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CASE REPORT

Successful treatment of umbilical granuloma in infants using topical application of common salt: a serial case report

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ABSTRACT

An umbilical granuloma is a small, granulation tissue-filled swelling at the base of the umbilicus, commonly occurring in newborns. Various treatment options are available, including the topical application of common salt; however, its availability varies across healthcare facilities, and the most effective method remains uncertain. This serial case report describes infants presenting with umbilical masses accompanied by discharge. Physical examination revealed a flesh-like, protruding mass from the umbilicus, associated with yellowish and reddish discharge and surrounding normal skin. The granuloma was resolved entirely through the topical application of common salt. Our findings suggest that common salt is an effective, simple, and inexpensive treatment for umbilical granuloma. With regular monitoring, this approach could serve as a viable alternative to more advanced therapies.

1. Introduction

An umbilical granuloma is a minor, vascularised granulation tissue swelling at the base of the umbilicus that typically develops following cord detachment (Karagüzel, 2016). It is a common condition in approximately 3.8–7.3% of newborns, with a higher incidence in females and infants bathed before the cord entirely separates (Tülin & Muhammet, 2022; Iijima, 2023). Prompt and proper cord care is essential to promote rapid healing and prevent infections; the World Health Organisation recommends dry cord care using soap and water. Diagnosis is generally straightforward, characterised by a pink, soft, flesh-like mass measuring 3–10 mm, often accompanied by serous or purulent discharge. Typically, the umbilical stump dries and detaches within 1–2 weeks, leaving a fibromuscular ring covered by surrounding skin. However, incomplete epithelialisation can result in residual granulation tissue, forming granuloma (Namba *et al.*, 2023; Haftu *et al.*, 2020). Several factors increase the risk of granuloma development, including delivery mode, hygiene practices, moisture, infection, and foreign materials (Medina, 2020).

Treatment options vary and include silver nitrate cauterisation, topical medications, ligatures, cryotherapy, electrocautery, and surgical excision, yet the most effective and accessible method remains uncertain, especially in resource-limited settings (Namba *et al.*, 2023). Previous research has demonstrated that common salt is a safe, inexpensive, and highly effective treatment, with success rates exceeding 90% and minimal adverse effects (Banerjee *et al.*, 2023; Haftu *et al.*, 2020). Despite this evidence, detailed clinical descriptions of the practical application of common salt are scarce. This case report aims to fill this gap by documenting the

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Figure 1. An umbilical granuloma in a 4-week-old boy

Figure 2. A detached umbilical granuloma

Figure 3. Umbilical granuloma in a 2-month-old girl.

Figure 4. The umbilical granuloma on the first day of therapy

Figure 5. Detached umbilical granuloma on the fourth day of therapy

successful use of common salt in treating umbilical granuloma, emphasising its feasibility and effectiveness in environments with limited healthcare resources.

2. Cases

2.1. Case 1

A 4-week-old boy was brought to the pediatric outpatient department with a yellowish-watery discharge from an umbilical mass first noticed by his mother at 3 weeks of age, following umbilical cord separation. He was born full term, weighing 3,000 g, without complications, and remained clinically stable, with no fever or other symptoms. Physical examination revealed a flesh-like mass measuring 1×1×0.5 cm protruding from the umbilicus, accompanied by frequent yellowish discharge and normal surrounding skin. (Figure 1).

The granuloma was treated using table salt after cleaning the umbilical area with a moistened cotton swab. A sterile gauze was applied over the lesion and removed after 30 min to complete one application cycle. This procedure was performed three times daily for three consecutive days. The treatment was well-tolerated, with no complications. By the end of the week, the mass had detached, leaving no evidence of the granuloma (Figure 2).

2.2. Case 2

A 2-month-old girl presented to the pediatric outpatient department with a reddish-watery discharge from an umbilical mass. She was clinically stable, afebrile, and showed no additional symptoms. Born full term with a birth weight of 3,200 g, her birth history was unremarkable. Physical examination revealed a 0.8×0.8×0.5 cm mass protruding from the umbilicus, accompanied by a reddish discharge and normal surrounding skin (Figure 3).

The standard salt treatment was well-tolerated, with no complications. On the first day of therapy, the umbilical granuloma remained but exhibited reduced discharge and appeared darker (Figure 4).

