



Case Report: Complete Perineal Body Rupture Following Rectovaginal Fistula in the Second Stage of Vaginal Delivery

Reihane Rajati¹, Reyhane Sadat Hosseini², Marzieh Faghani Aghoozi^{3*}

¹ Department of Midwifery, Islamic Azad university, Mashhad branch, Mashhad, Iran.

² Assistant Professor, Fellowship of Pelvic Floor Medicine and Reconstructive Surgery, Department of Obstetrics and Gynecology, Mashhad University of Medical Sciences, Mashhad, Iran.

³ Department of Midwifery, Torbat-Jam Faculty of Medical Sciences, Torbat-Jam, Iran.

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Abstract

Background: Obstetric fistula is a severe and disabling reproductive health complication, particularly prevalent in low-resource settings. It involves an abnormal communication between the gastrointestinal or urinary tract and the female genital tract, most commonly resulting from obstructed or prolonged labor. Based on anatomical involvement and etiology, it may manifest as vesicovaginal, rectovaginal, or rectovesicovaginal fistulas.

Case Presentation: A 19-year-old primigravida of foreign nationality presented in active labor at 40 weeks gestation. Intermittent hypertensive episodes complicated labor during the second stage. Vaginal delivery resulted in the birth of a healthy female neonate, accompanied by a complete perineal body rupture associated with rectovaginal fistula formation.

Conclusion: Even in the absence of significant obstetric, medical, or surgical risk factors at admission, modifiable conditions such as intrapartum hypertension—often linked to nutritional deficiencies—can precipitate severe maternal complications, including obstetric fistulas. This case underscores the importance of vigilant intrapartum monitoring and early intervention in high-risk labor presentations.

Keywords: Rectovaginal fistula, Perineal body, Vaginal delivery.

*Corresponding to: M Faghani Aghoozi, Email: mahda.f255@gmail.com

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Introduction

Obstetric fistula is a severe and disabling complication of reproductive health that disproportionately affects women in low- and middle-income countries. It is defined as an abnormal communication between the female genital tract and either the gastrointestinal or urinary system, most often resulting from prolonged or obstructed labor. Based on anatomical location, underlying etiology, fistula size, and the extent of surrounding tissue injury, presentations may include vesicovaginal, rectovaginal, or rectovesicovaginal fistulas¹⁻⁵.

During obstructed labor, the vaginal canal may be compressed between the fetal head circumference and the maternal pelvis, leading to ischemic pressure necrosis^{6, 7}. This tissue necrosis, which typically manifests between the third and tenth postpartum days, is more closely associated with the duration than the intensity of pressure. Resulting defects may

range from a minor mucosal breach to complete rupture of the vaginal wall^{1, 4, 5}.

With advances in obstetric care—particularly the availability of cesarean delivery and regional anesthesia—obstetric fistula has become rare in high-resource settings. In such contexts, it is more often attributed to congenital anomalies, malignancy, surgical injury, or pelvic radiation⁵. Historically, the earliest documented vesicovaginal fistula was identified in a mummified Egyptian woman from approximately 2050 BCE³. The Persian physician Avicenna (Abu Ali Sina) is also credited with one of the earliest clinical descriptions of the association between obstructed labor and fistula formation in 1037 CE⁵.

The global incidence of rectovaginal fistula (RVF) is estimated at 0.2 to 4 cases per 1,000 vaginal deliveries^{2, 8-10}. In regions such as the Middle East, North Africa, East Asia, Oceania, South Asia, and Sub-Saharan Africa, obstetric fistulas affect approximately 1 to 3 women per 1,000 deliveries. Current estimates suggest that 2 to 3.5 million women in Asia and Sub-Saharan Africa live with untreated obstetric fistulas, leading to chronic urinary or fecal incontinence^{11, 12}. In Sub-Saharan Africa alone, between 50,000 and 100,000 new cases are reported annually^{13, 14}.

Third- and fourth-degree perineal lacerations occur in approximately 4–7% of episiotomies, with 10% of these cases progressing to wound dehiscence and 1–3% developing into RVFs^{2, 15, 16}.

