

Improving practice using the wrapped tucked position for lumbar punctures

Infants undergoing a lumbar puncture are subjected to a potentially painful and uncomfortable procedure. They often struggle against the required hold position and become increasingly agitated during the procedure, thereby reducing the likelihood of success. The use of a wrapped technique for holding during lumbar punctures can provide support and comfort for the baby and help healthcare professionals to locate the most appropriate space for needle insertion and obtain a clear cerebrospinal fluid sample.

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Background

In 2016 a group of staff from the Jessop Wing neonatal unit, Sheffield, attended the COINN (Council of International Neonatal Nurses) conference in Vancouver where we were shown a brief video about neonatal care in Canada.¹ The team was impressed to see a wrapped baby who was about to receive a lumbar puncture appearing asleep and comfortable. In our experience, a lumbar puncture is one of the most traumatic procedures for neonates who often become distressed and are unable to remain settled in the flexed decubitus position.

We immediately wanted to learn more about this procedure and explore the possibility of implementing it in our own unit. However, on our return to the UK we were unable to find any further information about the technique and we therefore decided to develop our own method of wrapping a baby in a muslin square to help provide comfort and support during a lumbar puncture procedure.

The wrapped lumbar puncture technique

Minimal equipment is needed to make the holding technique a success. Muslin cloths are key to the wrapped lumbar puncture technique; the fabric stretches and allows the baby to be wrapped without overheating. Muslin cloths can be used with babies from 500g to 4kg; extra long muslin can be purchased for use with babies greater than 2kg, and smaller cloths are available for the smaller babies. The

wrapped technique can be used on all babies whether ventilated, receiving different forms of continuous positive airway pressure therapy or self-ventilating in air.

Step 1

Fold the muslin so that it forms a long piece of material of approximately 10cm in width and adjust according to the size of the baby. Position it under the baby between the shoulders and the base of the head. The length of muslin should be positioned so that there is one long piece of material and one short piece of material either side of the baby (**FIGURE 1A**).

Step 2

Working from the side of the baby with the longer piece of material, bring the baby's hand up towards its mouth to allow it to self-soothe. Bring the long piece of material across the front of the body angled down towards the opposite hip (**FIGURE 1B**). Continue to wrap the muslin under the base of the buttocks and the back of the legs (stretching the material if required) and back over across the abdomen, similar to a figure of eight shape (**FIGURE 1C and D**). As the muslin is brought back across the body, the baby automatically starts to turn into a curved position.

Step 3

Bring the other arm up towards the mouth and bring the shorter piece of material down across the body to meet with the ends of the longer side (**FIGURE 1E**). Turn the baby into a side-lying position (**FIGURE 1F**).

Keywords

lumbar puncture; developmental support; infant; holding position

Key points

Ramsay S., Jackson K. Improving practice using the wrapped tucked position for lumbar punctures. *Infant* 2018; 14(4): 135-36.

1. The wrapped lumbar puncture technique is less traumatic for the infant and developmentally supportive.
2. It is user-friendly for staff – it is easier for the nurse to maintain the baby's position and provide appropriate support.
3. In the wrapped tucked position the baby is able to settle and a successful lumbar puncture is more likely.

Using this technique, the infant's back is appropriately exposed for lumbar puncture. The baby is positioned well without undue force; with the baby's arm in a tucked position it can comfortably self-soothe. The nurse can easily hold the baby and administer sucrose or expressed breast milk, as necessary. The nappy can still be tucked down and the muslin cloth does not interfere with the sterile field.

The wrapped muslin cloth technique can also be used for babies receiving a lumbar puncture in a sitting position (**FIGURE 1G**).^{2,3}

Discussion

The wrapped lumbar puncture technique was implemented in the Jessop Wing neonatal unit in December 2016. As with any change of practice, it was initially slow to get going but thanks to support from senior nursing and medical staff it was fully operational from February 2017.

The technique is taught to all staff during their orientation to the unit and performed on all babies needing a lumbar puncture whether they are ventilated in an incubator, self-ventilating in a cot in the special care unit, or attending from the postnatal wards (**FIGURE 2**). No complications have been identified so far.

