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CASE REPORT

## "Rusty pipe" syndrome: benign and rare cause of bloody nipple discharge during breastfeeding - case report

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### Abstract

"Rusty pipe" syndrome is a rare cause of benign, self-limiting bloody nipple discharge during pregnancy and the puerperal period. This article reports the case of a postpartum woman in the southern region of Brazil, who presented with painless bilateral brownish nipple discharge in the first hours following childbirth. The breasts showed no signs of infection or structural changes upon physical examination, and the patient was directed to continue breastfeeding. The condition persisted and the patient underwent breast ultrasound, which showed no significant findings except multiple scattered cysts. Two days after onset, the bloody nipple discharge ceased and lactation was continued. The newborn was exclusively breastfed until 6 months of age. This condition should be considered as a possible differential diagnosis for other causes of papillary discharge, and it is important to not discourage breastfeeding in this situation.

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## INTRODUCTION

The occurrence of bloody nipple discharge in lactating women can lead to maternal anxiety, cause vomiting in the newborn,<sup>1</sup> and interfere with breastfeeding. The most common causes for this condition are nipple fissure, mastitis, trauma, and ductal papilloma.<sup>2,3</sup> However, there are reports of a rare physiological condition known as “rusty pipe syndrome” as the cause of painless nipple discharge in pregnant and postpartum women.<sup>3</sup> Although it is benign and self-limiting, the syndrome should be included in the differential diagnosis of these nursing women to guide appropriate conduct in the case, especially to maintain breastfeeding.

## CLINICAL CASE

A female infant was born vaginally to a 29-year-old primipara at 38 weeks and 2 days of gestational age, with birth weight of 3575 g, and Apgar scores of 8 and 9 at 1 and 5 min, respectively. In the first hours after birth, the new mother experienced painless bilateral brownish nipple discharge. Clinical evaluation was performed at the Milk Bank of the Darcy Vargas Maternity Hospital in Joinville (SC) and found no signs of inflammation, fissures, engorgement, retractions, or palpable masses in the breasts. The patient denied any history of breast trauma. Examination of the newborn’s mouth ruled out the presence of natal teeth. The following day, the condition persisted and milk could not be extracted, and a breast ultrasound was performed. No solid nodular images were found, only sparse multiple bilateral mammary cysts measuring up to  $0.8 \times 0.4 \text{ cm}^2$  on the right and  $0.6 \times 0.3 \text{ cm}^2$  on the left. Physical examination of the breasts found no abnormalities, and because the imaging exam also revealed nothing suspicious, “rusty pipe” syndrome was considered, and the patient was encouraged to continue breastfeeding. Later the same day, the nipple discharge ceased spontaneously, and the lactation process continued. Since then, breastfeeding continued uneventfully, and the infant was breastfed until 6 months of age when complementary feeding was initiated.

## DISCUSSION AND LITERATURE REVIEW

“Rusty pipe” syndrome is a rare benign physiological condition that involves transient, spontaneous, and painless bloody nipple discharge during gestation and lactation.<sup>2,3</sup> Both breasts are usually involved, and the syndrome begins at the time of birth or early days of lactation,<sup>4</sup> but can even occur during pregnancy.<sup>2,5</sup> The pathophysiological process consists of increased stromal vascularization<sup>6</sup> associated with rapid alveolar and mammary duct growth;<sup>7</sup> the capillary network is consequently very delicate and can break easily, resulting in bloody nipple discharge along with mammary secretions.<sup>2,4,5</sup>

The condition is more common in primiparous women<sup>7</sup> who present with no pain or signs of inflammation in the breast as well as no previous history of trauma,<sup>2</sup> as in the case reported here. In addition, physical examination does not reveal any sensitivity, engorgement, fever, masses, cracks, or fissures in the breasts or areolae.<sup>2,4</sup>

Nipple trauma resulting from breastfeeding technique<sup>8</sup> that causes fissures and bleeding should be considered a differential diagnosis and excluded to diagnose “rusty pipe” syndrome, as well as pathological conditions such as intraductal papilloma and fibrocystic breast disease.<sup>2,3,5,9</sup> Intraductal papilloma is a benign epithelial neoplasm that develops in the lumen of the subareolar ducts and presents with painless spontaneous hemorrhagic nipple discharge on one side from a single duct.<sup>2,5</sup> The diagnosis involves searching for the “trigger point” to identify the affected duct through clinical breast examination by applying pressure on the cardinal points of the nipple–areola complex or ultrasound examination (if there is doubt upon physical examination), and treatment consists of surgical resection of the affected duct.<sup>10</sup> Fibrocystic breast disease is a benign functional breast alteration that results from exaggerated physiological response of breast tissue to a change in the hormonal environment, affecting both breasts and causing mastalgia, palpable granulosis, and nipple secretion,<sup>1,11</sup> and is treated by symptomatic orientation and measures and the use of hormonal contraceptives.

Diagnosis of “rusty pipe” syndrome is first made by anamnesis and normal physical examination, followed by complementary examinations if necessary, such as cytological analysis of the mammary secretion and ultrasound, which may help rule out pathological conditions.<sup>3,5</sup> The patient should be advised to continue breastfeeding during this period, considering that the condition is benign and self-limiting,<sup>6</sup> and in most cases, the bloody discharge ceases within 3–7 days.<sup>3,8</sup> However, gastrointestinal irritation in the newborn due to the presence of blood in the breastmilk can lead to the appearance of bloody vomit<sup>1,11,12</sup> and even undermine breastfeeding.<sup>13</sup>

The main cause of digestive bleeding in healthy neonates is swallowed maternal blood, and the Apt test differentiates maternal from neonatal blood. This colorimetric assay is performed on a sample of vomit, gastric aspirate, or feces from the newborn and is based on the resistance of fetal hemoglobin to denaturation when exposed to sodium hydroxide. A small sample of the test material is diluted in ml of water to lyse the erythrocytes and is centrifuged. After adding one part sodium hydroxide 1% to five parts of the centrifuged supernatant, adult-type hemoglobin changes in color from pinkish to yellowish-brown in 2 min, whereas fetal-type hemoglobin remains pink. In this way, a positive test demonstrates the presence of maternal hemoglobin in the test, corresponding to swallowed blood syndrome.<sup>11,12</sup>

The benefits of breastfeeding are already well known and incontestable. This practice has a significant impact on

public health by reducing mortality due to infectious diseases, necrotizing enterocolitis, and sudden infant death syndrome in childhood and also prevents diarrhea, respiratory infections, and otitis media.<sup>14</sup> Guaranteeing exclusive breastfeeding is therefore essential. For this reason, knowledge of “rusty pipe” syndrome among health professionals and the use of the Apt test can provide better assistance to mothers, with adequate management and maintenance of breastfeeding.

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