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Best Practice for Umbilical Cord Care

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Significance

During pregnancy the umbilical cord serves as the vital connection between mother and fetus supplying oxygen and nutrients to the fetus that are imperative for its growth and development. After birth, the umbilical cord is cut and then must heal over the next one to three weeks before it will eventually detach (MD Consult, 2007). During the healing period, methods of caring for the umbilical stump vary greatly between countries and healthcare settings. These specific practices will be described in the next section.

Roughly one hundred thirty-five million live births occur worldwide each year. The majority of these births occur in “less developed countries” (US Census Bureau, 2008). A major cause of death in these less developed countries is umbilical cord infections. One such infection, neonatal tetanus, causes about two hundred thousand infant deaths each year throughout the world (Zupan, Garner, and Omari 2009). It is important to determine the best practice for umbilical cord care in order to minimize cord infections in the millions of babies born each year.

Current Practice

In the United States and most other count more developed countries the majority of babies are born in a hospital or birth center setting. In these settings clean technique is practiced and a “sterile cutting instrument (blade or scissors)” (Zupan *et al*, 2009, para 8) is used when cutting the umbilical cord shortly after the baby’s birth. In other parts of the world unsterile tools may be used to sever the cord. After the cord is cut, there is great variation in the methods used for caring for the umbilical stump. Many practitioners advocate dry cord care in which the umbilical stump is kept “clean and dry without applying anything” (Zupan *et al*, 2009, para 9). In more developed countries if a practitioner chooses to apply a substance to the umbilical stump it may be a dye, an antiseptic, or an antibiotic. Antiseptic agents commonly used are “alcohol, silver sulphadiazine, iodine, and chlorhexidine” (Zupan *et al*, 2009, para 8). Dyes like “triple dye, gentian violet, acriflavine, and eozine” (Zupan *et al*, 2009, para 8) may also be used. Finally, topical antibiotics like “bacitracin, neomycin, nitrofurazone, or tetracycline” (Zupan *et al*, 2009, para 8) can be used in preparations mixed with water, alcohol, or detergents, or as ointments. In less developed countries “various substances are applied including charcoal, grease, cow dung, or dried banana” (Zupan *et al*, 2009, para 7).

The Birth Place at Carilion New River Valley Hospital advocates dry cord care predominantly. The stump is kept clean and dry and diapers are folded down under the stump as not to irritate them. The cord is observed twice daily by nurses to check to erythema, swelling, and foul smelling or purulent discharge. After discharge from the hospital parents are instructed to look for these warning signs and contact their healthcare provider if they are observed. If the cord is found to be dirty, it may be cleaned with rubbing alcohol on a cotton swab.

The research on cord care is limited and has been performed mostly in more developed countries which have a lower incidence of umbilical cord infections than less developed countries. The Cochrane reviewers only found twenty-one studies that met their inclusion criteria; out of those twenty-one studies only one was performed in a less developed country

(Thailand) and eight were conducted in the United States. Nineteen of the studies were on infants born after thirty-eight weeks gestation (full-term) and without other diseases or conditions. “Recommendations for cord care are often based on traditional assessments or published literature and tradition” (Zupan *et al*, 2009, para 14) and not research.

Summary of Evidence

The meta-analysis from Cochrane discovered that antiseptics were used more often than antibiotics. It speculated that this is because antiseptics tend to be cheaper than antibiotics and are seen more as a preventative measure whereas antibiotics tend to be more curative. It also said that infections reported from the studies it reviewed were rare, no matter which method of cord care was being tested. Overall, it stated that cord separation time is prolonged with antiseptic use versus dry care and shortened by powder preparations (Zupan *et al*, 2009).

Vural and Kisa performed a study comparing topical human milk application to povidone-iodine application and dry care. Both the human milk and the povidone-iodine were applied twice daily and they dry care group’s cords were kept clean and dry. The main outcomes measured were the cord separation time and the presence of cord infection. They concluded that there was “no significant difference between the three groups in terms of omphalitis occurrence” (Vural and Kisa, 2006, para 7). They also found that the babies in the dry care and human milk groups had cords that detached sooner than the babies in the povidone-iodine group (Vural and Kisa, 2006).

