

# Mallory-Weiss Tear Diagnosed in the Immediate Postpartum Period: A Case Report

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## Abstract

**Background:** Mallory-Weiss tears occur rarely during pregnancy, labour and delivery, and the puerperium, despite the increased frequency of retching and vomiting.

**Case:** We describe a Mallory-Weiss syndrome diagnosed during the immediate postpartum period in a 34-year-old primigravida. The syndrome initially manifested as lower gastrointestinal bleeding and melena.

**Conclusion:** If unrecognized, this complication may lead to life-threatening internal bleeding. It is important to look for an occult bleeding source with such a presentation, and prompt intervention is essential.

## Résumé

**Contexte :** Les déchirures de Mallory-Weiss ne surviennent que rarement au cours de la grossesse, du travail et de l'accouchement, et de la puerpéralité, et ce, malgré la fréquence accrue des haut-le-cœur et des vomissements.

**Cas :** Nous décrivons un cas de syndrome de Mallory-Weiss diagnostiqué au cours de la période postpartum immédiate chez une primigravide de 34 ans. Le syndrome s'est initialement manifesté sous forme de saignements de l'appareil gastro-intestinal inférieur et de méléna.

**Conclusion :** Lorsqu'elle passe inaperçue, cette complication peut mener à une hémorragie interne constituant un danger de mort. Il est important d'être à l'affût d'une source de sang occulte ayant une telle présentation; une intervention sans délai s'avère essentielle.

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## INTRODUCTION

The Mallory-Weiss lesion is characterized by a longitudinal tear in the mucosa of the gastroesophageal junction.<sup>1</sup> It is postulated that Mallory-Weiss tears occur as a

result of dramatically increased intra-abdominal pressure, which can cause a laceration of the gastrointestinal mucosa with extension into the underlying vasculature. Mallory-Weiss tears are caused by forceful vomiting or retching; they are most commonly described in alcoholics. Other causes of vomiting that may induce Mallory-Weiss tears include hiatus hernia, peptic ulcers, infectious gastroenteritis, volvulus, hyperemesis of pregnancy, cholecystitis, uremia, and increased intracranial pressure.<sup>2,3</sup> The clinical manifestations of Mallory-Weiss syndrome include dyspepsia, abdominal pain, hematemesis, passage of tarry stools, and in rare instances hypovolemic shock.<sup>3</sup>

We report a case of a Mallory-Weiss tear diagnosed in the immediate postpartum period and manifested by rectal bleeding and hypovolemic shock.

## THE CASE

A 34-year-old nulliparous woman with no significant past medical history and routine antepartum care was admitted to the labour and delivery suite at 40+4 weeks' gestation with spontaneous rupture of membranes in the active phase of labour. Examination at admission showed the cervix dilated to 4 cm and 80% effaced. The patient's antepartum course had been uneventful. At the time of admission, the patient's blood pressure was 140/92 mmHg with pulse 82 bpm. She was afebrile. Her elevated BP was assumed to be caused by the pain of labour; her BP 15 minutes later was 133/76 mmHg. Hemoglobin on admission was 13.8 g/L.

After one hour in the delivery suite, at 5 cm dilatation, the patient requested epidural anaesthesia for pain control. She had received 1200 mL of lactated Ringer's solution over one hour. Approximately 10 minutes after induction of epidural anaesthesia, she had intractable retching and vomited on two occasions. Her BP at this time was 87/52 mmHg, which was attributed to the epidural anaesthesia. Her pulse

**Key Words:** Mallory-Weiss syndrome, pregnancy, postpartum period

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at the time of this initial episode of vomiting was 87 bpm. The fetal heart rate tracing showed no change associated with the drop in maternal blood pressure, and it showed moderate long-term variability with no change in fetal baseline or decelerations. Intravenous hydration was continued at 125 mL/hr, and the patient received two doses of ondansetron 4 mg IV, approximately 10 minutes apart, with some improvement of her nausea and vomiting.

