

## Effectiveness of Table Salt (NaCl) in the Treatment of Umbilical Granuloma at Household Level

\*Mahmud AA<sup>1</sup>, Uddin MB<sup>2</sup>, Khan NZ<sup>3</sup>, Islam S<sup>4</sup>, Bari MS<sup>5</sup>, Ali MS<sup>6</sup>, Nag UK<sup>7</sup>, Islam MA<sup>8</sup>, Hasan A<sup>9</sup>, Khan MA<sup>10</sup>

Umbilical granuloma may be defined as a small mass of granulation tissue which develops at the base of the umbilicus after separation of the cord. It consists of true granulation tissue with fibroblast and abundant capillaries. Treatment options are chemical cauterization, electrocauterization and sometimes need surgical excision. Aims of this study were to develop a simple and feasible method for the treatment of umbilical granuloma with table salt (NaCl). This was a multi-center prospective type of observational study and conducted from January 2023 to March 2024 in the department of Pediatrics Surgery, Mymensingh Medical College Hospital, Mymensingh and other Private Hospitals of Mymensingh, Bangladesh. Total 66 patients were included among them 59(89.09%) cured and 7(10.6%) patients need other options. No complications and recurrence was seen in 3 months follow up. Treatment of umbilical granuloma with table salt (NaCl) is a simple, effective, low cost and feasible method.

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**Key words:** Umbilical Granuloma, Table salt, Household

### Introduction

Umbilical granuloma is a common mass in the umbilicus among the other umbilical anomalies<sup>1</sup>. Size ranges from 1.0 mm to 1.0 cm<sup>2</sup>. Incidence is about 1 in 500 births<sup>3</sup>. It consists of true granulation tissue with fibroblast and abundant capillaries<sup>4</sup>. It may be formed due to excessive inflammation at the base of the umbilicus after separation of the cord<sup>5,6</sup>. It's surface often has pedunculated appearance<sup>4</sup>. It may involute spontaneously, if not involutes within 4 weeks treatment is necessary<sup>1</sup>. If not treated it may lead to oozing, irritation, discharge and infection<sup>7</sup>. There are different treatments options reported in the text book and literature such as chemical cauterization (silver nitrate, copper sulphate and table salt), electrocauterization, cryotherapy and surgical excisions<sup>1</sup>. Each of these methods has its own merits and demerits<sup>8</sup>. Although the most commonly used treatment modality is the use of silver nitrate but it may cause irritation, skin excoriation<sup>9</sup>. In 1972 Schmitt first reported the use of table salt for the treatment of umbilical granuloma and later detailed by Kesaree in 1983<sup>10,11</sup>. Because of limited evidence physician shows reservation on using table salt for treating umbilical granuloma<sup>9</sup>. This study aims to evaluate the outcomes of application of table salt (NaCl) in treating umbilical granuloma at household level.

1. \*Dr Md Abdullah Al Mahmud, Asstt Professor, Department of Pediatric Surgery, Mymensingh Medical College (MMC), Mymensingh, Bangladesh; E-mail: drratan31@gmail.com
2. Dr Md Badar Uddin, Associate Professor, Department of Urology, MMC, Mymensingh, Bangladesh
3. Dr Nadiuzzaman Khan, Associate Professor and Head, Department of Urology, MMC, Mymensingh, Bangladesh
4. Dr Sangul Islam, Assistant Professor of Pediatric Surgery, MMC, Mymensingh, Bangladesh
5. Dr Md Shafikul Bari, Assistant Professor of Pediatric Surgery, MMC, Mymensingh, Bangladesh
6. Dr Mohammad Showkot Ali, Assistant Professor of Pediatric Surgery, MMC, Mymensingh, Bangladesh
7. Dr Uzzal Kumar Nag, Associate Professor of Pediatric Surgery, MMC, Mymensingh, Bangladesh
8. Dr Mohammad Aminul Islam, Assistant Professor, Department of Urology, MMC, Mymensingh, Bangladesh
9. Dr Amit Hasan, MS (Phase-B) Resident, Pediatric Surgery, MMC, Mymensingh, Bangladesh
10. Dr Mahfuz Alam Khan, Resident Surgeon, Pediatric Surgery, MMCH, Mymensingh, Bangladesh

\*for correspondence

**Methods**

This multi-center prospective type of observational study was conducted from January 2023 to March 2024 in the Department of Pediatrics Surgery, MMCH, Mymensingh and other private hospitals, Mymensingh, Bangladesh. Prior permission was taken from the authority of the existing departments. Total 66 patients were included in this study. After cleaning the umbilicus with water, dried granulated table salt (NaCl) was applied to cover the granuloma. Adhesive surgical tape was used to hold the salt for 30 min twice daily for 7 days and observed for changes in colour, reduction in size or resolution. Treatment was given as outpatient basis and followed up monthly for 3 months and observed for any complications and recurrence.