Pezzati, Rossi, Tronchin, Dani, Filippi, and Rubaltelli (2003) studied the effectiveness of topical salicylic sugar powder application with chlorhexidine in preterm infants. Upon admission to the neonatal intensive care unit (NICU) the babies were bathed in a soap solution. The cord was treated with either salicylic sugar powder or chlorhexidine at each diaper changing until cord separation and was covered with a piece of dry sterile gauze in between treatments. They found that cord separation occurred about three days sooner in the infants treated with salicylic sugar powder than those treated with chlorhexidine. Only one patient in each group out of all of the two hundred forty-four participants developed sepsis or omphalitis. Interestingly enough, the NICU nurses were thirty-one percent more satisfied with the salicylic sugar powder treatment. The salicylic acid group also had about twenty percent more negative umbilical swabs than the chlorhexidine group (Pezzati *et al*, 2003).

Golombek, Brill, and Salice (2002) compared the effectiveness of alcohol versus triple dye application in umbilical cord care. They reported that the alcohol group had a cord separation about three days sooner than the triple dye group without an increase in infection. They also emphasized the monetary merits of alcohol use versus triple dye. They also referenced many other studies in their discussion section. The Gladstone study mentioned concluded that there was no significant difference in the colonization of the cords with microorganisms when comparing treatment with triple dye, alcohol, povidone-iodine, silver sulfadiazine, and bacitracin. Another study mentioned suggested that dry care resulted in faster separation and no increase in cord infections than alcohol application at each diaper change (Golombek, Brill, and Salice, 2002).

Though not abundant, the studies on umbilical cord care seem to be well performed. All of the references cited in this paper are primary sources with the exception of the Cochrane review. These primary sources themselves have extensive lists of sources that are referenced in the journal article and then cited in the references section. All the articles referenced in this paper are peer reviewed and have been published since January 2002; they were selected to make sure that the evidence in this paper is from the most recent research. All the articles used for this paper primarily paraphrased when referencing other works and explored both supporting and opposing theories. The literature reviews in the articles were both concise and comprehensive.

Preliminary Conclusions

There is still much debate over the best practice for umbilical cord care. The Cochrane review on this topic was just published this year and was unable to come to a clear conclusion for the best practice. It is safe to conclude that using charcoal, grease, cow dung, and dried banana like they do in some less developed countries is not the best practice. However, a decision between the various antiseptics, antibiotics, and dyes versus dry care cannot yet be made. The Cochrane review states that the current data from studies does not prove or disprove the advantage of antibiotics or antiseptic use over dry cord care (Zupan *et al*, 2009).

Dry care looks promising - especially in more developed countries where clean technique is used when cutting the umbilical cord and when handling the baby thereafter. Dry care is also makes sense financially; the only costs associated with dry care are the soap and water used to cleanse the umbilical stump. Dry care also shortens the duration of time it takes for the umbilical stump to detach. This can save money in countries where home visits for cord care are continued until the stump falls off. It is important to emphasize when educating parents that dry care does not mean providing no care; providing no care can lead to odor, drainage, infection, and even death. Dry care may not be the best choice for newborns as high risk for infection like those that are premature and babies in the NICU. It may be advantageous to use topical antiseptic application in these infants to prevent colonization and infection of the umbilical stump. Dry cord care may not be the best choice in less developed countries where hygiene and sterile technique are not routinely practiced. Cochrane suggests that in these cases topical antiseptic application would be best – perhaps alcohol would be the most cost effective option (Zupan *et al*, 2009).

Without a doubt, more research must be performed to determine the best practice for this clinical problem. In well-developed countries it would be interesting to compare the cheaper antiseptic and antibiotics treatments to dry cord care. In less developed countries where dry cord care is not recommended studies should be performed comparing soap and water cleansing of the stump to various antiseptics and antibiotic preparations. The authors of the Cochrane review also suggest that it may be interesting to explore the use of topical colostrum application to the umbilical stump because of its bacteriostatic properties; if proven effective this would be a financially sensible option (Zupan *et al*, 2009).

References

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Literature Review

Cochrane EBM Reviews

Keywords used: “umbilical cord care”

Number of relevant EBM reviews: 1

Number included in paper: 1

CINAHL

Keywords used: “umbilical cord care”

Year limits (if any): 2002 - present

Other Search limits used: peer reviewed, English

Once search is adequately refined, number of relevant search results: 7

Citations included in paper from this search: 3

MD Consult

Keywords used: “umbilical cord care”

Search limits used: year limit 2006 – present

Number and types of articles (research, clinical, other) included in paper from this search: 1

Google

I wanted some census information to demonstrate how many births occur each year worldwide in order to emphasize the importance of this topic. I used Google.com to find the information from the US Census Bureau.