

Original Research Article

Role of common salt in the treatment of umbilical cord granuloma

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ABSTRACT

Background: Umbilical granuloma is an overgrowth of granulation tissue following the separation of umbilical cord. Treatment options for this common entity are limited and have side effects such as chemical burns. In this study, we want to highlight the salt application method for treatment of infants with umbilical granuloma.

Methods: Thirty six infants were enrolled in present study after institutional ethics committee approval and consent from the parents. After thoroughly explaining the method to all mothers, they are advised to apply a pinch of salt on granuloma twice a day for 3 days. The area of application was cleaned, and common table salt was carefully applied over the lesion. The granuloma was then occluded with surgical adhesive tape for 30 minutes. Cases were followed up after 3 days for assessment of improvement.

Results: All thirty six cases responded well to this approach with complete resolution of lesions after 3 days. Small clot like shrunken tissue was found at the site of granuloma, which was easily scraped off during gentle cleansing. No major complication or recurrence was noted in follow-up.

Conclusions: The use of common salt in treating umbilical granuloma is simple, cost-effective, curative, and safe. It is easily administered and can be performed by parents at home.

Keywords: Common salt, Umbilical granuloma

INTRODUCTION

Umbilical granuloma is the most common umbilical abnormality in neonates and infants causing inflammation and discharge.¹ It is an overgrown tissue that develops during the healing process of the umbilicus, usually in reaction to a mild infection. It is not a congenital abnormality but represents continuous swelling of the granulation tissue that has not yet epithelialized.² It typically presents as a tiny segment of bright red, slightly wet flesh that remains in the umbilicus after cord separation, where normal healing should have happened.³ Umbilical granulomas are often noted by the parents because of continuous drainage or moisture involving the umbilicus, after the cord has dried and separated.

The normal cord usually separates 7-10 days postpartum. After normal cord separation the umbilical cicatrix gets

epithelialised. The remaining granulation tissue normally disappears by 3rd week of life with proper hygiene.⁴ Following cord separation, incomplete epithelialization may happen over the fibromuscular ring of the umbilicus, and an area of beefy red tissue or granulation tissue is seen. Granulation tissue can grow excessively at the umbilicus and lead to an umbilical granuloma. It contains no nerves and is devoid of sensation.¹ Persistence of the granuloma beyond this time will require therapeutic intervention.⁵ Currently, the therapeutic alternatives for umbilical granuloma are the following: (1). Chemical cauterization with silver nitrate or copper sulphate, (2). Electric cauterization, (3). Cryocauterization, (4). Surgical excision, and (5). Double-ligature technique. Chemical cauterization with 75% silver nitrate stick or solution and copper sulphate is the conventional method. This method is not entirely safe, and when applied liberally, these solutions can cause minor burns in the

periumbilical skin area. In 1972, Schmitt briefly described the contracting effect of common salt on umbilical granuloma. This observation has rarely made an appearance in subsequent medical literature. This study reports excellent response common salt in the management of umbilical granuloma.

METHODS

This prospective study was conducted at the tertiary care hospital of western Uttar Pradesh, north India. Data were collected between July 2014 and August 2016. A total of 36 infants (4 weeks to 24 weeks) with clinically evident umbilical granuloma who came for treatment at the Pediatric clinic of the institution were included in the present study. All infants with signs of infection at the umbilicus or other systemic signs of sepsis were excluded from the study. The parents (mostly mothers) were asked to (1). Clean the umbilical area with a cotton ball soaked in warm water, (2). apply a small pinch of table/cooking salt over the umbilical granuloma, (3) cover the area with adhesive tapes to keep the salt in place for 30 min, and (4) again, clean the area using a cotton ball soaked in warm water. This procedure was repeated twice a day for 3 consecutive days. All infants were re-evaluated after 3 days, 1 week and 3 weeks to see the effect of common salt on umbilical granuloma. The effects were graded as (a) excellent response (complete regression, no discharge, and healed with complete epithelialization) and (b) no response (no regression of umbilical granuloma, and persistent umbilical discharge).

