Umbilical granuloma is the most common umbilical abnormality in young infants and neonates. This prospective study was conducted on 21 infants (28–63 days old) with an umbilical granuloma. The treatment, performed in the patient’s home, comprised application of common (edible) salt on the lesion twice a day for 5 days. Results were good in all cases. Thus, application of common salt for treating umbilical granulomas is simple and safe.

**Keywords:** umbilical granuloma, infants, treatment

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Material and Methods. This prospective study was conducted at the Pediatric Surgery Outpatient Department of our hospital. Data were collected between August 2016 and May 2018. Altogether, 21 infants with an umbilical granuloma (12 (57.1 %) boys, 9 (42.9 %) girls; mean age 38.6±7.5 days) were the target group. The parents had given informed written consent. The parents were asked to follow a prescribed regimen, which included (1) cleaning the granuloma and surrounding area with a cotton ball soaked in warm water; (2) applying a small pinch of common salt over the umbilical granuloma; (3) cover the area with adhesive tape for 20 min; and (4) remove the tape and again clean the lesion using a cotton ball soaked in warm water. The entire procedure was repeated twice a day for 5 days. The surgeon evaluated the patient’s progress twice: before and after treatment. Parents kept a treatment diary with daily photographs to visually map the treatment dynamics.

The healing criteria for these fungus-infected lesions were as follows: good – complete healing of the lesion by the end of treatment; satisfactory – incomplete wound healing with partial epithelialization (<50 %); unsatisfactory – absence of wound healing by the end of treatment.

Statistica 10.0 (StatSoft, Tulsa, OK, USA) was used for statistical data analyses, which included standard descriptive and analytical statistical methods.

Results and Discussion. All 21 infants included in the study were evaluated on the sixth day after the start of treatment. Patients were assessed for the state of the granuloma (possibly infected with a fungus) and skin in the area of the umbilical ring. All infants completed the study with good follow-up results. No adverse effects of common salt were observed.

Concomitant diseases (i.e., perinatal encephalopathy, lactase deficiency) that were present in some of the infants had no effect on the formation of hypertrophic scars. There were also no differences in the propensity to form hypertrophic scars according to age or sex.

Good compliance—salt administration twice daily for 20 min per application for 5 days—was seen for 20 of the 21 (95.2 %) patients. The other infant (4.8 %) had satisfactory compliance (the parents sometimes forgot to perform the second application).

A representative clinical example was patient B, a 6-week-old female infant who was referred to us with pink tissue protruding from the umbilicus. She was born at term with a birth weight of 3600 g. The pregnancy had been unremarkable, with a normal prenatal ultrasonography scan. There was no family history of congenital anomalies. Her parents had noted the unusual nature of the infant’s umbilicus 1 week prior to her first visit to our department. Its size had doubled from the time it was first noticed. The infant was otherwise well, with no signs of intestinal obstruction. On clinical examination, we noted pink-red, fleshy tissue, about 0.8 cm diameter, protruding from the umbilicus (Figure). Umbilical granuloma was diagnosed. Treating it with common salt was recommended, which was started on the sixth day after the umbilical granuloma was diagnosed. The outcome was good.

The most common umbilical problem in infants is the umbilical granuloma. Numerous treatments have been tried, including chemical moxibustion with silver nitrate or copper sulfate, cryolite cryolysis, electric moxibustion, a double-ligature technique, and surgical removal. Each treatment has advantages and disadvantages. For example, chemical moxibustion with silver nitrate or copper sulfate may cause a slight burn of the periumbilical area of the skin [7]. Electrocautery and cryoacauterization require that clinics be equipped with special devices, increasing the cost of treatment. Skin discoloration has been reported as a complication of these procedures [3, 6].

The double ligation method is simple to perform and provides good cosmetic and functional results with minor complications. The only contraindications for using this technique are large sessile umbilical cord granulomas with a wide base, small deep lesions, and very loose foci that can bleed during the procedure [9].

Treatment of umbilical granuloma at home with topical clobetasol propionate (0.05 %) cream is as effective as treatment with topical silver nitrate (99 %) in the clinic [10]. Topical clobetasol propionate, however, has been found to suppress the hypothalamic-pituitary-adrenal axis. Hence, it has been suggested that it be used only in patients over 12 years of age [11]. Finally, surgical removal requires general anesthesia as well as an experienced physician, usually a surgeon, and sterile conditions and equipment [12].

Conclusions. The therapeutic mechanism of salt, when used to treat umbilical cord granulomas, is its influence as a desiccant and its other biological properties. A high concentration of sodium ions in the area draws water from the cells, thereby resulting in drying and necrosis of moist granulation tissue. This effect is not so strong that it damages the surrounding normal keratinized tissue when applied via injection for the entire treatment period. Thus, our study confirmed that application of common salt for treating umbilical granuloma is simple and safe.