In low-resource settings, risk factors for obstetric fistulas include socioeconomic deprivation, low educational attainment, chronic malnutrition, short maternal stature (<150 cm), early marriage, sexual trauma, nulliparity, and first childbirth before the age of 18^{14, 17, 18}. Additional contributors include unskilled birth attendance, home deliveries, rural residence, inadequate access to emergency obstetric services, precipitous labor, and failure to utilize partograph-based monitoring¹⁹⁻²¹.

In high-resource countries, risk factors are primarily linked to intrapartum trauma, including progression of third- or fourth-degree tears, macrosomia, occiput posterior fetal position, midline episiotomy, instrumental delivery, and nulliparity^{15, 22}. Congenital anomalies are rare, accounting for less than 1% of RVF cases in most studies^{21, 22}.



Complications associated with vaginal fistulas are often profound and multisystemic²³. These include urinary incontinence, upper urinary tract damage such as unilateral or bilateral hydronephrosis, chemical dermatitis due to persistent urine leakage, and gastrointestinal sequelae such as constipation, flatal incontinence, and fecal leakage^{3, 8, 24}. Obstetric fistulas may also lead to serious reproductive and endocrine complications, including uterine rupture, Sheehan's syndrome, secondary infertility, amenorrhea, stillbirth, and perinatal mortality^{12, 13}. Neurologic and psychosocial consequences such as peroneal nerve injury, paraplegia, dyspareunia, inability to perform religious practices, social ostracism, unemployment, divorce, depression, and suicide are also reported^{14, 17, 25}. Women living with untreated fistulas are often described as "the living dead" due to the severity of physical suffering and social isolation they endure³.

Early, multidisciplinary surgical repair—alongside psychological, physical, and social rehabilitation—is essential to prevent long-term disability. Surgical management of RVFs is cost-effective, reduces disability-adjusted life years (DALYs), and significantly improves the quality of life^{3, 5}. In response to the global burden, the United Nations Population Fund (UNFPA) launched the Campaign to End Fistula in 2003¹¹.

Although the literature has identified a variety of associated risk factors, including vaginal stenosis secondary to chronic fistula in 17% of patients³, a 2023 meta-analysis by Mahd Reihan et al. identified fetal head circumference as a key predictor of obstetric anal sphincter injury (OASIS) during vaginal delivery²⁶.

Despite the documented burden of RVF, this report presents a rare case of complete perineal body rupture secondary to RVF during the second stage of labor in the absence of severe maternal complications.

Case Presentation

A 19-year-old primigravida woman of Afghan nationality, married in 2017 to a distant relative, presented at 40 weeks of gestation with labor pains as the chief complaint. The pregnancy was planned and desired, with no reported comorbidities or antenatal complications. She reported attending at least eight prenatal care visits. She had no history of miscarriage.

On April 28, 2010 (9/2/1389 in the Iranian calendar), she was admitted to the labor and delivery unit at Javad-al-Aemmeh Hospital in Mashhad in the latent phase of labor with signs of bloody show due to the long distance to her home following midwifery triage and initial evaluation at 12:00 PM.

The patient denied headache, dyspnea, epigastric pain, abnormal vaginal discharge, incontinence, or prior vaginal manipulation. Her medical history was negative for infectious diseases, gastrointestinal or genitourinary surgeries, Crohn's disease, dyspareunia, or anorectal trauma. Baseline laboratory evaluations and cardiotocographic monitoring were performed. Labor progressed spontaneously without pharmacologic induction, and uterine contractions were deemed adequate.

The mother's vital signs were assessed at the time of admission and at the beginning of the active phase and were

normal. Hypertension was not reported until the end of the active phase. Uterus contractions at the time of admission were mild and 20 seconds long, every 10 minutes, and regular. Vaginal examination was performed every 2 hours during the active phase, and at the beginning of the active phase, the cervical dilatation was 5 cm, effacement 60%, and the fetal station -1. According to the partograph, the diagnosis of prolonged labor or labor arrest was not reported. The patient was in RBR position and bladder emptying was performed if necessary.