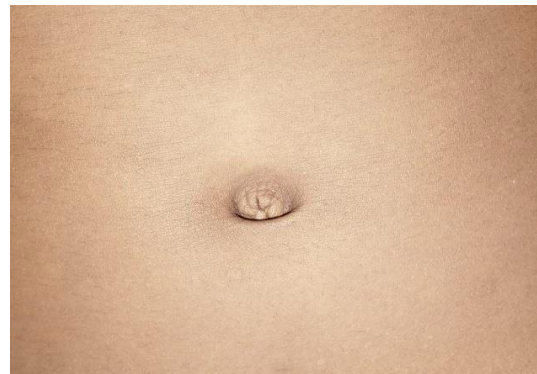
Photograph 1: Umbilical granuloma



Photograph 2: Application of table salt (NaCl)



Photograph 3: Resolution after one week



Photograph 4: Follow up after three months

**Results**

Total 66 patients were included in this study. Among them 59(89.39%) patients were cured with the treatment of table salt and 7(10.6%) patients need other treatment modalities.

Table I: Age distribution in months (n=66)

Age ranges (months)	Number of patients (Percentage) n (%)
0-3	04 (06.77)
3-6	11 (18.64)
6-9	30 (50.84)
9-12	09 (15.25)
12-15	08 (13.55)
15-18	04 (6.77)

Table II: Sex distribution (n=66)

Sex	Number of patients (Percentage) n (%)
Male	39 (59.1)
Female	27 (40.9)

Table III: Response to treatment in days (n=59)

Days range	Number of patients (Percentage) n (%)
0-3	15 (25.42)
3-5	35 (59.32)
5-7	06 (10.16)
>7	03 (5.08)

## Discussion

Umbilical granuloma is an overgrowth of granulation tissue in newborn baby's umbilical stump. It develops due to failed epithelialization and increase growth of granulation tissue after cord separation<sup>9,10</sup>. Incidence is about 1 in 500 births and most commonly seen in first few weeks of baby's life. It is soft pink or reddish nodule and moist with clear fluid or seropurulent discharge<sup>11,12</sup>. It has no nerves hence devoid of sensation<sup>13</sup>. Treatment is necessary because natural regression of the umbilical granuloma has not been documented<sup>12</sup>. If left untreated, it may become complicated and lead to formation of pus<sup>14</sup>. Before considering treatment it is necessary to differentiate umbilical granuloma from umbilical sinus, umbilical polyp, umbilical cyst, cord hernia and patent VID. Different approaches have been suggested in text book and literature such as chemical and electro cauterization, cryotherapy and surgical excision<sup>15</sup>. Most common treatment modality is the use of 75.0% silver nitrate sticks which may need repeated application and can cause chemical burns to the surrounding skin<sup>8,16</sup>. Brodsgaard et al. in their study compared the use of silver nitrate with clobetasol propionate and found equivalent efficacy with cure rate 96.7% and 90.0% respectively<sup>17</sup>. However the use of cholebesterol can cause potential risk of local and systemic side effects<sup>18</sup>. Electrocautery, surgical excision and use of absorbable suture materials may be other options but have their own limitations<sup>5,19,20</sup>. In 1972 Schmitt 1<sup>st</sup> reported the use of table salt for the treatment of umbilical granuloma which later detailed by Kesaree in 1983<sup>3</sup>. He treated umbilical granuloma by homemade table salt for 5-10 minutes daily for 3 days<sup>11</sup>. In another study Alsaleh modified the use of table salt, at increase duration for 30 minutes twice daily for 5 days with adhesive surgical tape<sup>21</sup>. Tripathi et al. and Hossain et al. in their study use table salt without occlusion for 30 minutes twice daily for 3 days and found cure rate 96.0% and 91.7% respectively<sup>12,18</sup>. Jimish et al. reported complete resolution of umbilical granuloma after table salt was carefully applied over the lesion<sup>22</sup>. The mechanism of table salt in the treatment of umbilical granuloma is curative and is thought to be by its desiccant effect and other biological properties. In table salt there is high concentration of sodium ion which draws water out of the cell

and resulting shrinkage and necrosis of wet umbilical tissue. This effect is not harmful for the surrounding normal cornified tissue as it is applied for short duration<sup>12</sup>. In this study, after cleaning the umbilical area with water we applied dry granulated table salt (NaCl) with the help of adhesive surgical tape for 30 minutes twice daily for 7 days and observe changes in colour, reduction in size and resolution. Total 59 patients (89.39%) were cured and 7 patients (10.60%) need other treatment out of 66 patients. The patients who did not respond to this treatment were diagnosed as umbilical polyp (3), umbilical sinus (2) and urachal cyst (2). Among the recovered cases 15(25.42%), 35(59.32%), 6(10.16%) and 3(5.08%) patients were cured at 0-3 days, 3-5 days, 5-7 days and more than 7 days respectively. This variation of cure rate may be due to maturity and size of the granuloma. We followed up monthly for 3 months; no complications and recurrence were noted.

## Conclusion

From this study we can conclude that complete resolution of umbilical granuloma can be achieved with table salt (NaCl) application which is simple, effective, low cost and feasible at household level.

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