An audit was carried out in January 2018 asking for feedback from those carrying out the procedure (medical staff and advanced neonatal nurse practitioners, ANNPs) and those holding the baby (nursing staff). All identified that the new technique results in the procedure starting with a baby in a calm state rather than already crying and/or fighting against the forced hold position. The infants appear more comfortable and often remain settled throughout the procedure (**TABLE 1**). With their arms in a tucked position, the babies can naturally self-soothe and settle. The settled baby is less likely to cry and the whole environment is calmer, which is more likely to result in a successful lumbar puncture.⁴ Although a successful lumbar puncture is probably more dependent on the skill of the person performing it, the position of the baby is essential. The medical staff report that it is easier to find the correct lumbar region in a baby that is settled. While the baby will startle and cry when the spinal needle is inserted, in the majority of cases it will settle immediately and often go to sleep.

Staff identified in the audit that they initially found it slightly tricky to correctly position the muslin but with practice it

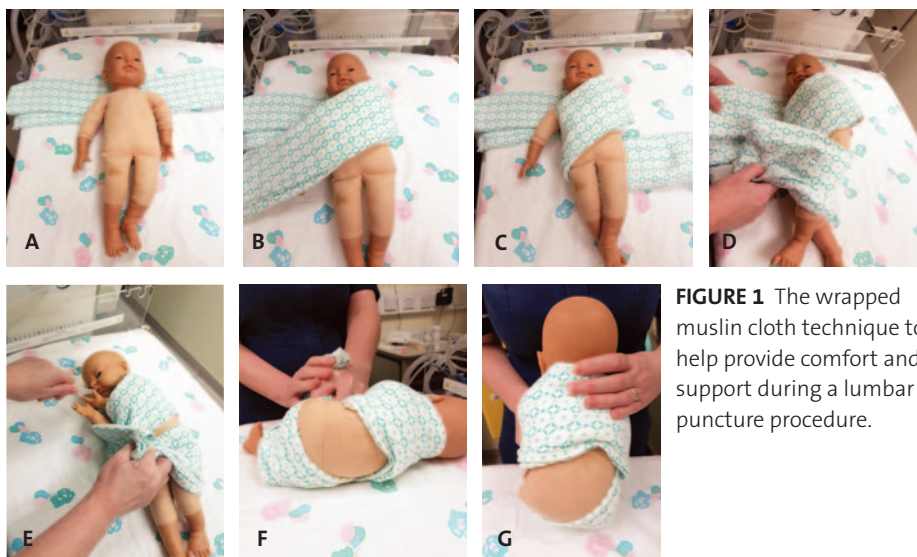


FIGURE 1 The wrapped muslin cloth technique to help provide comfort and support during a lumbar puncture procedure.



FIGURE 2 An infant wrapped in the holding position and about to undergo a lumbar puncture.

became much easier. The technique is popular with the nursing staff as it is easier to hold the baby in an optimal position without strenuous effort or bent at the back trying to hold the baby in a forced and unnatural manner. The baby's position can be maintained and appropriate support can be given. It is essential to have good communication between the person carrying out the lumbar puncture and the nurse holding the baby as it can be hard to judge how rotated the baby is in the lateral decubitus position.

For babies nursed in an incubator, performing a lumbar puncture involves fully lowering the doors on either side of the incubator to permit access. On some occasions the lid is also removed. This could result in a drop in the baby's environmental temperature. In covering the baby in muslin and placing it in the more natural fetal position, we find that the babies maintain their temperature when the incubator doors are lowered.

Following its implementation on the unit, the wrapped lumbar puncture technique has been taught on local training

The baby is able to self-soothe and appears more comfortable

Strenuous holding is avoided

The baby can easily receive sucrose/expressed breast milk for pain relief

Temperature regulation is improved

The baby will often remain settled in the wrapped tucked position

It is easier to locate the correct lumbar region

TABLE 1 Advantages of the wrapped tucked position.

days and ANNP clinical skills days, national study days and on the international FINE (Family and Infant Neurodevelopmental Education programme).⁵

While the technique works well at the Jessop Wing, other units considering adopting the technique should carry out appropriate senior reviews and audit their work to ensure its suitability.

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