At 7:30 PM, spontaneous rupture of membranes (SROM) occurred, revealing thick meconium-stained amniotic fluid. Continuous fetal heart rate (FHR) monitoring showed no pathologic decelerations. Blood pressure measurements during labor reached 140/100 mmHg on multiple occasions. At 7:40 PM, intravenous magnesium sulfate was initiated for hypertensive management, with routine monitoring of deep tendon reflexes, respiratory rate, and urine output. Following a hypertensive spike to 160/110 mmHg, a single dose of hydralazine was administered.

Cervical dilation reached 10 cm by 8:30 PM. At 9:00 PM, prior to fetal crowning, the patient was transferred to the delivery bed. Fetal crowning was observed simultaneously at the typical outlet of the vaginal and rectal orifices (Figure 1). A female neonate weighing 2,900 grams, with a head circumference of 36 cm and no abdominal abnormalities was delivered with Apgar scores of 9/10—a complete perineal body rupture complicated delivery.

The placenta and membranes were delivered intact within 10 minutes. Postpartum examination revealed a full-thickness rectal tear extending proximally toward the cervix, without hematuria or urinary retention.

It is worth noting that during repeated pelvic examinations, the criteria of Cephalopelvic disproportion, asynclitism, and occiput posterior were not recorded and the fetal head did not have any supporting evidence such as Caput succedaneum after delivery. In the fourth stage of labor, due to excessive bleeding, intravenous oxytocin (60 IU) was administered along with misoprostol (1000 mg).

Due to the potential risk of infection of the surgical site by enteric and epidermal bacteria and to maintain tissue integrity, a transvaginal, layer-by-layer approach was used. In this technique, the patient was first placed in a modified lithotomy position to elevate the buttocks so that the first incision could be made to remove scar tissue in the perineum. In the next step, the layers of the rectal wall and prerectal fascia were first closed by 3-0 chromic catgut with separate sutures. The third step included a midline levatoroplasty and the anal sphincter was repaired with an end-to-end repair method. In the final step, the vaginal wall was closed by 2-0 absorbable chromic catgut with continuous sutures (Figure 2).

after surgery ileus elimination, patient was provided with a diet, along with perineal hygiene education, avoidance of vaginal douching and intercourse for 3 months, and prescription of stool softeners. Urethral catheterization was performed, followed by layered transvaginal repair of the rectal sphincter and vaginal wall. The patient was managed with

prophylactic antibiotics and nutritional supplementation for three months postpartum.

Follow-up imaging showed no evidence of Müllerian anomalies. At a 6-week follow-up, both in person and by

telephone, the patient reported only mild pain at the suture site and denied symptoms of constipation, abdominal bloating, or fecal or flatal incontinence. The patient had no complaints of fecal incontinence (liquid and solid) and gas, anus stenosis, pain during defecation, and bleeding.



Figure 1. Fetal head crowning through prineal body



Figure 2. Transvaginal, layer-by-layer approach

Discussion

RVF occurs in approximately 1–8% of cases globally, either in isolation or concurrently with vesicovaginal fistula, the latter seen in up to 23% of affected individuals²⁰. The global disparity in disease burden is partially attributable to access to trained surgeons; in East Africa, the estimated ratio is 0.25 trained fistula surgeons per 100,000 individuals, compared to 5.6 per 100,000 in the United States³.

According to the Daniels classification (1949), RVFs are categorized by the vertical extent of the vaginal defect into mild, moderate, and severe types. Mild fistulas are located near the posterior fourchette, moderate ones extend toward the mid-vaginal vault, and severe fistulas reach the posterior fornix of the cervix. Most obstetric fistulas are <2.5 cm and respond well to local perineal repair^{2, 27, 28}. Larger or recurrent fistulas, especially those associated with pelvic surgery, inflammatory bowel disease (e.g., Crohn's disease), malignancy, or radiation, often require intra-abdominal surgical correction^{12, 20, 21}.

Management of RVF based on etiology remains a subject of debate. Complex and repeated RVF repairs often fail due to scarring and loss of vascularity of the surrounding tissue²⁹. Some studies report a fourfold higher healing rate for obstetric fistulas within six months post-repair compared to non-obstetric etiologies^{30, 31}, while others report no significant difference. In the current case, the RVF was categorized as moderate and successfully treated using a transvaginal approach.

