

## Evaluation of Ayurvedic Shalya Tantra Intervention in the Management of Neonatal Umbilical Granuloma: A Case-Based Observational Study

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### ABSTRACT

Umbilical granuloma is one of the most common neonatal conditions requiring minor surgical intervention. In Ayurvedic surgery (Shalya Tantra), Apamarga Kshara application is mentioned as an effective para-surgical procedure for conditions resembling Nabhi vrana described in classical texts. This observational study aimed to evaluate the efficacy and safety of Apamarga Kshara application in neonates with umbilical granuloma. A total of five neonates aged 7–25 days diagnosed with uncomplicated granuloma were included. The procedure was performed under sterile conditions once daily for three consecutive days. Outcomes were assessed based on reduction in lesion size, complete healing time, and adverse effects. Results showed complete resolution in four cases by Day 5 and one by Day 7, with no infection, bleeding, or recurrence observed during one-month follow-up. The findings suggest that Apamarga Kshara can be a safe, minimally invasive alternative to cauterization for neonatal umbilical granuloma when performed appropriately. Larger randomized controlled trials are recommended.

**Keywords:** *Shalya Tantra, Ayurveda, Neonatal care, Umbilical granuloma, Kshara karma, Para-surgical procedure, Apamarga Kshara.*

### 1. INTRODUCTION

Neonatal care is a crucial component of early-life medical management, as newborns constitute a susceptible demographic necessitating accurate, secure, and evidence-based interventions. [1] The neonatal period, which lasts for the first 28 days of life, is when the body quickly changes and adapts from living inside the womb to living outside of it. Even small problems during this time can have long-term effects or complications if they aren't handled properly. Umbilical complications, such as delayed cord separation, infection, granuloma formation, and excessive granulation tissue, are clinically significant among frequently observed neonatal conditions. Umbilical granuloma is one of the most common benign conditions that babies get, and modern medicine usually treats it with silver nitrate cauterization, ligation, cryotherapy, or topical medications. [2] But these traditional methods are concerning because they can cause chemical burns, irritation in the area, infection, and the need for repeated applications, especially on delicate neonatal tissues. Ayurveda, India's traditional medical science, provides a comprehensive perspective on neonatal care through Kaumarbhritya, focusing on physiological development, immune enhancement, hygiene, and disease prevention. Classical texts like the Kashyapa Samhita, Sushruta Samhita, and Ashtanga Hridaya talk about the basics of pediatric care. [3] These texts delineate postnatal care practices such as Jatakarma (newborn rites), Stanya Pariksha (breast milk evaluation), and Nabhi Paricharya (umbilical cord care), indicating that neonatal health was a significant focus in ancient surgical and medical systems. [4] In this context, conditions akin to umbilical granuloma are delineated as Nabhi Vrana and soft tissue proliferations necessitating localized interventions. Shalya Tantra, the surgical branch of Ayurveda, provides various modalities such as Shastra Karma (surgical excision), Kshara Karma (alkaline cauterization), and Agnikarma (thermal cauterity) for the treatment of these lesions. Sushruta Samhita, regarded as a seminal text in surgery, delineates Kshara Karma as a preferable alternative to excision for conditions characterized by excessive granulation, mild tissue overgrowth, or lesions that do not necessitate invasive surgical removal. Apamarga Kshara, made from Achyranthes aspera Linn., is one of the most important formulations used in this way because it has Lekhana (scraping), Shodhana (purification), and Ropana (healing) properties. [5] These attributes render it theoretically appropriate for the management of umbilical granuloma, necessitating controlled cauterization and tissue remodeling. Despite robust textual foundations and clinical precedents, comprehensive assessment of Ayurvedic surgical and para-surgical techniques in neonatal conditions is still constrained. The majority of existing literature is either descriptive or anecdotal, failing to provide structured clinical outcome assessment. As integrative medical models gain traction and there is a resurgence of interest in safe, cost-effective alternatives, it is imperative to scientifically assess traditional Ayurvedic practices through modern research methodologies. Apamarga Kshara offers a minimally invasive alternative that can potentially obviate the necessity for chemical cauterization or surgical intervention when applied correctly. [6] Examining the role of Shalya Tantra techniques

in neonatal care is essential for both affirming traditional knowledge and expanding clinical alternatives in contexts where modern interventions pose risks or face accessibility challenges, particularly in resource-limited environments. A clinically assessed Ayurvedic alternative may enhance public health initiatives, rural healthcare facilities, and integrative pediatric practices. Consequently, the current study seeks to evaluate the safety, feasibility, and clinical efficacy of Apamarga Kshara application in neonatal umbilical granuloma utilizing standard observational research methodology. Assessing the healing response, recurrence rate, tolerance, and procedural acceptability may assist in ascertaining the reliability of Shalya Tantra-based para-surgical procedures as neonatal interventions within the framework of evidence-based integrative medicine. [7]

## 2. METHODOLOGY

### Study Design

A prospective case-based observational study conducted at a pediatric Ayurvedic surgical unit over three months.

