



Narrative Review

The Three Most Important Things to Tell Parents of a Newborn/Infant with a Problem of the Navel

Giorgio Rovatti¹

¹*Private Practice, Modena, Italy*

KEYWORDS

*Newborn's navel,
Umbilical stump,
Cord,
Cord care,
Umbilical granuloma,
Umbilical polyp,
Omphalytis,
Umbilical hernia*

ABSTRACT

The Author briefly reviews the physiological involution of the umbilical stump, the commonly accepted practices of cord care and the pathological conditions of the navel in neonatal age and the first months of life.

CORRESPONDING AUTHOR

Giorgio Rovatti
Pediatrician
Private Practice,
Modena, Italy

grovatti@outlook.it

Introduction

The umbilical cord, an essential connection between mother and fetus in intrauterine life, loses much of its importance when it is cut in the delivery room; It becomes a source of doubt and concern for the newborn's family when the stump remains visible and persists over time.

The present dissertation is dealing with the most common problems of the umbilical region that can be found

in newborns and infants in the first months of life.

The umbilical cord stump undergoes a progressive shriveling and drying, final outcome of a series of physiological processes leading to its separation. This involution is thought to be initiated by thrombosis and contraction of the umbilical vessels, followed by necrosis-inducing granulocyte and macrophage migration (1).

Timing of cord separation

The mean umbilical cord separation time is 6.61 days (± 2.33 - Min1,97-Max 13,96) (2, 4).

Even though there is not an universally accepted definition, it is usually believed that a cord separation after 2-3 weeks from birth can be considered to be delayed (2, 3).

Many factors can be associated with delayed separation of the umbilical cord stump, such as prematurity, low birthweight, delivery by cesarean section, systemic antibiotics for neonatal infections and administration of topical antiseptic agents (1, 2, 4, 16).

The vast majority of newborns displaying an umbilical stump whose time of separation is delayed beyond

the usual physiological time limits is completely healthy. Nonetheless, a marked delay in cord separation in patients showing umbilical infections and/or recurrent/severe infections, especially involving skin, gums, raises the suspicion of leukocyte adhesion deficiency (LAD) (5).

Leucocyte adhesion deficiency (LAD) syndromes are a group of rare Immunodeficiency disorders consisting in an inability of leukocytes to migrate to the site of infection. The exact prevalence of this disorder is difficult to evaluate given its rarity but, referring to its commonest variant LAD-I, it is estimated to be between 1-9 / 1 000 000ive births (6).

Cord care

Many studies have shown that the application of antiseptics to the umbilical cord stump to prevent infections, while delaying its separation (16), did not provide clear benefit (8). The most widely recommended practice nowadays is the so called "Dry Cord Care" (9) that can be summarised in few simple pieces of advice (7):

- Keep the stump dry and exposed the to air;
Keep the front of your baby's diaper folded down;
- Cover the stump with a sterile gauze and if it becomes soiled, clean it with sterile water;
- Give your baby a sponge bath until the cord falls off.

It has been shown that this kind of cord care does not increase the risk of infections when the delivery takes place in hospital settings and/or in a safe and hygienically suitable environment (8). The WHO recommends application of antiseptics (4% chlorhexidine) only in settings where, for cultural reasons, harmful traditional substances (e.g. animal dung) are commonly used on the umbilical cord (8, 9). Once the umbilical cord stump has fallen off it is not unusual to notice secretions in the umbilical area.

Two distinct situations can be observed:

- **Secretions without clinical signs of inflammation**

The most prevalent cause of persistent serous or serosanguinous drainage is, by far, the *Umbilical Granuloma*, commonly considered to be the result of an overgrowth of the granulation tissue; it usually looks like a soft pink or light red lump. The umbilical granuloma is not to be confused with *Umbilical Polyp*, remnants of the omphalomesenteric duct enteric mucosa at the umbilicus. Small umbilical granulomas can undergo a spontaneous involution without any intervention (3); nevertheless, cauterization with silver nitrate remains the conventional treatment of umbilical granulomas although they can also be successfully managed at home by using table or cooking salt (10, 11). The results of the latter treatment are satisfactory without the small risks of excessive burning of the former. The incomplete or anomalous involution of the omphalomesenteric duct or the urachus can be rarely responsible for persistent secretions from the navel (3).

- **Secretions with clinical signs of inflammation**

The most common cause is omphalitis, a potentially serious infection whose incidence is estimated around 0.1% in "high income" countries, where the delivery takes place in safe and hygienically suitable environment; in less favourable conditions the incidence can

reach the 8% (8, 12). The bacterial species isolated in this condition are numerous: Gram positives (*Staphylococcus aureus*, *Streptococcus pyogenes*), Gram negatives (*Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*) ed Anaerobis (*Bacteroides fragilis*, *Clostridium perfringens*) (8, 12).