A 2018 study by Jahani et al. on severe perineal laceration during vaginal delivery showed that controlled maternal pushing, mediolateral episiotomy with modified Rittgen maneuver after perineal massage in labor can be a protective factor³². However, in our study, the fistula was hidden by fetal head in the second stage of labor and was not detected till crowning. In addition The mother did not receive perineal massage during labor. For this reason, despite the perineal control maneuvers performed by the gynecologist, at station +3, the head was suddenly observed in a position between the vaginal entrance and the rectum and was delivered with a complete rupture of perineal body.

According to the World Health Organization (WHO), the success rate of obstetric fistula repairs—via transanal, transvaginal, or transperineal techniques—ranges from 20% to 90%³³, although no global consensus exists on the preferred approach^{3, 20, 22, 27}. In the transanal technique, the fistulous tract is excised, and rectal and vaginal defects are closed separately with absorbable sutures. The transvaginal technique involves layered closure of the rectal wall and the anterior (prerectal) fascia following excision of scar tissue, followed by midline levatorplasty and final closure of the vaginal wall. In the transperineal approach, a perineal incision is used to expose and repair both compartments in a single surgical field^{20, 34}.

Optimal visualization during repair is essential to identify the size, location, degree of tissue loss, and any associated vaginal scarring. The exaggerated lithotomy position with Trendelenburg tilt and buttock elevation improves access. Postoperative care includes urinary catheterization for 10–21

days, strict perineal hygiene, stool softeners, and sexual abstinence for three months to promote tissue healing^{3, 35, 36}.

In a study by Santoso in 2021, 3-0 and 2-0 absorbable sutures were used for postpartum RVF rupture, and despite the normal birth weight (2900 g) and multiparity of the mother, RVF occurred due to the risk factor of a previous history of grade 3 rupture³⁷. This study also suggested that delayed absorbable sutures may be more beneficial in terms of long-term functional outcomes, which is consistent with the results of repair surgery in our study. However, there are not enough clinical trials to draw a definitive conclusion.

Factors influencing surgical outcomes include nutritional status, hemoglobin levels, local tissue integrity, history of prior fistula repairs, coexisting medical conditions, and the implementation of a multidisciplinary surgical approach involving gynecologists, proctologists, and diagnostic sonographer^{18, 20, 22}. The WHO also advocates establishing dedicated obstetric fistula committees within national maternal and neonatal health programs, emphasizing context-specific resource allocation and workforce capacity³. Both the Royal College of Obstetricians and Gynaecologists (RCOG) and the American College of Obstetricians and Gynecologists (ACOG) recommend a structured postpartum follow-up between 6 and 12 weeks for patients who sustain third- or fourth-degree perineal lacerations²².

In the present case, the favorable surgical outcome may be partially attributed to the trophic effects of endogenous estrogen on perineal tissue healing, potentially related to the patient's young age. This observation is consistent with findings reported by Satura et al. in a 2023 study conducted in the Netherlands³⁸.

Inflammatory fistulas generally demonstrate inferior postoperative healing and surgical outcomes compared to trauma-related fistulas and are frequently associated with diminished quality of life³⁹. In rare cases, infectious processes such as Bartholin gland cysts or abscesses—typically palpable at the 4 and 8 o'clock positions of the vaginal introitus—may predispose individuals to RVF formation. In the current case, however, vaginal examination revealed no signs of such pathology^{22, 40}.

The risk factor of our study patient was nulliparity and Asian race, which was associated with high blood pressure at the end of the active phase, which was consistent with the results of the vatanchi study in 2022 in Mashhad. In vatanchi study, one attempt at delivery with vacuum was successful, but despite the normal weight of the newborn, a RVF unexpectedly occurred, which shows the importance of postpartum rectovaginal examination in the stages before and after suturing⁴¹.

