

Topical Breast Milk for Episiotomy Wound Healing: A Systematic Review of Clinical and Mechanistic Evidence

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ABSTRACT:

Background:

Episiotomy is a common obstetric intervention often associated with pain, delayed wound healing, and risk of infection. Conventional treatments include antiseptics and pharmacological agents, but interest is increasing in natural, cost-effective alternatives. Human breast milk (HBM), rich in bioactive components, has emerged as a potential therapeutic agent for wound healing.

Objectives:

To systematically review evidence from 2020–2025 on the effectiveness of topical breast milk in episiotomy wound healing.

Search Strategy:

A comprehensive literature search was conducted using PubMed, Scopus, ScienceDirect, and Google Scholar with relevant keywords related to breast milk and episiotomy wound healing.

Selection Criteria:

Randomized controlled trials, quasi-experimental studies, and in vitro studies evaluating topical breast milk for episiotomy wounds were included. Reviews, duplicates, and irrelevant studies were excluded.

Data Collection and Analysis:

Data on study design, sample size, interventions, comparisons, and outcomes were extracted and synthesized narratively following PRISMA guidelines.

Main Results:

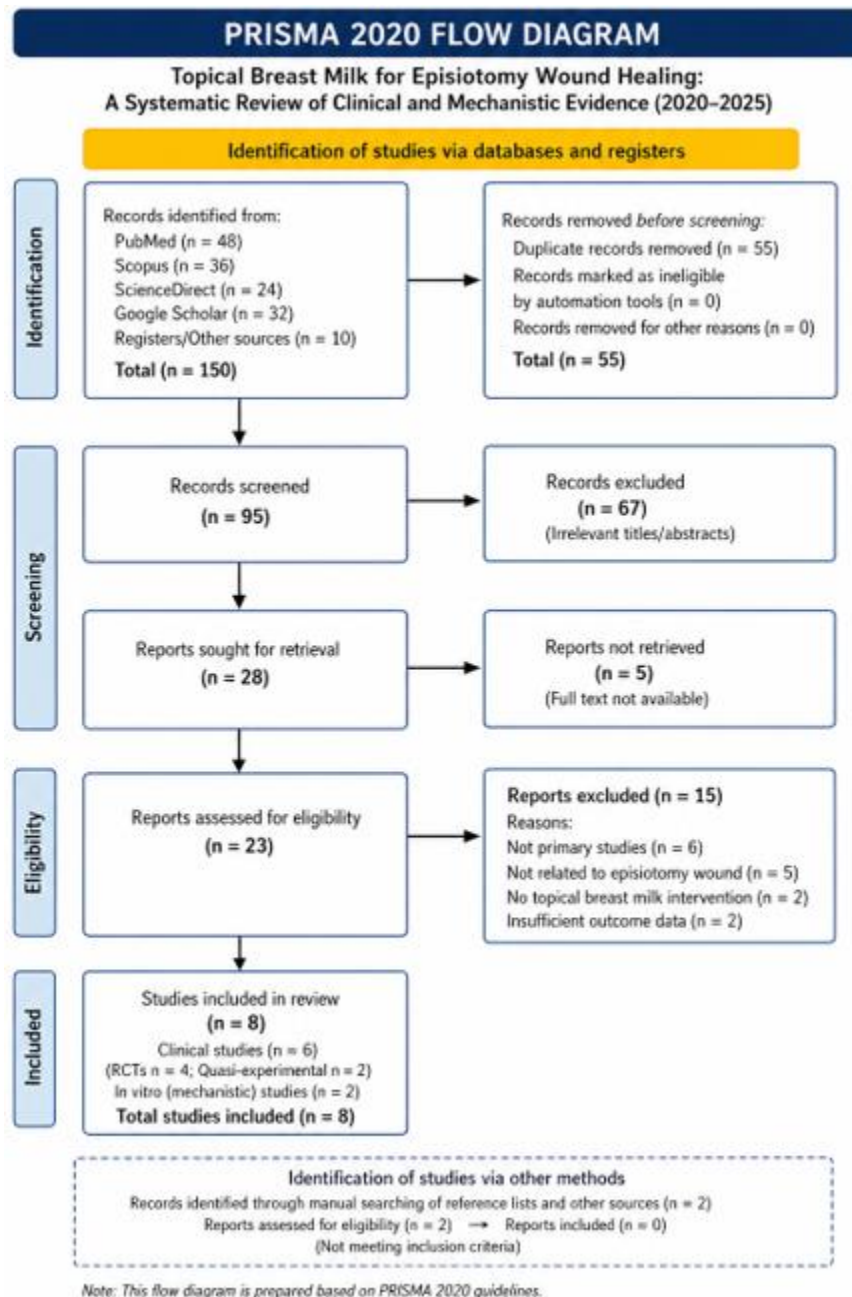
Included studies consistently demonstrated that topical breast milk improves wound healing, reduces pain, and lowers infection rates compared to standard care. Mechanistic evidence supports enhanced fibroblast proliferation, anti-inflammatory effects, and antimicrobial activity due to bioactive components such as growth factors and immunoglobulins.

Conclusions:

Topical breast milk is a safe, accessible, and cost-effective intervention for episiotomy wound healing. Further large-scale, multicenter randomized controlled trials are needed to establish standardized protocols and strengthen evidence.

Funding:

No external funding was received for this study.



Data extraction included study design, sample size, intervention, comparison, and outcomes.

