

Umbilical Venous Catheter Position Formula: Best is yet to Come!

Despite umbilical venous catheter (UVC) insertion being a common procedure in the neonatal units, the ideal formula for an optimal position is still an illusion for the neonatologists. The study by Krishnagowde, *et al.* [1], recently published in *Indian Pediatrics* [1], is a step forward in this direction. We have few concerns, clarification of which will be useful for the readers.

1. The authors compared Shukla's formula [2] (UVC length inserted (in cm) = (birth weight \times 3+9)/2) +1) with their proposed JSS formula (UVC length (in cm) = 6.5 + weight in kg) and showed that Shukla's formula has higher rates (65.5%) of 'short of length to an acceptable position' as compared to JSS formula (29.2%). Calculating length of insertion with each formula, the length of insertion is much more with Shukla's formula as compared to JSS formula; the difference widening as the weight of infant increases. Thus, logically Shukla's formula should have led to deeper insertion as compared to JSS in this study. Shukla's formula has been earlier shown to lead to higher rates of over-insertion of UVC; therefore, revised formula (UVC length inserted (in cm) = (birth weight \times 3+9)/2) has been suggested [3].
2. The authors have used an anteroposterior (AP) view X-ray for confirming the position of the tip of the UVC. A recent study has shown that the radiograph has only moderate accuracy in detecting the position of the tip of UVC [4]. The last portion of the ductus venosus runs in the sagittal plane and, therefore, it can be correctly visualized only in lateral view. Moreover, rising concern of radiation exposure and increased availability of the ultrasound machine makes the bedside echocardiography the modality of choice. Ultrasound is shown to be superior in localizing the exact position of the catheter and can help in the real-time adjustment of the tip [4]. Therefore, the studies comparing new formula with the existing one should use a better standard (like echocardiography) to make the study more robust. In the absence of the facility or skills for bedside ultrasound, a lateral view should be combined with anteroposterior to increase the diagnostic accuracy.

3. The authors did not mention the time interval between the insertion of the catheter and chest radiograph acquisition. The catheter migration after a few hours is not unusual in the clinical practice, and delay in acquiring radiograph may show increased rates of malposition [5].

JOGENDER KUMAR¹ AND ARUSHI YADAV²

¹Department of Pediatrics, PGIMER,
and ²Department of Radiodiagnosis,
Government Medical College and Hospital;
Chandigarh, India.
¹jogendrayadv@gmail.com

REFERENCES

1. Krishnagowda S, Thandaveshwar D, Mahadevaswamy M, Doreswamy SM. Comparison of JSS formula with modified Shukla's Formula for insertion of umbilical venous catheter: A randomized controlled study. *Indian Pediatr.* 2019;56:199-201.
2. Shukla H. Rapid estimation of insertional length of umbilical catheters in newborns. *Arch Pediatr Adolesc Med.* 1986;140:786-8.
3. Verheij GH, te Pas AB, Smits-Wintjens VEJ, Sramek A, Walther FJ, Lopriore E. Revised formula to determine the insertion length of umbilical vein catheters. *Eur J Pediatr.* 2013;172:1011-5.
4. Guimares AFM, Souza AACG de, Bouzada MCF, Meira ZMA. Accuracy of chest radiography for positioning of the umbilical venous catheter. *J Pediatr (Rio J).* 2017;93:172-8.
5. Hoellering AB, Koorts PJ, Cartwright DW, Davies MW. Determination of umbilical venous catheter tip position with radiograph. *Pediatr Crit Care Med.* 2014;15:56-61.

AUTHOR'S REPLY

We thank the reader for careful examination of our study. The clarifications are as follows:

1. The formula used for comparison with JSS Formula in our study was modified Shukla formula, which generally falls short of JSS formula.
2. Though ultrasound is increasingly being used to report the tip of the umbilical venous catheter, it is not universal due to availability of machines/skilled personnel. Regarding usage of *lateral view*, we differ regarding it being better. We have recently conducted a retrospective analysis of 140 X-rays for inter- and intra-rater agreement between horizontal-dorsal-decubitus (lateral) vs supine X-ray in determining the optimal localization of the tip position. This study showed a fair agreement

(unpublished data) between both inter- and intraraters with supine X-ray ($k=0.6$) and poor inter- and intra-rater agreement on lateral X-ray ($k=0.29$).

- We agree with the reader regarding the possibility of migration of the catheter, and we did not collect data for this time duration. The average turnaround time

for chest X-ray is approximately 30 minutes in our unit, and all X-rays were taken within an hour of insertion.

SUSHMA KRISHNEGOWDA
Department of Pediatrics,

JSS Hospital, Mysuru, Karnataka, India.
drsushmasri@gmail.com

Commercializing Donor Human Milk – Nip it in the Bud

According to World Health Organization, if mother's own milk is unavailable or insufficient, the next best option is to use pasteurized donor human milk (DHM) [1]. Given the high rate of preterm births in the country and level of malnutrition that ensues in the postnatal growth of preterm infants, there is an urgent need to establish Human milk banks (HMBs) across the country, especially in large neonatal units. Though the first HMB of India was started in 1989 at Mumbai, the growth of HMBs has been at a much slower rate than the demand. Nevertheless, there has been renewed interest in this area over the past few years, and now more than 50 HMBs are operational in the country [2,3], and a majority of them are in the public sector. As per National Guidelines on Lactation Management Centers in Public Health Facilities, donation should be done freely and voluntarily without any monetary benefits to the donor and with an understanding that the donated milk may be used to feed the baby of another mother admitted in the hospital free of any cost [4].

In this context, it is disturbing that there is a move to commercialize DHM in the country. Certain companies are clandestinely trying to market DHM as mother's milk fortifier and also sell DHM for a price of 300 rupees for 15 ml [5]. The fact is that DHM is obtained free from mothers, and is pasteurized and marketed with vested commercial interest. At a phase when lactation management centers are being streamlined, this commercial perspective is an obstacle that can derail the

progress and functioning of HMBs across the country, which are solely based on the principle of voluntary human milk donation. If mothers start selling their milk or companies indirectly do so, HMBs will run dry and infant formula use will increase. There is also a risk that DHM may be used for non-scientific indications, excluding the needy preterm neonates. Stringent laws should be enacted urgently to stop commercialization of DHM. All stakeholders, including Ministry of Health and Family Welfare, Government of India, Indian Academy of Pediatrics, National Neonatology Forum, and Breastfeeding Promotion Network of India, should step-in and act.

B ADHISIVAM* AND S THANIGAINATHAN
Department of Neonatology,
JIPMER, Puducherry, India.
**adhisivam1975@yahoo.co.uk*

REFERENCES

- DeMarchis A, Ballard KI, Mansen KA, Engmann C. Establishing an integrated human milk banking approach to strengthen newborn care. *J Perinatol.* 2017;37:469-4742.
- Nangia S, Sachdeva RC, Sabharwal V. Human milk banking: An Indian experience. *Neo Reviews.* 2018;19:e201.
- Bhat BV, Adhisivam B. Human milk banking and challenges in quality control. *Indian J Pediatr.* 2018;85:255-6.
- National Guidelines on Lactation Management Centers in Public Health Facilities. Ministry of Health and Family Welfare, Government of India. New Delhi, 2017.
- Proposal to sell mother's milk sets off alarm bells. Available from: <https://www.thehindu.com/news/cities/bangalore/Proposal-to-sell-mother%E2%80%99s-milk-sets-off-alarm-bells/article15001608.ece>. Accessed May 10, 2019.