A study in China in 2025 analyzed 4 cases of rectovaginal button fistula. This study reported that primiparous women were more susceptible to RVF due to less elasticity of pelvic tissues and lack of childbirth experience, and multiparous women over 35 years of age were more susceptible to RVF due to age-related decrease in tissue elasticity, along with tightening of pelvic muscles and ligaments⁴², which is consistent with the study by Ma and Suzuki in 2024 in Japan and Toney in 2023 in Ireland. This study identified the



variables of nulliparity, instrumental delivery, and midline episiotomy as strong risk factors for RVF^{43,44}.

Although in various studies, male sex in newborns with bigger head circumference were reported in the list of risk factors^{10, 26}, such a risk factor was not confirmed in our study, which indicates the importance of other avoidable risk factors in the labor process, such as proper control of labor and delivery than Contextual factors such as age, race, and parity.

Surgical repair of RVFs is considered technically demanding and is associated with higher failure rates than other fistula types. This is attributed to the thin, poorly vascularized architecture of the anovaginal septum and the constant mechanical stress imposed by fecal transit through the rectum³⁶. In the present patient, aside from a hypertensive crisis during labor and the presence of meconium-stained amniotic fluid at the end of the active phase, no other significant obstetric or medical risk factors were identified. However, maternal nutritional status was not thoroughly evaluated. Limited evidence, including a 2015 study by Oakley et al. in California, has reported hypertensive complications in approximately 21% of mothers diagnosed with RVF⁴⁵. Similarly, a 2020 case report by Pramod described an obstetric fistula in a vegetarian mother, raising the possibility of nutritional deficiency as a contributory factor¹⁸.

One proposed mechanism for fistula formation in the context of intrapartum hypertension involves increased vascular fragility and compromised perineal parenchymal integrity under peak mechanical strain during fetal crowning³⁸. Chronic perineal moisture and urinary acidity may exacerbate tissue breakdown by promoting uric acid crystal deposition and secondary skin inflammation. In such cases, topical corticosteroid or estrogen-containing creams are often prescribed for symptom relief. Fistula-related urinary incontinence typically presents as stress or urge incontinence³. Notably, the patient, in this case, exhibited no clinical signs of urinary tract infection or skin breakdown due to leakage.

Neurologic complications, including foot drop resulting from peroneal nerve injury or postpartum paraplegia secondary to L5 nerve root involvement—collectively termed "obstetric palsy"—have also been reported in association with obstetric fistulas³. In contrast, the current patient reported only mild discomfort at the suture site, without any evidence of gas or fecal incontinence, mobility impairment, or lower extremity neuropathy.

Given the absence of multiple conventional risk factors for RVF in this case, the lack of a detailed nutritional assessment—particularly regarding maternal protein intake, vegetarianism, and factors contributing to limited fetal growth—represents a key limitation. Nevertheless, the rarity of RVF development in the context of an isolated hypertensive episode and the favorable clinical outcome following conservative transvaginal repair underscore the significance of this report. It provides valuable insight into non-traditional risk factors and reinforces the importance of individualized obstetric assessment.

Conclusion: In the present study, RVF risk factors such as nulliparity, young age, Asian ethnicity and hypertension were reported. Monitoring these risk factors, especially in the

context of the country's demographic crisis, is of the most importance in primiparous mothers to increase the sensitivity of obstetric staff in controlling labor and delivery in mothers with more than one risk factor.

In alignment with the principle that prevention supersedes treatment in reproductive health, comprehensive and detailed history-taking—particularly by midwives—is essential for early identification of risk factors for RVF in primiparous women. Seemingly minor clinical elements, including nutritional deficiencies, suboptimal calcium intake, or transient hypertensive episodes during pregnancy or labor, may serve as early indicators of adverse obstetric outcomes. To mitigate complications such as obstetric fistulas, coordinated communication and systematic data sharing across maternal healthcare systems should be emphasized within national population health strategies. This case highlights the urgent need for structured midwifery education and risk-assessment protocols, particularly in rural and underserved maternity settings.

Ethical Considerations

Prior to writing the article, informed consent was obtained from the pregnant woman and her husband regarding the publication of images of the obstetric fistula in the scientific journal. They were assured that all personally identifiable information and data from their medical records would be kept confidential and that only the obstetric information relevant to the article would be used.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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