The clinical spectrum of clinical findings is wide and a classification divided into four stages has been proposed (Table I) (12).

Table I. *Omphalitis classification.*

Omphalitis - Classification
<i>Funisitis and umbilical discharge</i>
<i>Omphalitis with abdominal wall cellulitis</i>
<i>Omphalitis with systemic sepsis</i>
<i>Omphalitis with fasciitis</i>

The treatment of omphalitis in the newborn includes antimicrobial therapy and supportive care that is

beyond the scope of this paper.

Umbilical hernia

Umbilical hernias are fairly common among children, with a prevalence ranging from 10% to 30% of newborns (15). It is very common for umbilical hernias to close spontaneously during the first 3 years of life and most will close by 4-6 years of age (14, 15). An expectant management of umbilical hernias is therefore usually advised, given the favourable natural history

and the quite low rate of complications (the risk of incarceration is variously estimated in literature, ranging from 0.07% to 2.77%) (13). Surgical repair for asymptomatic hernias is not routinely indicated before the age of 4-5 years (14, 15).

References

1. Anhalt H, Marino RV, Rosenfeld W. Retained umbilical stump: clinical approaches and separation anxiety. *Am J Dis Child.* 1992; 146(12):1413-4. doi: 10.1001/archpedi.1992.02160240023005.
2. Oudesluys-Murphy AM, Eilers GA, de Groot CJ. The time of separation of the umbilical cord. *Eur J Pediatr.* 1987; 146(4):387-9. doi: 10.1007/BF00444944. PMID: 3653134.
3. Chabra S, Anderson JA, Jovid PJ. Abdominal wall defects in: Avery's diseases of the newborn Edited by Christine A. Gleason and Sandra E. 11th Edition-Elsevier 2024.
4. López-Medina MD, López-Araque AB, Linares-Abad M, López-Medina IM. Umbilical cord separation time, predictors and healing complications in newborns with dry care. *PLoS One.* 2020; 15(1).
5. Reynolds S, Devlia D, Stearns R, Cole T. Should all infants with delayed umbilical cord separation be investigated for leucocyte adhesion deficiency? *Arch Dis Child.* 2021; 106(12):1233-1236.
6. Orphanet website <https://www.orpha.net>. Accessed June 2025.
7. Mayo clinic website accessed june2025 <https://www.mayoclinic.org/healthy-lifestyle/infant-and-toddler-health/in-depth/umbilical-cord/art-20048250>.
8. Stewart D, Benitz W; Committee on fetus and newborn. Umbilical Cord Care in the Newborn Infant. *Pediatrics.* 2016; 138(3):e20162149. doi: 10.1542/peds.2016-2149. PMID: 27573092.
9. WHO recommendations on maternal and newborn care for a positive postnatal experience Geneva: World Health Organization; 2022.
10. The Sydney Children's Hospitals Network website accessed june2025 <https://www.schn.health.nsw.gov.au/umbilical-granuloma-factsheet>.
11. Banerjee A, Jain RA, Munghate GS, Bodhanwala M, Bendre PS. Common Salt versus Silver Nitrate for the Treatment of Umbilical Granuloma in Infants: An

- Open-label, Single-center, Pilot Randomized Controlled Trial. *J Indian Assoc Pediatr Surg.* 2024; 29(3):199-203. doi: 10.4103/jiaps.jiaps_209_23.
12. Sawardekar KP. Changing spectrum of neonatal omphalitis. *Pediatr Infect Dis J.* 2004; 23(1):22-6. doi: 10.1097/01.inf.0000105200.18110.1e.
13. Abdulhai SA, Glenn IC, Ponsky TA. Incarcerated Pediatric Hernias. *Surg Clin North Am.* 2017; 97(1):129-145. doi: 10.1016/j.suc.2016.08.010.
14. Almekhl W et al. Systematic Review of Current Consensus on Timing of Operative Repair Versus Spontaneous Closure for Asymptomatic Umbilical Hernias in Pediatric Med Arch. 2019; 73(4): 268-71
15. Zendejas B, Kuchena A, Onkedi E et al. Fifty-three-year experience with pediatric umbilical hernia repairs. *J Pediatr Surg.* 2011, 46(11): 2151-6.
16. Quattrin R, Iacobucci K, De Tina AL et al. 70% Alcohol Versus Dry Cord Care in the Umbilical Cord Care: A Case-Control Study in Italy. *Medicine.* 2016; 95(14):p e3207.