Fig. Infant with an umbilical granuloma possibly due to a fungal infection: A – before treatment; B – after treatment.

The treatment result was «good» in that there was total elimination of the fungus and complete epithelialization of the skin defect.

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References

1. Al Saleh A. S. Therapeutic effect of common salt on umbilical granuloma in infants. Int. J. Med. Sci. Public. Health. 2016;5(5):911-914. https://doi.org/10.5455/ijmsph.2016.07012016312

2. Hossain A. Z., Hasan G. Z., Islam K. D. Therapeutic effect of common salt (table/cooking salt) on umbilical granuloma in infants. Bangladesh J. Child Health. 2010;34(3):99-102. https://doi.org/10.3329/bjch.v34i3.10360

3. Assi A. N., Kadem M. K., Al Rubaee R. J., Atshan F. G. Management of umbilical granuloma. Thi-Qar Medical Journal (TQMJ). 2010;4(4):82-87.

4. O’Donnell K. A., Glick P. L., Caty M. G. Pediatric umbilical problems. Pediatr. Clin. North. Am. 1998;45(4):791-799. https://doi.org/10.1016/S0031-3955(05)70045-6

5. Wilson C. B., Ochs H. D., Almquist J., Dassel S., Mau-seth R. [et al.] When is umbilical cord separation delayed? J. Pediatr. 1985;107(2):292-294.

6. Schmitt B. D. Tip of the month: shrinking umbilical granulomas. Consultant. 1972;12:91.

7. Chamberlain J. M., Gorman R. L., Young G. M. Silver nitrate burns following treatment for umbilical granuloma. Pediatr. Emerg. Care. 1992;8(1):29-30. https://doi.org/10.1097/00006565-199202000-00008

About authors:

Bolotov Iuriy Nikolaevich, Assistant Professor, Department of Pediatric Surgery; tel.: +79187838354; e-mail: b-y-n@rambler.ru

Minaev Sergey Viktorovich, MD, PhD, Professor, Head of the Department of Pediatric Surgery; tel.: +79624507653; e-mail: sminaev@yandex.ru

Kachanov Alexander Vasilyevich, MD, Pediatric Surgeon, Laboratory Assistant of the Department of Pediatric Surgery with DPO Course; tel.: +79283174974; e-mail: 89283174974@mail.ru

Doronin Fedor Vladimirovich, MD, Associate Professor, Department of Pediatric Surgery; tel.: +79054914529; e-mail: fedor.doronin@mail.ru

Sukhanova Anastasia Sergeevna, student in the Pediatric Faculty; tel.: +79187915423; e-mail: a.s.alibash@gmail.com

Afanasova Alexandra Igorevnovna, student in the General Medicine Faculty; tel.: +79899918099; e-mail: alex.afanasowa@mail.ru

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CLINICAL EFFICACY OF A NOVEL DOSED TISSUE DISTRACTION METHOD IN THE TREATMENT OF SOFT TISSUE DEFECTS IN THE LOWER LIMBS

Pyatakov S. N. 1, Porkhanov V. A. 2, Baryshev A. G. 1, Pyatakova S. N. 3, Bardin S. A. 1, Suzdal'tsev I. V. 4

1 Kuban State Medical University, Krasnodar, Russian Federation
2 S. V. Ochaposky Regional Clinical Hospital № 1, Krasnodar, Russian Federation
3 City Hospital № 4, Sochi, Russian Federation
4 Stavropol State Medical University, Russian Federation

ИЗУЧЕНИЕ КЛИНИЧЕСКОЙ ЭФФЕКТИВНОСТИ МЕТОДА ДОЗИРОВАННОЙ ТКАНЁВОЙ ДИСТРАКЦИИ ПРИ ЛЕЧЕНИИ ДЕФЕКТОВ МЯГКИХ ТКАНЕЙ РАЗЛИЧНОЙ ЭТИОЛОГИИ В ОБЛАСТИ НИЖНИХ КОНЕЧНОСТЕЙ

C. N. Pyatakov 1, B. A. Porphanov 2, A. G. Baryshev 1, C. N. Pyatakova 3, C. A. Bardin 1, I. V. Suzdal'tsev 4

1 Кубанский государственный медицинский университет, Краснодар, Российская Федерация
2 Научно-исследовательский институт – Краевая клиническая больница № 1 имени профессора С. В. Очаповского, Краснодар, Российская Федерация
3 Городская больница № 4, Сочи, Российская Федерация
4 Ставропольский государственный медицинский университет, Российская Федерация

A comparative assessment of the original method of DTD for skin defects closure in the lower limbs compared with traditional approaches has been made. 345 patients and injuries with skin and soft tissues defects of lower limbs were included in the analysis, out of which standard approaches were applied to the treatment of 164 patients, the original