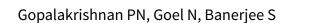


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# Saline irrigation for the management of skin extravasation injury in neonates (Review)



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#### [Intervention Review]

# Saline irrigation for the management of skin extravasation injury in neonates

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#### **ABSTRACT**

#### **Background**

Extravasation injury, a complication commonly seen in the neonatal intensive care unit, can result in scarring with cosmetic and functional sequelae. A wide variety of treatments are available, including subcutaneous irrigation with saline (with or without hyaluronidase), liposuction, use of specific antidotes, topical applications, and normal wound care with dry or wet dressings. All such treatments aim to prevent or reduce the severity of complications.

## **Objectives**

# Primary objective

To compare the efficacy and safety of saline irrigation or saline irrigation with prior hyaluronidase infiltration versus no intervention or normal wound care for tissue healing in neonates with extravasation injury.

### **Secondary objectives**

To evaluate by subgroup analysis of controlled trials the influence of type of extravasate, timing of irrigation following extravasation, and postmenstrual age (PMA) of the neonate at the time of injury on outcomes and adverse effects.

Specifically, we planned to perform subgroup analysis for the primary outcome, if appropriate, by examining:

- 1. time to irrigation from identified extravasation injury (< 1 hour or  $\geq$  1 hour);
- 2. type of extravasate (parenteral nutrition fluid or other fluids or medications);
- 3. amount of saline used (< 500 mL or ≥ 500 mL); and
- 4. PMA at injury (< 37 completed weeks or ≥ 37 completed weeks).

#### **Search methods**

We used the standard search strategy of the Cochrane Neonatal Review Group to search the Cochrane Central Register of Controlled Trials (CENTRAL; 2017, Issue 1), MEDLINE via PubMed (1966 to 2 February 2017), Embase (1980 to 2 February 2017), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL; 1982 to 2 February 2017). We also searched clinical trial databases, conference proceedings, and reference lists of retrieved articles for randomised controlled trials and quasi-randomised trials. We used the Google Scholar search tool for reverse citations of relevant articles.



#### **Selection criteria**

Randomised controlled trials (RCTs) and quasi-randomised controlled trials comparing saline irrigation with or without hyaluronidase infiltration versus no intervention or normal wound care for the management of extravasation injury in neonates.

#### **Data collection and analysis**

Three review authors independently reviewed and identified articles for possible inclusion in this review. We used the GRADE approach to assess the quality of evidence.

#### **Main results**

We found no eligible studies. Our search revealed 10 case reports or case series describing successful outcomes with different interventions for this condition.

#### **Authors' conclusions**

To date, no RCTs have examined the effects of saline irrigation with or without prior hyaluronidase infiltration for management of extravasation injury in neonates. Saline irrigation is frequently reported in the literature as an intervention for management of extravasation injury in neonates. Research should focus first on evaluating the efficacy and safety of this intervention through RCTs. It will also be important for investigators to determine effect size by examining the timing of the intervention, the nature of the infusate, and severity of injury at the time of intervention.

#### PLAIN LANGUAGE SUMMARY

#### Saline irrigation for the management of skin extravasation injury in neonates

**Review question:** How does saline irrigation or saline irrigation with prior hyaluronidase compare with no intervention or normal wound care for improving tissue healing in neonates with extravasation injury?

**Background:** Preterm and sick term infants requiring intravenous fluids and medications are vulnerable to tissue injury secondary to extravasation, that is, leakage of fluid into surrounding tissue. Such injury can result in scarring with consequent cosmetic issues and, in some infants, functional limitations. Remedial surgical intervention may be required for some babies. Saline flush, with or without prior infiltration of hyaluronidase (a protein that promotes the breakdown of barriers that hold tissue planes together), is widely used for the management of severe extravasation injury in neonates, and is intended to prevent or reduce complications following extravasation. Conservative treatment with normal wound care and various topical dressings is commonly used at different stages of extravasation injury with variable results.

Study characteristics: We found no high-quality randomised or quasi-randomised studies that currently answer this question.

**Key results:** To date, no randomised controlled trials have examined the effects of saline irrigation with or without prior hyaluronidase infiltration on the management of extravasation injury in neonates. Frequent reports in the literature indicate that saline irrigation is used for the management of extravasation injury in neonates. Research should be directed first toward evaluating the efficacy and safety of this intervention through randomised controlled trials. It will also be important to determine effect size by examining the timing of the intervention, the nature of the infusate, and severity of injury at the time of intervention.

Quality of evidence: We obtained very low-quality evidence from case series or reports.