota et al<sup>1</sup> and Sperstad et al<sup>2</sup> as they found that fetal birth weight, body mass index, and enlargement of the uterus have not been statistically significant in women with and without DRA. Another study by Candido et al<sup>4</sup> also found that enlargement of the uterus and twin pregnancy were not statistically significant factors to development of DRA.

To our knowledge, there is limited information and few case reports available on DRA during labor. With this case report, we highlight similarities between DRA and uterine rupture during labor, review risk factors for uterine rupture,

and advocate to include DRA in the differential for healthy, uncomplicated patients to prevent an elective cesarean delivery in a nulliparous patient without risk factors for uterine rupture.

### **Case description:**

A female young adult with her first pregnancy was admitted to the labor and delivery department after spontaneous rupture of membranes at 39 weeks 3 days' gestation. During labor, she was found to have a new abdominal mass after an episode of sudden-onset vomiting. Clinically, the patient had a sudden increase in pain and became diaphoretic. Vitals remained stable throughout, and no vaginal bleeding was present on examination. A bedside sonogram showed a fluid-filled structure, at which time uterine rupture could not be ruled out clinically by a senior resident and an attending. An obstetrics code was called due to a concern that the maternal status or the fetal status could quickly deteriorate. As a result, the patient was taken to the operating room for an urgent cesarean delivery. A vertical midline skin incision was made due to the presence of a supraumbilical mass. The operating room was set up for an urgent cesarean delivery under generalized anesthesia. On entry into the abdomen, the bowel was present anterior to the fundus and the uterus was intact. Further examination of the upper abdomen revealed complete retraction of the rectus and no fascial layer. Given the acute nature of abdominal mass, the patient was believed to have an acute separation of the rectus muscles, essentially an acute abdominal wall herniation resulting in a complete rectus diastasis. Intraoperatively, uterine rupture was ruled out and diastasis of the rectus muscle was noted. Subsequently, a low transverse uterine incision was used for delivery of the fetus. Delivery of the fetus was otherwise uncomplicated, with estimated blood loss of 600 mL. A live male infant weighing 4710 g with APGAR scores of 7 and 9 at 1 and 5 minutes, respectively, was delivered. Normal uterus, fallopian tubes, and ovaries were noted.

The patient's postoperative recovery was uncomplicated; her vitals were stable, pain was well controlled, lochia was normal, she voided spontaneously, ambulated well, passed flatus, and breastfed without difficulty. She met all discharge criteria and was discharged home on postoperative day 4.

### **Discussion:**

DRA is a condition defined as the separation between the rectus abdominis and the linea alba leading to a weakness in the abdominal muscles. Although DRA has wide prevalence in pregnancy and postpartum period, there is limited information regarding DRA during labor. DRA is not known to be life threatening or symptomatic to the patient and most commonly resolves on its own.<sup>4</sup> This case was unusual as DRA occurred abruptly during labor. In addition, herniation of the bowel to the anterior abdomen above the fundus led to suspicion of life-threatening uterine rupture.

Uterine rupture refers to a complete separation of all uterine layers, including the uterine serosa. According to a World Health Organization systematic review of 86 women, the prevalence of uterine rupture ranged from 0.016% to 0.3% in community hospitals in developed nations.<sup>5</sup> It is most commonly associated with clinically significant uterine bleeding, fetal distress leading to a need for prompt cesarean delivery, emergent uterine repair, or hysterectomy. A retrospective medical record review conducted by Yap et al<sup>6</sup> from 1976 to 1998 of 38,027 deliveries found only 4 women who had uterine rupture and no history of uterine surgery (1 patient had a bicornuate uterus).

The patient presented here did not have commonly known risk factors for uterine rupture such as a history of previous cesarean delivery, multiparity, malpresentation, or obstructed labor. However, the patient did present with nonspecific symptoms found in uterine rupture while undergoing induction with prostaglandins, which is a risk factor for uterine rupture. In the study by Yap et al,<sup>6</sup> nonspecific symptoms for uterine rupture were acute abdominal pain, vaginal bleeding leading to altered hemodynamic status, nonstress test with bradycardia, and repetitive variable or late decelerations. The patient presented here had a sudden onset of pain and with a prominent abdominal bulge. Although the patient did not have other symptoms of uterine rupture, such as abnormal nonstress test results or uterine bleeding, uterine rupture still could not be ruled out. The inconsistent signs and the short time interval to make a definitive treatment decision made this case challenging.

Due to the emergent nature of this case, it is important to highlight ways to properly diagnose uterine rupture and DRA as they have significantly different management and complication profiles for the patient and fetus. When evaluating the patient during labor, consideration must be made about maternal and fetal complications of uterine rupture. In a review of 33 studies, Schrimsky and Benson<sup>7</sup> found 960 cases of uterine rupture resulted in 620 infant deaths, yielding a perinatal mortality rate of 65%. Due to lack of prevalence of known DRA and sudden herniation of bowel during labor, the suspicion of uterine rupture remained high. Consequently, for this patient, to prevent the threat of significant morbidity and mortality of the fetus, emergent cesarean delivery was then performed as definitive diagnosis could not be promptly determined.

Regarding further management of DRA, DRA is asymptomatic and resolves on its own postpartum. If the DRA is severe, it can be surgically corrected to prevent concurrent abdominal hernia, strangulation, or incarceration.<sup>8</sup> For the patient here, she desired surgical correction of the hernia; thus, we consulted general surgery colleagues to determine whether the patient was a candidate for the procedure. The consultant recommended that management with a mesh should follow the postpartum period and subsequent to physical therapy to strengthen the rectus abdominal muscles.

## **Conclusion:**

The case presented here highlights the need to keep DRA as a common differential in a primiparous patient who otherwise has a low risk for uterine rupture. If uterine rupture cannot be ruled out, and emergent cesarean delivery is pursued, we highlight the importance of counseling during labor and after the emergent cesarean delivery about surgical complications, psychological assistance, screening for depression, and assuring language and cultural competency to provide the patient with the utmost comprehensive and quality care. The patient should also be informed about her chances of trial of labor after a cesarean delivery for subsequent pregnancy as outlined by the American College of Obstetricians and Gynecologists.

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