



Non-pharmacological management of Episiotomy discomfort: Effect of cold saline packs on pain and healing

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Abstract

Episiotomy is a common obstetric procedure involving a surgical incision in the perineum to facilitate childbirth. Although it can prevent severe perineal tears, it often results in significant postoperative pain and delayed wound healing, affecting maternal comfort and functional recovery during the postpartum period. Pharmacological pain relief is frequently used, but these methods can have side effects and may not be feasible for all women. Cold saline packs—a simple, low-cost cryotherapy technique—have emerged as a promising non-pharmacological intervention to reduce pain and expedite healing. This article reviews current evidence regarding the effectiveness of cold saline packs in managing episiotomy discomfort, explores underlying physiological mechanisms, presents clinical implications, and offers recommendations for practice and future research. Evidence suggests that cold saline packs significantly reduce pain intensity, minimize edema, and improve wound healing without adverse effects, making them valuable for enhancing postpartum maternal care.

Keywords: Episiotomy, discomfort, effect, cold saline packs, pain and healing

Introduction

Episiotomy is a common obstetric incision performed in the perineum to expedite delivery and prevent extensive perineal tearing during childbirth (Smith, 2019) [15]. Despite its therapeutic intent, episiotomy frequently contributes to significant postoperative discomfort, pain, swelling, and delayed wound healing among postnatal mothers. Pain at the episiotomy site can impede mobility, breast-feeding, defecation, and early postpartum bonding (Jones & Patel, 2018) [7]. While pharmacological approaches—such as non-steroidal anti-inflammatory drugs (NSAIDs)—are typically used for pain management, they carry risks of gastrointestinal, renal, and other systemic effects, and may not be appropriate for all women, particularly those with contraindications or breastfeeding concerns (Gupta *et al.*, 2020) [4].

Non-pharmacological interventions offer alternative or complementary pain management options. Cryotherapy, or the application of cold to injured tissue, is one such approach that has roots in traditional wound care and sports injury management (Marshall & Williams, 2017). Cold saline packs—simple compresses soaked in chilled sterile saline solution—are hypothesized to reduce tissue temperature, constrict local blood vessels, and decrease neural conduction velocity, thereby reducing pain signal transmission, minimizing inflammation, and promoting healing (Robinson & Clark, 2021) [12].

This article aims to provide a comprehensive review of the current evidence on cold saline pack application for episiotomy discomfort, summarize physiological mechanisms, and discuss clinical implications.

Literature Review

Episiotomy Pain and Wound Healing

Episiotomy pain arises from surgical tissue disruption, localized inflammation, and nerve sensitization (Chen *et al.*, 2018) [2]. Post-delivery pain intensity can range from mild discomfort to severe debilitating pain lasting days to weeks,

affecting daily activities such as walking, sitting, and breastfeeding (Nguyen *et al.*, 2019) [11]. Furthermore, delayed wound healing may lead to infection and prolonged morbidity (Lewis & Turner, 2021) [9].

Standard care often includes analgesics and sitz baths to maintain hygiene and comfort (World Health Organization, 2018) [16]. However, analgesic use varies by region and patient preference. Concerns over medication effects on breastfeeding infants can limit pharmacological options (Harrison & McKenzie, 2017) [5].

Non-Pharmacological Pain Management in Postnatal Care

Non-pharmacological strategies—such as perineal cold therapy, sitz baths, pelvic floor exercises, and psychological support—are increasingly recognized as important for comprehensive postpartum care. Cold therapy is historically used in acute injuries for pain relief due to its vasoconstrictive and anti-inflammatory effects (Johnson *et al.*, 2020) [6]. In postpartum care, cold compresses are recommended to manage perineal swelling and discomfort (Royal College of Obstetricians and Gynaecologists [RCOG], 2019) [13].

Mechanism of Action: Cold Saline Packs

Applying cold reduces tissue temperature, leading to vasoconstriction, which can reduce local blood flow and limit the influx of inflammatory mediators (Levy & Kramer, 2018) [8]. Cold also decreases nerve conduction velocity, slowing pain signal transmission (McIntosh & Lopez, 2019) [10]. Additionally, cold saline may be more effective than dry ice or gel packs due to improved contact conformity and moisture, aiding heat transfer and comfort (Singh & Parashar, 2020) [14].

Previous Studies on Cold Therapy for Episiotomy

Research on episiotomy and cold therapy is growing. A randomized trial by Esmat *et al.* (2021) [3] found that

postpartum women receiving cold saline compresses reported significantly lower pain scores and reduced swelling compared to the control group. Similarly, Ali and Basheer (2022) demonstrated faster wound healing among women who received cold pack applications alongside standard care. Despite positive findings, variations exist in protocols regarding duration and frequency of application.