By the third day of treatment, the umbilical area appeared cleaner and free of discharge. By the fourth day, there was no residual granuloma, and the mass had detached (Figure 5).

3. Discussion

Umbilical granulomas commonly develop during the neonatal period following umbilical cord separation (Brady *et al.*, 2016). Several factors are significantly associated with their occurrence, including birth weight, gestational age, and meconium-stained amniotic fluid (Iijima, 2023). Histopathological analysis reveals granulation tissue composed of fibroblasts, inflammatory cells, and proliferating vascular endothelial cells within an edematous stroma. The condition likely arises from subclinical infection or inadequate epithelialization of the umbilical stump (Karagüzel, 2016; Brady *et al.*, 2016). Clinically, the most common presentation

is swelling with discharge from the umbilicus, which appears to be a small, moist, friable, pink or red lesion on examination (Karagüzel, 2016).

Umbilical granulomas are typically soft, friable, painless lesions measuring 1–10 mm, often pale pink or red, located at the base of the umbilicus and surrounded by normal skin. Recognizing these lesions can be challenging due to the depth of the umbilical orifice, but diagnosis is primarily achieved through a thorough history and physical examination (Karagüzel, 2016; Steve & Okon, 2023). Oozing tissue or fluid from the navel suggests that diagnosis and additional investigations are rarely required (Karagüzel, 2016).

Management strategies for umbilical granuloma vary widely, with no consensus on the optimal approach. Common treatment modalities include silver nitrate cauterization, topical steroid applications, and salt therapy—all chosen based on resource availability (Karaguzel, 2018; Haftu *et al.*, 2020; Ogawa *et al.*, 2018). According to a previous study, topical steroid ointment can be considered an effective alternative for silver nitrate cauterization in treating umbilical granuloma because it minimizes the risk of chemical burns (Ogawa *et al.*, 2018). Topical steroids, such as clobetasol propionate (0.05%), have demonstrated efficacy comparable to silver nitrate in randomized controlled trials while reducing the risk of chemical burns (Brødsgaard *et al.*, 2015). here are reports of complications following electrocautery, including minor bowel injury—a risk that warrants caution (Tayade *et al.*, 2022).

In this case, the application of common salt proved effective, leading to detachment of the granuloma and complete drying of the umbilical area without adverse effects. This simple, non-invasive technique minimizes recurrent hospital visits. After cleaning the area with a moistened cotton swab, table salt was applied, covered with sterile gauze, and left in place for 30 min before removal. The cycle was repeated 3 times daily over 3 consecutive days.

Given its safety and affordability, salt therapy is particularly advantageous for patients with limited access to healthcare services, allowing for home-based management (Karagüzel, 2016; Sthapak *et al.*, 2020). Multiple studies report high success rates—up to 91.7% (Hossain *et al.*, 2020)—and complete resolution without adverse events or recurrence (Haftu *et al.*, 2020). While silver nitrate remains effective, it carries certain risks, including minor burns and discomfort, making salt therapy a more cost-effective and faster alternative (Sunshi *et al.*, 2019; Alatwani *et al.*, 2021). Randomized controlled trials confirm that topical salt application offers comparable efficacy to silver nitrate, further supporting its consideration as first-line therapy (Fawzi, 2021). Notably, the typical healing time with salt therapy ranges from 4 to 7 days. Despite its proven benefits, salt therapy remains underutilized and somewhat contentious among healthcare providers. Surgical options such as ligation or excision may be necessary if conservative management fails. Proper hygiene and close monitoring during treatment are essential to prevent complications, including sepsis or omphalitis (Karagüzel, 2016).

This case underscores the effective use of common salt in resolving umbilical granuloma within a week without adverse effects. Given its simplicity, cost-effectiveness, and accessibility, salt therapy offers a valuable alternative treatment—particularly in resource-limited settings like Indonesia—when coupled with careful clinical observation.

4. Conclusions

The topical application of common salt represents an inexpensive, simple, and effective treatment for umbilical granulomas. When accompanied by proper monitoring, this approach offers a promising alternative to more invasive or resource-intensive therapies, enabling clinicians to assess for recurrence and potential adverse effects.

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Conflict of interest

The authors declare no potential conflicts of interest related to this publication.

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