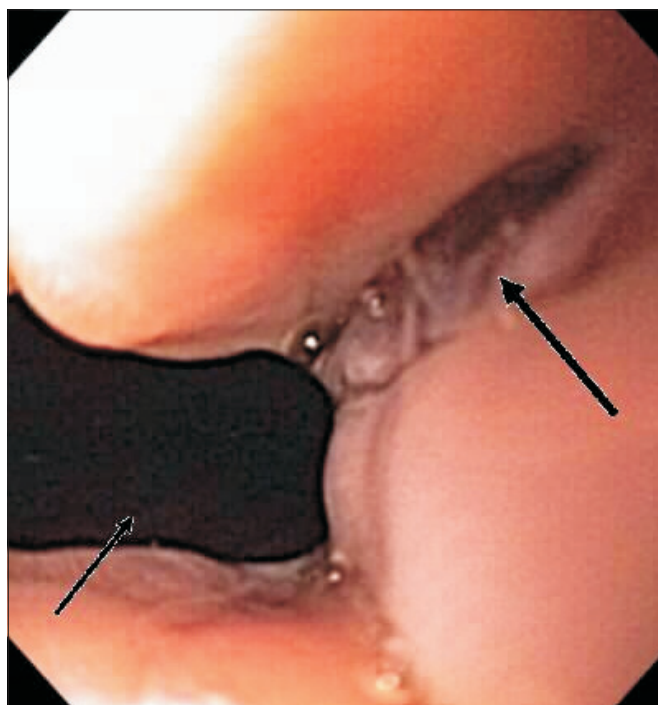
After three hours she reached full cervical dilatation. After 30 minutes of pushing, with repetitive variable decelerations to 60 bpm with every contraction, a vacuum extractor was applied to expedite the delivery. A 2722 g baby was delivered using two pulls, with 60 mmHg suction applied. The delivery was otherwise without complication. The placenta was delivered spontaneously, and an oxytocin infusion was begun. The patient was found to have a third-degree laceration which was repaired without complication. The total blood loss at delivery was estimated at 400 mL. The patient received a total of 3 L of IV crystalloid from the time of admission.

One hour after delivery, heavy vaginal bleeding was noted; the oxytocin infusion following delivery had been continuous. A speculum examination showed 500 mL of organized clot in the vagina. Uterine atony was suspected, and the patient was given misoprostol 600 µg per rectum. The uterus subsequently was firm with a normal vaginal vault and intact third degree laceration repair. There was no evidence of a cervical laceration.

During assessment of the postpartum bleeding, the patient had a BP of 72/34 mmHg and a pulse of 113 bpm. The patient had another episode of nausea and vomiting 15 minutes after the initial evaluation of her postpartum bleeding. An ultrasound examination of the uterus performed at the bedside showed a normal postpartum endometrial echo, with no evidence of retained placental tissue or accumulated blood. The patient's hemoglobin concentration at this time was 9.9 g/L. There was no obvious reason for the discrepancy between the patient's vital signs and the estimated blood loss, but the patient's BP quickly corrected to 95/67 mmHg and pulse to 101 bpm following continued hydration, continued oxytocin infusion, and the administration of the misoprostol. From the time of initial evaluation of the increased postpartum bleeding to the stabilization of her vital signs, the patient received an additional 1800 mL of IV crystalloid.

The patient's condition appeared to have stabilized. However, three hours after delivery, the patient again became hypotensive, with blood pressure 70/40 mmHg and tachycardia of 140 bpm. Examination of the vagina and perineum revealed a normal amount of vaginal bleeding, but a copious amount of admixed bright red blood and black,

**Endoscopic image demonstrating Mallory-Weiss tear. Mallory-Weiss tear (large arrow), stomach (small arrow).**



tarry stool was found on rectal examination. At this time the patient's hemoglobin fell to 8.5 g/L. Screening for disseminated intravascular coagulation was negative. She received empiric treatment with four units of packed red blood cells, two units of fresh frozen plasma, and two units of platelets because of the clinically worrisome heavy bleeding.

Because of the bleeding from the rectum, a colorectal surgeon was asked to evaluate the patient. An immediate colonoscopy, performed in the delivery room, allowed good visualization of the sigmoid and descending colon; bright red blood was seen, but no lower gastrointestinal source of bleeding could be identified.

It was now obvious that the patient's continuing bleeding had a gastrointestinal source, but a lower GI source seemed less likely. An upper endoscopy assessment was performed by the gastroenterology team in the labour and delivery suite. This evaluation showed a moderate-sized Mallory-Weiss tear at the gastroesophageal junction with active bleeding (Figure). This was treated by local injection of 2 mL of 1:10 000 dilution of epinephrine and deployment of two Resolution clips at the site of the tear. Excellent hemostasis was achieved. The patient received an IV bolus of pantoprazole 80 mg over 15 minutes, followed by 8 mg/hr as an IV infusion for three days.

The patient's postoperative course was uneventful, and she was discharged in stable condition three days after the endoscopic procedure. Her diet had been cautiously advanced until she tolerated solid food. The patient's hemoglobin at the time of discharge was 10.0 g/L.