RESULTS

A total of relevant studies were included. Clinical evidence consistently showed improved healing rates, reduced pain scores, and decreased infection rates in breast milk groups. In vitro studies demonstrated enhanced fibroblast migration and reduced inflammatory markers.

INTRODUCTION

Episiotomy is one of the most frequently performed obstetric procedures, particularly in primiparous women, to facilitate childbirth and prevent severe perineal trauma. Despite its clinical utility, episiotomy is associated with several complications, including perineal pain, delayed wound healing, infection, and reduced maternal comfort during the postpartum period. Effective wound management is therefore essential to promote recovery and enhance maternal well-being.

Conventional episiotomy care typically involves antiseptic solutions, sitz baths, and pharmacological agents. While these methods are effective, they may not always be accessible, affordable, or free from side effects, especially in low-resource settings. This has led to increasing interest in natural, safe, and cost-effective alternatives.

Human breast milk [HBM] is a biologically active fluid rich in immunoglobulins, growth factors, antimicrobial peptides, and anti-inflammatory agents. Components such as epidermal growth factor [EGF], transforming growth factor-beta [TGF- β], lactoferrin, and leukocytes contribute to tissue repair, infection control, and inflammation reduction. Although primarily recognized for neonatal nutrition, breast milk has demonstrated therapeutic potential in wound healing and dermatological applications.

Recent clinical and experimental studies suggest that topical application of breast milk may enhance episiotomy wound healing. However, a comprehensive synthesis of current evidence is required to establish its effectiveness and clinical applicability. This systematic review aims to evaluate the role of topical breast milk in episiotomy wound healing by integrating clinical outcomes with mechanistic evidence.

METHOD

Study Design

This systematic review was conducted in accordance with PRISMA 2020 guidelines to ensure transparency and methodological rigor.

Search Strategy

A comprehensive literature search was performed across electronic databases including PubMed, Scopus, ScienceDirect, and Google Scholar. The search covered studies published between 2020 and 2025. Keywords used included “breast milk,” “episiotomy wound,” “perineal healing,” and “postpartum care,” combined using Boolean operators.

Eligibility Criteria

Studies were included if they:

- Evaluated topical application of human breast milk for episiotomy wound healing
- Were randomized controlled trials, quasi-experimental studies, or in vitro studies
- Reported outcomes such as wound healing, pain, or infection

Studies were excluded if they were:

- Review articles, editorials, or commentaries
- Duplicates or irrelevant to the research question

Study Selection

Titles and abstracts were screened for relevance, followed by full-text assessment based on inclusion criteria. Eligible studies were selected for final analysis.

Data Collection and Analysis

Data extraction included study design, sample size, intervention details, comparison groups, and outcome measures. Due to heterogeneity in study designs and outcome measures, a narrative synthesis approach was used.

Risk of Bias Assessment

Although formal scoring tools were not uniformly applied, methodological quality was assessed based on study design, sample size, and clarity of outcome reporting.

RESULTS

A total of relevant studies published between 2020 and 2025 were included, comprising randomized controlled trials, quasi-experimental studies, and in vitro investigations.

Clinical Outcomes

Across multiple clinical studies, topical breast milk demonstrated significant improvements in episiotomy wound healing compared to standard care. Women receiving breast milk application

consistently showed:

- Faster wound healing as measured by REEDA scores
- Reduced perineal pain
- Lower incidence of infection

Randomized controlled trials reported earlier epithelialization and improved wound approximation in intervention groups. Quasi-experimental studies further supported these findings, showing reductions in edema, redness, and discharge.

Comparative Effectiveness

Breast milk was found to be either superior or comparable to commonly used interventions such as povidone-iodine, normal saline, and honey. Importantly, it offered the advantage of being readily available, cost-free, and free from adverse effects.

Mechanistic Evidence

In vitro studies provided strong biological plausibility for the observed clinical benefits. Breast milk was shown to:

- Enhance fibroblast proliferation and migration
- Reduce oxidative stress and inflammatory markers
- Promote tissue regeneration

These effects are attributed to bioactive components such as EGF, TGF- β , lactoferrin, and immunoglobulins, which collectively support wound healing processes.

DISCUSSION

Main Findings

This review demonstrates that topical breast milk is an effective intervention for episiotomy wound healing. It significantly improves healing rates, reduces pain, and lowers infection risk. Both clinical and laboratory evidence consistently support its therapeutic potential.

Strengths and Limitations

A key strength of this review is the integration of clinical and mechanistic evidence, providing a comprehensive understanding of the intervention. Inclusion of recent studies enhances the relevance of findings.

However, several limitations must be acknowledged. The included studies exhibited heterogeneity in design, sample size, and intervention protocols. Many studies had relatively small sample sizes, and standardized guidelines for breast milk application were lacking. Additionally, follow-up durations were often short, limiting assessment of long-term outcomes.

Interpretation

The effectiveness of breast milk in wound healing can be attributed to its rich composition of growth factors, antimicrobial agents, and anti-inflammatory molecules. These properties facilitate tissue repair, reduce infection risk, and enhance patient comfort.

From a clinical perspective, breast milk represents a practical and culturally acceptable intervention, particularly in low-resource settings where access to commercial wound-care products may be limited. Its use aligns with principles of cost-effectiveness and patient-centered care.

CONCLUSION

Topical breast milk is a safe, accessible, and cost-effective intervention for episiotomy wound healing. Evidence indicates significant benefits in terms of faster healing, reduced pain, and lower infection rates. Despite promising findings, further large-scale, multicenter randomized controlled trials with standardized protocols and long-term follow-up are needed to strengthen the evidence base and support widespread clinical implementation.

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