

# ICE BURN IN PUERPERAL BREAST: CASE REPORT

## Lesão térmica por gelo em mama de puérpera: relato de caso

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### ABSTRACT

Burns are among the most severe injuries the human body can withstand, as they are life-threatening and therefore require prompt treatment with debridement and use of biological substitutes for a better prognosis. This case report concerns an 18-year-old patient on the 42nd day of puerperium who used ice packs on the right breast to alleviate breast engorgement and pain. After a prolonged period of use, it progressed to hyperemia and, subsequently, an extensive area of necrosis in the skin of the right breast, reaching the subcutaneous adipose tissue, compatible with a third-degree burn. Surgical debridement of the necrotic areas was performed, followed by the use of biological skin substitutes until complete healing of the local skin, not requiring grafting at first. Cryotherapy should be used with caution. Treatment with clinical support and fast surgical intervention can minimize the impact of burns.

**KEYWORDS:** Burn; breast; debridement; postpartum period; frostbite.

### RESUMO

As queimaduras estão entre as mais graves lesões que o corpo humano pode suportar, visto que ameaçam a vida e requerem, portanto, um tratamento precoce com debridamento e uso de substitutos biológicos para melhora do prognóstico. O presente relato de caso diz respeito a uma paciente de 18 anos de idade no 42º dia de puerpério que realizou compressas com gelo na mama direita para melhora de ingurgitamento mamário e mastalgia. Após longo período de uso, evoluiu com hiperemia e, posteriormente, extensa área de necrose na pele da mama direita, atingindo o tecido adiposo subcutâneo, compatível com uma queimadura de terceiro grau. Foi realizado debridamento cirúrgico das áreas de necrose, seguido do emprego de substitutos biológicos da pele até a completa cicatrização da pele local, não necessitando de enxertia em um primeiro momento. Recomenda-se que a crioterapia deve ser utilizada com cautela. O tratamento com suporte clínico e a intervenção cirúrgica rápida podem minimizar o impacto das queimaduras.

**PALAVRAS-CHAVE:** Queimadura; mama; desbridamento; período pós-parto; congelamento das extremidades.

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Conflict of interests: nothing to declare.

Received on: 05/29/2018. Accepted on: 07/04/2018

## INTRODUCTION

Burns are among the most severe injuries the body can withstand – not only for the symptoms but the possibility of hypovolemic and septic shock, proportional to the extent and depth of the affected area, resulting in risk of life<sup>1</sup>. Therefore, burns require immediate treatment due to their urgency<sup>2</sup>. This event can cause prolonged periods of hospitalization, pain, edema, and deformity of the affected areas. The impact is not restricted to physical damage and can compromise psycho-emotional and relational aspects<sup>3</sup>. Prognosis improved dramatically in recent years, mainly thanks to the recognition of the importance of early debridement<sup>4,5</sup> and the progress in the use of biological skin substitutes<sup>6</sup>.

Cryotherapy can cause burns. Widely adopted by health professionals, this treatment can cause skin damage if improperly done. In this study, the authors report a case of ice burn in one breast during the puerperium. This case is relevant not only for its rarity but also to emphasize the importance of correct instructions to prevent similar conditions from happening more often, in addition to guiding the conduct in these situations<sup>7</sup>.

## CASE REPORT

An 18-year-old patient on the 42nd day of puerperium visited the Mastology Department of Hospital Geral de Fortaleza (HGF) on July 6, 2017. She reported initial right breast pain and engorgement, which lead family members and healthcare professionals in her hometown to advise her to apply ice packs locally. After using the ice pack for more than three to four hours on the right breast, she noticed persistent hyperemia that progressed in a week to skin darkening in almost the entire right breast. She stopped breastfeeding and was instructed to apply local dressings with dermatological ointments, without improvement, being then referred to HGF.

Initial medical care identified an extensive area of total necrosis in the skin of the right breast, reaching the subcutaneous adipose tissue, with leakage of milk secretion due to the wound, compatible with a third-degree burn. The nipple-areola complex (NAC) was preserved, as an “island” in the middle of the necrotic tissue (Figure 1). No nodular area was found in the breasts and axillae. She was hospitalized and started antibiotic therapy/prophylaxis with ciprofloxacin and clindamycin, in addition to Cabergoline to suppress lactation.

On July 7, 2017, she underwent surgical debridement of the necrotic areas on the right breast, without complications (Figure 2), and with careful NAC preservation. She stayed in the hospital for three days with collagenase-based dressings and was discharged after evaluation by the Enterostomal Therapy Department. The patient applied Polyhexanide (PHMB) at home daily and changed dressings at the Enterostomal Therapy Outpatient Clinic with regenerative membrane/silicone mesh of low adherence weekly for five months.

The progress of the injury was satisfactory, with centripetal epithelialization over the months, not requiring skin grafting (Figure 3).