## DISCUSSION

Mallory-Weiss syndrome (MWS) is a nonvariceal, vomiting-induced mucosal laceration of the gastroesophageal junction.<sup>4</sup> Its incidence among patients with upper gastrointestinal bleeding is from 5% to 15%.<sup>5-7</sup> Hematemesis is the most common presenting symptom, occurring in about 85% of cases.<sup>8</sup>

Since in most cases MWS-related bleeding stops spontaneously, no intervention other than hemodynamic support is required. However, as in this case, some patients may require invasive care, especially those with clinical signs suggesting hemodynamic instability and evidence of active bleeding.

Other instances of Mallory-Weiss tears in pregnancy have been described,<sup>9-11</sup> but these three cases have, in each instance, been associated with other underlying pathology; two cases of scleroderma and one case of acute fatty liver in pregnancy were reported. These cases reflect pathology which may have predisposed those patients to the Mallory-Weiss syndrome. A review of EMBASE, Medline, PubMed, and Ovid determined that the case presented here appears to be the first report of Mallory-Weiss syndrome associated with the immediate postpartum period.

One of the most interesting features of this case is that the patient presented with rectal bleeding and not hematemesis. Furthermore, the rectal bleeding was bright red, rather than dark red or tarry, as would be expected with an upper gastrointestinal bleed. There is no straightforward explanation for this, except for the high likelihood that the bleeding from the Mallory-Weiss tear in our patient was rapid and voluminous, which also may explain the patient's rapid drops in blood pressure and tachycardia, which were associated with her episodes of vomiting.

This patient's unusual presentation of Mallory-Weiss tear is striking, because nausea and vomiting during labour in the first, second, and third stages (involving increased intra-abdominal pressure, anaesthesia induced hypotension, and dorsal lithotomy position) is fairly common, but Mallory-Weiss syndrome involving vomiting-induced mucosal tears in labouring patients is indeed uncommon. This raises the possibility of a pregnancy-associated factor or constellation of factors that may be protective of the GI mucosa.

If during pregnancy the GI mucosa is somehow protected from vomiting-induced injury, the mechanisms are not entirely known. We hypothesize that these defence mechanisms may be explained by two well-described physiologic gastrointestinal changes associated with pregnancy. The first is the displacement of the stomach, intestine, and other adjacent organs by the gravid uterus. This displacement may generate redistribution of the forces applied to the gastroesophageal junction at the time of vomiting.<sup>12</sup> The second possible mechanism is the effect of the physiologic changes in progesterone levels, which lead to a decrease in peristalsis, reduced tone and mobility of the GI smooth muscles, enhanced absorption of nutrients, and the associated physiologic lowering of the secretion of hydrochloric acid and pepsin.<sup>13</sup> The collective effects of these two mechanisms may be cumulatively protective when repetitive vomiting occurs during labour.

Upper gastrointestinal tract hemorrhage can present a diagnostic and therapeutic challenge to the clinician. In the described case, we can postulate that the tear could have occurred during the intrapartum period or early labour and was alternately leaking and tamponaded by the gravid uterus. Ultimately, the Mallory-Weiss tear was manifested during the postpartum period by signs of hemodynamic instability, rectal bleeding, and melena.

Therapeutic approaches to control active bleeding in patients with MWS include surgery, balloon tamponade of the esophagus, arterial embolization, and systemic or selective arterial infusion of vasopressin.<sup>14</sup> In a hemodynamically stable patient, endoscopy is the best technique for identifying the bleeding lesion in patients with MWS; when performed early, it can result in a diagnostic accuracy rate of greater than 90%.<sup>15,16</sup> Several studies have shown that endoscopic therapies are safe and have high success rates in controlling bleeding in MWS.<sup>17-19</sup> The American Society for Gastrointestinal Endoscopy provides clear guidelines for endoscopy during pregnancy,<sup>20</sup> when it is generally safe. The potential risks of endoscopy during pregnancy may be associated with maternal oversedation causing hypotension and hypoxia, which in turn may lead to fetal hypoxia. Fetal exposure to potentially teratogenic drugs is also a concern, but this risk is low.<sup>21</sup> In a study by Cappell et al., evaluating upper endoscopy in 83 pregnant women, the diagnostic yield for upper GI bleeding was 95%, and there were no adverse outcomes (premature labour or congenital fetal malformation).<sup>22</sup>

MWS in pregnancy is very uncommon. The clinician should consider MWS during pregnancy or labour when a patient presents with severe vomiting, clinically apparent GI bleeding, or hypovolemic shock that may or may not be explained by the amount of bleeding noted. Persistent GI

bleeding, progressive pallor, and hypovolemic shock in any patient who experiences severe vomiting or retching during the intrapartum period should prompt an evaluation for an occult bleeding source in the upper GI tract. Timely decision making and rapid intervention is crucial in excluding any possibility of life-threatening internal bleeding.

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