### Sample Size

Five neonates meeting inclusion criteria.

### Inclusion Criteria

Age: 0–30 days

Presence of soft, pink, moist umbilical granuloma

No signs of infection

### Exclusion Criteria

Active bleeding

Pus discharge or cellulitis

Preterm neonates below 34 weeks gestation

### Procedure

The area was cleaned with **lukewarm sterile saline**.

A minimal amount of Apamarga Kshara paste was applied using a sterile wooden probe.

The paste remained for **20–30 seconds**, then neutralized with *Ghritkumari Swaras* (*Aloe vera juice*).

Procedure repeated once daily for a maximum of three days.

### Outcome Measures

Lesion size reduction (mm)

Duration of healing

Recurrence at 30-day follow-up

Any adverse reactions (pain, irritation, infection)

## 3. RESULTS

All five neonates completed the procedure. Lesion regression began within 48 hours in four subjects. Final outcomes in table 1:

**Table 1: Observational study included five neonates diagnosed**

Case No.	Initial Size	Days to Healing	Recurrence	Adverse Effects
1	6 mm	5 days	No	None
2	5 mm	5 days	No	None
3	7 mm	7 days	No	Mild irritation
4	5 mm	5 days	No	None
5	4 mm	5 days	No	None

No infection, bleeding, or scarring was observed.

This observational study included five neonates diagnosed with uncomplicated umbilical granuloma. All neonates successfully adhered to the intervention protocol without withdrawal or attrition. The size of the baseline lesion was between 4 and 7 mm, with an average diameter of 5.4 mm. At the baseline evaluation, none of the participants exhibited secondary infection, purulent discharge, fever, or systemic complications. The response to treatment was evaluated by the gradual

decrease in lesion size, alteration in tissue characteristics, duration of healing, and monitoring for recurrence during a 30-day follow-up period. Four neonates exhibited a discernible therapeutic response within the initial 48–72 hours subsequent to the first application of Apamarga Kshara. In these instances, the granuloma exhibited typical shrinkage, desiccation of surplus granulation tissue, and the progressive development of a sterile, dry umbilical stump with epithelialization. One neonate with the largest lesion size (7 mm) needed two extra Kshara applications on top of the usual three-day schedule because it was taking longer for the lesions to go away. The problem was solved on the seventh day without any problems. One baby had mild irritation that went away right after the application, but it didn't need any extra care or treatment to stop. The study found that healing took between five and seven days, with four cases showing complete healing by Day 5. There was no bleeding, scabbing, bad smell, redness, or moisture after the healing process was finished. The average time it took for the sample to heal was 5.4 days. Parents' feedback was mostly positive, saying that the procedure was easy and that the babies didn't seem to be in much pain.

Recurrence was tracked one and four weeks after treatment ended. During follow-up, none of the neonates showed signs of granulomatous regrowth or problems with their umbilical cords. Umbilical hygiene was maintained at an acceptable level, and no neonate experienced cellulitis, delayed cord healing, systemic infection, or complications necessitating allopathic intervention. In general, the results show that using Apamarga Kshara with a controlled exposure time and proper neutralization with Ghratkumari Swarasa (Aloe vera) is an effective way to manage local tissue through controlled cauterization and natural healing processes. The lack of negative effects or reoccurrence indicates that the procedure is safe and appropriate for use in neonates under professional supervision. A comparison with conventional management (derived from literature trends rather than direct comparison in this study) suggests that the healing duration and recurrence rate are comparable or superior to silver nitrate cauterization, which poses risks such as chemical burns and post-procedural irritation in neonates. The quantitative and qualitative findings of this study suggest that Ayurvedic para-surgical intervention, especially Kshara Karma, offers a minimally invasive, cost-effective, and clinically efficient approach for the management of neonatal umbilical granuloma. These findings endorse the resurgence and clinical integration of Shalya Tantra principles in neonatal surgical care.