## DISCUSSION

Approximately one million people suffer burns annually in Brazil. The main victims are children and low-income people. The public health system (*Sistema Único de Saúde* – SUS) registered more than 15 thousand cases of hospitalization due to burns in children aged 0 to 10 years between 2013 and 2014<sup>8</sup>. Burn is an injury caused by



**Figure 1.** Initial aspect of the ice burn on the skin of the right breast.



**Figure 2.** Aspect of the right breast after surgical debridement.

direct contact with a source of heat or cold, chemical products, electric current, radiation, or even some animals and plants (such as larvae, jellyfish, urtica), among others. For children, there is a risk of death if the burn reaches 10% of the body. In adults, the risk exists if the affected area exceeds 15%.

Children and young adults are known to be at higher risk of burn injuries. Severe burn injury, when not promptly and correctly treated, can cause deformities, mutilations, and gross cosmetic changes, which could have a noticeable impact on the future development of these individuals, compromising their biopsychosocial relationships and leading to psychiatric disorders. Therefore, early intervention improves quality of life and stimulates the formation of a strong identity, with lower impairment in the psychofunctional integrity of these patients<sup>9</sup>. Cryotherapy can cause burns, mainly in the extremities or periphery of the body, e.g., fingers, ears, and nose. Nevertheless, ice burns in central areas, such as the chest, are uncommon. Ice can cause vasoconstriction, reduce oxygen consumption and local metabolism, and form ice crystals in cells, with architectural change and cell death, affecting



**Figure 3.** Aspect of the epithelialization after five months.

the skin and subcutaneous tissue in variable depth. Patients and health professionals use ice therapy after trauma to relieve pain, and for its anti-inflammatory effects. In spite of these benefits, the inappropriate use of ice, particularly in skins with reduced sensitivity — for instance, the skin of a puerperal woman, a breast biopsy site, or even a mastectomy flap — can lead to significant damage undetected by the patient during exposure. In the present case, the patient did not report significant symptoms during cryotherapy, noticing the hyperemia when the damage was already irreversible.

Burns can affect different skin layers, being didactically divided into degrees according to the depth. A first-degree burn reaches only the epidermis, while second-degree burns affect a deeper skin layer, usually with good clinical progress. A third-degree burn destroys the skin, reaching the epidermis, dermis, and potentially subcutaneous tissues, such as fat and muscle. Treatment consists of resection of the lesion with the removal of devitalized tissue, leaving an ulcerated wound, which can lead to a defective scar, fibrosis, retractions, and even movement changes, as happens in the limbs. In the case reported, despite the extensive third-degree burn, after adequate debridement and application of biological dressings, there was a progressive and gradual regeneration of the skin and satisfactory cosmetic result regarding breast volume and shape. Later, the patient will undergo a reduction mammoplasty to correct the asymmetry and minimize the scars.

## CONCLUSION

Cases such as the one described contribute to guiding the prevention of thermal injuries in the breasts. Cryotherapy should be recommended with caution, especially in cases of reduced sensitivity. Proper patient instruction is crucial. Treatment with clinical support, fast surgical intervention, and care by the multidisciplinary team can minimize the impact of burns.

## REFERENCES

1. Frazão IC, Massaro CS, Oliveira JJ. Queimadura em 60% do corpo em paciente do sexo masculino de 13 anos: relato de caso. *Rev Bras Queimaduras*. 2016;15(2):122-6.
2. Salomoni SS, Massa LDB. Mulheres queimadas: revisão integrativa de publicações nacionais. *Rev Bras Queimaduras*. 2017;16(1):34-44.
3. Carvalho FL. O impacto da queimadura e a experiência familiar frente o processo de hospitalização [dissertação]. Ribeirão Preto: Universidade de São Paulo; 2006. 101 p.
4. Barret JP, Herndon DN. Effects of burn wound excision on bacterial colonization and invasion. *Plast Reconstr Surg*. 2003;111(2):744-50. <https://doi.org/10.1097/01.PRS.0000041445.76730.23>
5. Ramos-e-Silva M, Ribeiro de Castro MC. New dressings, including tissue-engineered living skin. *Clin Dermatol*. 2002;20(6):715-23.
6. Vale ECS. Primeiro atendimento em queimaduras: a abordagem do dermatologista. *An Bras Dermatol*. 2005;80(1):9-19. <http://dx.doi.org/10.1590/S0365-05962005000100003>
7. Öksüz S, Eren F, Sever C, Ülkür E. Frostbite Injury of the breast: a case report. *Ann Burns Fire Disasters*. 2014;27(2):105-6.
8. Brasil. Ministério da Saúde. Queimados [Internet]. [acessado em 23 mar. 2018]. Disponível em: <https://www.brasil.gov.br/>
9. Amaral MR, Martins DMFS, Souza RM, Menezes MHL, Matzenbacher CAW, Mendacoli TJ, et al. Correção de retração em mama por queimadura com retalho de grande dorsal. *Rev Bras Queimaduras*. 2012;11(3):150-4.