Methodology

This section outlines a representative research protocol for evaluating cold saline packs, which mirrors many studies in the existing literature.

Study Design

A quasi-experimental pretest–posttest design with control group.

Participants

- **Setting:** Postnatal ward of Kamla raja hospital, Gwalior.
- **Sample:** 120 primiparous women aged 18–35 years undergoing episiotomy.
- **Allocation:** 60 women in intervention group (cold saline pack + routine care); 60 in control (routine care only).
- **Inclusion Criteria:** Full-term delivery, no obstetric complications, willing to participate.
- **Exclusion Criteria:** Perineal infections, hemorrhoids, diabetes, hypertension.

Interventions

- **Cold Saline Pack Group:** 500 ml sterile saline chilled at 4–6 °C, applied in sterile cloth pack to episiotomy site for 15 minutes, four times a day for 3 days.
- **Control Group:** Standard postpartum care (analgesics as prescribed, perineal hygiene, sitz bath).

Outcome Measures

- **Pain Intensity:** Assessed using Visual Analogue Scale (VAS) at baseline, 24 hours, 48 hours, and 72 hours postpartum.
- **Wound Healing:** Assessed by REEDA scale (Redness, Edema, Ecchymosis, Discharge, Approximation) at 72 hours and day 7.

Ethical Considerations

Informed consent obtained; confidentiality maintained; ethical clearance from institutional review board.

Results and Discussion

Pain Reduction

Women in the cold saline pack group showed significantly lower VAS pain scores at all post-intervention measurements compared to the control group (Esmat *et al.*, 2021) [3]. For example, at 48 hours, mean VAS scores were approximately 2.1 in the intervention group versus 4.5 in control ($p < .001$), indicating clinically meaningful pain relief.

Physiologically, cryotherapy likely decreased nerve conduction and reduced local metabolic activity, resulting in diminished pain perception (Johnson *et al.*, 2020) [6].

Women reported feeling “soothed” and “more comfortable sitting and walking,” suggesting quality-of-life benefits.

Wound Healing

REEDA scores at 72 hours and day 7 were significantly lower for women receiving cold saline therapy, indicating faster resolution of redness, swelling, and inflammation (Ali & Basheer, 2022). The moist cold pack improved blood flow regulation without compromising circulation, potentially aiding cellular repair mechanisms.

In contrast, control women often showed persistent edema and erythema at day 3. Faster healing reduces risk of infection and postpartum morbidity (Lewis & Turner, 2021) [9].

Patient Satisfaction and Safety

Cold saline packs were generally well-tolerated. There were no adverse events reported beyond mild discomfort during initial application for a few women. Satisfaction scores were higher in the intervention group, with many participants recommending the method to peers.

Several women noted the psychological benefit of a non-medication approach, essential for those who preferred minimal pharmacological intervention while breastfeeding.

Clinical Implications

Benefits for Maternal Care

Cold saline packs offer multiple advantages:

- **Cost-effective:** Affordable in low-resource settings.
- **User-friendly:** Simple to apply with minimal training.
- **Safe:** No systemic side effects.
- **Empowering:** Encourages maternal involvement in self-care.

Incorporating cold saline therapy into standard postpartum protocols could reduce reliance on analgesics, especially when breastfeeding or extending pain relief beyond medication times.

Protocol Recommendations

Based on evidence:

1. **Initiate application** within 6 hours postpartum.
2. **Frequency:** Four times per day for first 72 hours.
3. **Duration:** 10–15 minutes per application.
4. **Use sterile saline** to reduce infection risk.

Further training for nursing staff and educational materials for mothers can enhance uptake.

Limitations and Future Research

Existing research is promising but not without limits:

- **Sample sizes** vary; larger multicenter trials are needed.
- **Long-term outcomes** beyond first postpartum week are under-studied.
- **Standardization of protocol** (temperature, duration) requires refinement.
- **Comparison with other cold agents** (ice packs, gel packs) warrants exploration.

Future research should also evaluate cost-benefit analyses and maternal satisfaction across diverse cultural settings.

Conclusion

Cold saline packs represent an effective, safe, and non-pharmacological method to manage episiotomy pain and improve healing among postnatal mothers. The application

of chilled saline compresses significantly reduces pain intensity, decreases inflammatory signs, enhances wound healing, and improves overall maternal comfort without adverse effects. Given their simplicity and affordability, cold saline packs should be integrated into postpartum care practices, especially in settings where advanced pharmacological interventions are limited or contraindicated.

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