#### 4. DISCUSSION

The current observational study was conducted to assess the efficacy and safety of Apamarga Kshara application, a traditional Shalya Tantra technique, [8] in the treatment of neonatal umbilical granuloma. The outcomes indicated that the procedure was well tolerated by all neonates and achieved complete resolution of lesions in every instance, without recurrence or significant adverse effects. These results suggest that Kshara Karma could be a clinically useful and minimally invasive alternative to traditional cauterization methods like silver nitrate or surgical ligation. [9] Umbilical granuloma is a common but harmless condition in newborns. It happens when granulation tissue stays at the umbilical stump site after the cord has been cut. Standard treatment usually includes using silver nitrate sticks multiple times, but a number of studies have shown that this can cause problems like chemical burns, delayed healing of the epithelial tissue, and parents being worried because the tissue looks discolored and irritated. Cryotherapy and ligation are other options, but they might need to be done by someone with experience or cause pain. So, there is a growing need for safer, cheaper, and more accessible methods with few risks, especially for newborns. From an Ayurvedic standpoint, umbilical granuloma can be associated with conditions delineated as Nabhi Vrana and abnormal tissue proliferation necessitating Lekhana (scraping) and Shodhana (cleansing). [10] Sushruta Samhita talks about Apamarga Kshara as a strong but controlled caustic substance that can break down soft, extra tissue while also helping wounds heal (Ropana). The pharmacological effects of Kshara correspond with the pathological characteristics of granuloma, necessitating the selective excision of soft tissue proliferation while preserving the integrity of the adjacent normal epithelium. The results of the current study are in line with this traditional reasoning. Most neonates exhibited quantifiable tissue regression within 48–72 hours of commencing treatment, signifying that the effects of Apamarga Kshara are efficacious at a regulated exposure duration. [11] The healing timelines in the present study (5–7 days) are analogous to the standard resolution period following silver nitrate cauterization as documented in contemporary pediatric literature. Importantly, there was no recurrence during follow-up, indicating that the depth of tissue action was adequate to eliminate the pathological granulation permanently. [12] Safety of the procedure is one of the most important things to think about when doing anything to a newborn. Apamarga Kshara is naturally alkaline, and if you use it wrong, it can irritate or burn you. But the short time it was on and the fact that it was neutralized with Ghratkumari Swarasa (Aloe vera juice) reduced the risk of too much cauterization. [13] Only one newborn showed mild temporary irritation that went away on its own without any help. The lack of infection, hemorrhage, or protracted healing signifies that when conducted in accordance with established classical and procedural protocols, Apamarga Kshara is safe for neonatal application.

Another important thing to notice in this study is how parents accept it. Even small neonatal surgeries can make caregivers very anxious. Caregivers were happy with the Kshara Karma procedure because it didn't involve invasive handling, instrumentation, or repeated visits to the clinic beyond what was required. [14] They also saw visible progress. This suggests the possible viability of incorporating the procedure into standard pediatric or Ayurvedic clinical practice, particularly in environments where access to silver nitrate or surgical proficiency is constrained. The results are encouraging, but the study

has some flaws. The sample size was limited, and there was no comparative control group undergoing standard treatment. Furthermore, variations in lesion size, granulation morphology, and neonatal feeding or hygiene practices may impact healing outcomes, yet these were not examined as independent variables. A randomized controlled trial with a larger sample size would facilitate statistical comparison and enhance clinical validation. In spite of these limitations, the study significantly enhances the accumulating evidence advocating for the incorporation of Ayurvedic surgical techniques into contemporary pediatric care, especially in neonatal cases where minimally invasive approaches are favored. [15] The successful outcome of Kshara Karma in this context underscores the significance of Shalya Tantra as a scientifically valid and clinically versatile discipline within Ayurveda. Future research should encompass pharmacological analysis of Apamarga Kshara, optimization of neonatal dosage standards, assessment of long-term skin integrity outcomes, and comparative trials involving silver nitrate, ligation, and topical antibiotic therapies.

## 5. RECOMMENDATIONS

Based on the results of the current observational study, the application of Apamarga Kshara seems to be a safe, effective, and minimally invasive Shalya Tantra intervention for the treatment of neonatal umbilical granuloma. [16] The effective healing response in all enrolled neonates, the absence of recurrence, and minimal procedural discomfort underscore its potential as a viable alternative to traditional methods such as silver nitrate cauterization and ligation. However, to make sure that clinical use is safe and consistent, there need to be some recommendations at the levels of implementation, research, and policy. Training and skill building are very important. Ayurvedic practitioners conducting Kshara Karma in neonates must possess comprehensive training in neonatal care, aseptic methodologies, dosage calibration, and the appropriate timing of application. [17] Institutions providing postgraduate training in Shalya Tantra must incorporate structured neonatal procedural modules and supervised clinical exposure. Second, standardizing formulations must be a top priority. Changes in the pH, concentration, and preparation method of Apamarga Kshara could affect how well it works and how safe it is. Laboratory standardization and pharmaceutically validated formulations should become part of regulated clinical use, particularly for pediatric applications. [18] Third, we need studies on a larger scale. The results of this study require confirmation via randomized controlled trials that compare Kshara Karma with conventional allopathic treatments. Research should also focus on long-term evaluation of skin integrity, recurrence trends, healing quality, and parental satisfaction metrics. [19] Finally, adding Ayurvedic procedures to pediatric and public health systems could be very helpful in places where there aren't many resources and people can't get to surgical facilities or chemical cauterization supplies. [20]

## 6. CONCLUSION

The results of this study show that Apamarga Kshara is a safe and effective treatment for neonatal umbilical granuloma when used correctly and with neutralization. The procedure resulted in total lesion resolution within 5–7 days for all participants, without complications or recurrence. The method is in line with the traditional Ayurvedic ideas of Lekhana, Shodhana, and Ropana, and it also meets modern clinical standards for safety, effectiveness, and feasibility. While additional research is necessary to enhance clinical evidence and formulate standardized guidelines, this study endorses the potential efficacy of Shalya Tantra-based para-surgical techniques in contemporary neonatal care. With the right training, rules, and research, Apamarga Kshara could be a reliable way to treat children in a holistic way.

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