Full thickness epidermal burn from a heating pad on a cesarean incision with silver dressing: a case report

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Abstract

We present a case of a full thickness epidermal burn resulting from an all-natural clay-based heating pad over a cesarean incision silver dressing to bring awareness to the risks associated with nonpharmacologic management of post cesarean pain. There is limited guidance on nonpharmacological management of post cesarean pain. It is important that providers are able to advise their patients about their options, including to be wary of using heating pads on post-cesarean dressings, especially with pain in the early post-partum period.

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Introduction

In the United States, one in three women deliver via cesarean section. These rates are higher, up to four in five, in other parts of the world.[1] The rates of cesarean delivery have increased in the U.S. With these increasing rates, the maternal mortality and morbidity have also increased.[1] The pain from a cesarean incision is the most common health concern in the first two months postpartum.[2] This pain has been shown to hinder the care of the child as well as self and other activities of daily living. Untreated postpartum pain is associated with increased opioid use, postpartum depression, and the development of persistent/chronic pain.[3] Although postpartum pain is common, there is limited guidance on managing this pain, especially non-pharmacological management.[2] Attempts to minimize opiate use and prescriptions post-partum has resulted in the use of various non-opiate pain modalities, including heat, cold, NSAIDs, and gabapentin among others.

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Case

A 26-year-old gravida 1 para 1 otherwise healthy obese female sustained a 0.5% total body surface area (TBSA) full thickness epidermal burn from an all-natural clay-based heating pad one week following a cesarean section with MepilexTM Boarder Post-op silver dressing. She was admitted at 39w1d for induction of labor. Her labor course included spontaneous rupture of membranes and augmentation of labor with oxytocin drip. She had a prolonged deceleration with fetal heart rate to the 40s-60s at which time she was 6 cm dilated. Given this, the decision was made to proceed with a cesarean delivery; a MepilexTM Boarder silver dressing was placed as per unit practice.

The patient contacted the OBGYN Department six days after delivery due to concerns for wound abnormalities. She had used an all-natural clay-based heating pad on her abdomen over her dressing the previous night that resulted in a palm-sized blister under the tape and dressing (e.g. below the silver dressing); and separate from the incision. The blister ruptured the following morning. She was scheduled for an appointment that day. She noted that she was not in severe pain. The physical exam at this time revealed a superficial blister that had ruptured without signs of cellulitis. The plan was to keep the area clean and dry.

She presented to urgent care 19 days later for concern that the wound was not healing. At that time examination showed concern for a full thickness palm size epidermal burn. She was advised to apply Silvadene twice a day and scheduled for an appointment in a specialized burn clinic the next day.

Figure 1. Wound at urgent care.

At her burn appointment the next day she reported night sweats, weight loss, tiredness, itching, and bleeding and pain from the wound, which was noted to be 5 cm x 7 cm and located above and separate from the cesarean incision. The cesarean section scar was well healed. Arrangements were made for surgical debridement and possible grafting in the operating suite the next day.

Figure 2. Wound at the burn clinic.

She underwent debridement and excision via 15cm incision and primary closure of the area—grafting was not necessary.

She returned for follow up in the burn clinic one week later. At that point, she was 1-month post-partum and able to do most daily activities and infant cares at home without issue. She was not experiencing any pain, itching, fever, chills, nausea, vomiting, or abdominal pain. She was taking acetaminophen periodically, had a good appetite with regular bowel habits and no issues with urination. Her wound appeared closed, the incision was approximated, glue was intact, with no surrounding erythema or drainage.

Figure 3. Wound one week following excision and debridement with primary closure.

Discussion

The pain experience is multifactorial – physical, cognitive, emotional, and cultural. Pain signals can arise from tissue damage or by inflammation. The current consensus recommendation for postoperative cesarean pain from the American College of Obstetrics and Gynecologists (ACOG) is a stepwise multimodal approach that includes oral and parenteral analgesic adjuvants, including acetaminophen, NSAIDs, and opioids.[3] ACOG notes that both pharmacologic and nonpharmacologic therapies are useful in managing postpartum pain and providers should understand the risks and benefits of the various options to optimize pain management. Yet ACOG does not provide guidance on nonpharmacologic therapies.[3] Additionally, enhanced recovery after surgery (ERAS) programs have been recommended and advised in order to shorten hospital stay, reduce opiate use and pain after delivery.[4] In order to reduce opiate use post-operative pain management is accomplished via a multimodal approach including neuraxial analgesia, early mobility, nutrition, cold/heat, NSAIDs, acetaminophen, and gabapentin. However, the use of heat and cold are not without risks. Cold compresses left in place for too long can result in ice burn or frostbite. Alternatively, heat can result in burns of various severity as presented in our case.

WebMD, Healthline, and the Rochester medical center suggest using a heating pad on the low setting to reduce pain on the abdomen and from the incision.[5,6,7] The use of an all-natural clay-based heating pad was a measure used successfully by the patient previously and desired to reduce the use of other pharmacologic measures. Unfortunately, the patient was not aware that the silver impregnated dressing was a contraindication to the use of heat which increased the risk of burn from use of heating pad as a heat source.[8] An option would have been earlier removal of the dressing—prior to the full 7 days allotted by the manufacturer—followed by use of heat. There is no current evidence that silver impregnated dressings reduce post-cesarean infection or are required to remain in place for a full seven days to result in

clinical benefit.

Literature review including PubMed, Google, and Cochrane including search terms: 'thermal burns from heating devices', 'burn and heating pads', 'burn and clay heating pad', 'burn and heat pad', 'burn and hot pack' restricted to the outpatient setting and English language yielded 12 articles including a recent review by Kornhaber et al. (2020).[9] Mun et al. performed a retrospective review including 864 patients with contact burns and noted that hot packs caused the majority 51 of 94 burns from therapeutic modalities.[10] Typically burns were in areas of decreased sensation (often following surgery) or those with comorbidities that reduce sensation (e.g., diabetes and peripheral vascular disease) that places them at greater risk for injury due to their inability to perceive temperature and pain.[9,10] While none of the studies included a specific clay heating pad device (similar to the device utilized by the patient in this case report), heating devices included "hot pack", "hot water bottle" and "heating pad" types. Concerns specific to "hot pack" devices include hotter temperatures and inconsistent heating as the device is heated in the microwave prior to use. Both the MepilexTM Boarder silver dressing and the all-natural clay-based heating pad included warnings regarding use. However, our patient had used the heating pad previously for nonpharmacologic pain management with good success and was unaware of the concern given the abundance of instructions given at discharge.

We present this unique case because it is important for providers to be aware of nonpharmacologic therapies of post-partum pain cesarean deliveries and to be able to advise their patients about these options, including to be wary of using heating pads on post-cesarean dressings.

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