RESULTS

A total of 43 infants were included in the study, but 7 infants were lost to follow up. The enrolled infants were aged 4-24 weeks (Table 1). Sixteen infants were girls (44.5%), and 20 (55.5%) were boys (Table 2). The effects of common salt were evaluated after 3 days, 1 week and 3 weeks following the last application. All 36 (100%) infants demonstrated excellent results (Table 3). No adverse effects of common salt were observed in this study.

Table 1: Age group distribution (n = 36).

Age group(weeks)	No. of Infants	Percentage
4-8	20	55.55
9-12	10	27.77
13-24	6	16.67

Table 2: Sex distribution (n = 36).

Sex	Number of infants	Percentage
Male	20	55.5
Female	16	44.5

The most common observation described by parents was discharge of a reddish black secretion from the lesion on

the first 2 days of treatment, following which shrinkage and gradual healing of the lesion was apparent within 3 weeks. The umbilicus returned to normal in all 36 infants.

Table 3: Response to the treatment (n = 36).

Response	Number of infants	Percentage
Excellent	36	100
No Effects	0	0

DISCUSSION

Umbilical granuloma formation is associated with delayed separation of the cord and persistent inflammation. Topical antibiotics are not effective for the management of granuloma, which implies the inflammation that causes granuloma formation may be not due to pure bacterial infections. Thus, the antibiotics are not the first line treatment. Therefore, other invasive treatments such as silver nitrate, ligation, electric cauterization, and surgery have developed for the treatment of granuloma. If umbilical granuloma remains untreated, it could ooze and present with persisting irritation for several months.⁶ Although all treatment modalities show a curative effect, each method has certain advantages and disadvantages. Cauterization with silver nitrate and copper sulphate may cause minor to major burn of periumbilical skin area which is painful.⁷ However, it is also time consuming for parents due to multiple visits to the clinic. In contrast, the side effect of topical salt is mild and reversible and the treatment can be performed at home. The procedure is not painful, As well common salt is not an irritant to tissues, it has no burning effect on normal tissues. Currently, electric cauterization or surgery is an option for those babies who failed previous noninvasive treatments.⁸ These treatments are surgical removal of the granuloma under general anesthesia. A disadvantage is that it costs more than noninvasive treatments. The natural regression of the untreated umbilical granuloma has not been documented in the literature.⁵

Further research is needed for an agent, which is not associated with any complications and has a curative effect. In this situation, common salt is a suitable agent for the treatment of umbilical granuloma. Common salt is potent and cost-effective, shows no adverse effects, and easily available. Encouraged by the other studies reported, we also used common salt on our study population.⁹⁻¹² In our study, topical salt had a high response rate (100%) without recurrence. As mentioned above, the curative mechanism of salt on granuloma is through its desiccant effect and other biologic properties; the high concentration of sodium ion in the area draws water out of the cells and results in shrinkage and necrosis of the wet granulation tissue. However, this effect is not so powerful as to cause damage to the normal surrounding tissue when applied for short treatment duration.¹³ These properties are speculated to

be part of the therapeutic mechanisms involved in our study.

In a study conducted by Hossain., et al and Saleh, Abdullah showed 100% excellent response to the common salt over UG with no adverse effects.^{10,12} In the first study 8.3% cases were unresponsive to the table salt for the treatment due to misdiagnosed as umbilical granuloma.

Umbilical granuloma is a minor condition with no recognized associated anomalies and is effectively and easily managed by local application of common salt. However, other umbilical conditions may present in a similar manner and be difficult to distinguish clinically. They may have been associated with more severe anomalies and will not be cured with common salt. Therefore, logical assessing of the discharge and swelling of the umbilicus is important in order to minimize diagnostic errors and delays in the initiation of the correct treatment. The umbilical granuloma treated with common salt usually clears within 3-5 days. If not completely cured within this time, surgical advice should be obtained.

In our study we found excellent results with common salt in the treatment of umbilical granuloma. We had no major complications. With the above findings our study highlights the excellent results of common salt in the treatment of umbilical granuloma.

CONCLUSION

From the present study it has been shown that umbilical granuloma can be treated with common salt with significantly higher cure rate. Treatment can be performed by doctors, nurses, primary health care staffs in remote areas and even by parents.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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