

Therapeutic effect of common salt on umbilical granuloma in infants

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Abstract

Background: Umbilical granuloma is the most general umbilical difficulty in neonates and young infants. It is commonly noted by the parents owing to persistent drainage or moisture involving the umbilicus, after the cord has dried and separated. If umbilical granuloma remains untreated, it could ooze and present with persisting irritation for several months. Many treatment modalities are available for umbilical granuloma such as chemical cauterization with silver nitrate or copper sulphate, electrocauterization, cryocauterization, granuloma ligation, and surgical excision.

Objective: To evaluate the therapeutic effect of common salt (table or cooking salt) on umbilical granuloma in infants.

Materials and Methods: This prospective study was conducted on 50 infants with umbilical granuloma. Parents of these 50 infants were instructed on the treatment regimen and administration to the infant at their home. The treatment consisted of application of common salt on the lesion twice a day, washing 30 min later, and repeating the procedure for 5 days.

Result: All 50 infants with umbilical granuloma showed complete resolution after the 5-day course of common salt treatment.

Conclusion: 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.

KEY WORDS: Umbilical granuloma, common salt, infants

Introduction

Umbilical granuloma is the most common umbilical abnormality in neonates.^[1] It is an overgrown tissue that develops during the healing process of the umbilicus, usually in reaction to a mild infection. 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.^[2] Umbilical granulomas are often noted by the parents because of continuous drainage or moisture involving the umbilicus, after the cord has dried and separated. It is

not a congenital abnormality but represents continuous swelling of the granulation tissue that has not yet epithelialized.^[3] The umbilical cord normally separates within 7–10 days postpartum.^[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. This normal granulation tissue of the resolving umbilical stump of a newborn should vanish by the second or third week of birth with correct hygiene. 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

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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 successful treatment of umbilical granuloma with common salt.

Materials and Methods

This prospective study was conducted at the National Guard Comprehensive Specialized Clinic in Riyadh, Saudi Arabia. Data were collected between December 2011 and November 2015. A total of 50 infants (3–16 weeks), both boys and girls, with clinically evident umbilical granuloma who sought treatment at the Pediatric clinic of the institution were considered as the target group [Figure 1]. All infants with signs of infection at the umbilicus 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 5 consecutive days. All infants were reevaluated after 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).

Result

A total of 50 infants were included in the study. The enrolled infants were aged 3–16 weeks [Table 1]. Twenty-eight infants were girls (56%), and 22 (44%) were boys [Table 2]. The effects of common salt were evaluated 1 week and 3 weeks following the last application. All 50 (100%) infants demonstrated excellent results [Table 3].

No adverse effects of common salt were observed in this study. 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 50 infants [Figure 2].

Discussion

Umbilical swelling and discharge is commonly found in general pediatric practice and may challenge the physician's diagnostic acumen. The umbilical granuloma is the most common umbilical problem in infants. If umbilical granuloma remains untreated, it could ooze and present with persisting irritation for several months.^[6] Many treatment modalities are available for umbilical granuloma such as chemical cauterization,

Table 1: Age group distribution (*n* = 50)

Age group (weeks)	Number of infants	Percentage
3–8	36	72
9–12	10	20
13–16	4	8

Table 2: Sex distribution (*n* = 50)

Sex	Number of infants	Percentage
Male	22	44
Female	28	56

Table 3: Response to the treatment (*n* = 50)

Response	Number of infants	Percentage
Excellent	50	100
No effects	0	0

electrocauterization, cryocauterization, granuloma ligation, and surgical excision. Although all treatment modalities show a curative effect, each method has certain advantages and disadvantages. Cauterization with silver nitrate may cause a minor burn on the periumbilical skin, which is painful^[7] [Figure 3]; cryocautery is expensive and complex; electrocautery is associated with a foul discharge and higher failure rates;^[8] and surgical removal needs general anesthesia and is rarely required.^[3] The natural regression of the untreated umbilical granuloma has not been documented.^[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,^[9–13] I used common salt on this study population. A total of 50 infants were selected for the study. Their ages ranged from 3 weeks to 16 weeks. In order to collect 50 infants with umbilical granuloma, this study was carried over 4 years duration, which was the main limitation of the study. In the literature, the incidence of umbilical granuloma was the same in boys and girls,^[14] which corroborated in this study. All 50 infants enrolled in this study showed excellent results. 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.^[14] The curative mechanism of salt when used for treating umbilical granuloma is attributed to its desiccant effect and other biological properties. The high concentration of sodium ion in the area draws water



Figure 1: Umbilical granuloma before salt treatment.

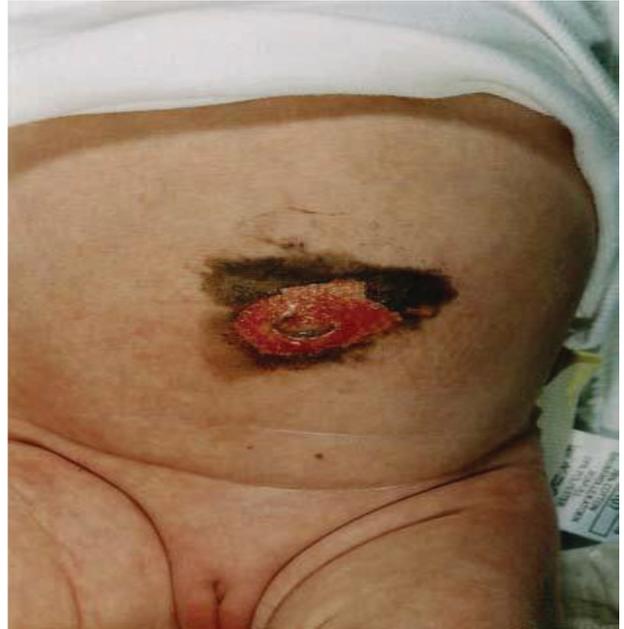


Figure 3: Periumbilical skin burn with silver nitrate.



Figure 2: Umbilical granuloma after salt treatment.

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.^[10] Unlike conventional treatment with 75% silver nitrate, which may cause periumbilical skin burns and cloth staining, needs several applications, and should be administered by a physician,^[10] common salt does not have any complications and can be administered

by parents. The procedure is not painful as the granuloma contains no nerves and develops no sensation. Common salt is not an irritant to tissues and does not burn normal tissues. The infant may cry because of being poked in the belly during the application of salt. This study demonstrates the successful treatment of umbilical granuloma with common salt (table or cooking salt), with no complications or relapse reported. This is a very important finding because many physicians lack the knowledge about the success use of common salt treatment for umbilical granuloma.

Conclusion

The application of common salt (table or cooking salt) to the umbilical granuloma is a simple, highly effective, and inexpensive form of treatment without any complications or relapse. Treatment can be performed by physicians, nurses, primary health-care staff in remote areas, and even by parents.

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