

Simple technique of head fixation for image-guided neurosurgery in infants

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Dear Editor:

I was pleased to read the article by Agrawal and Steinbok "Simple technique of head fixation for image-guided neurosurgery in infants" [1].

The authors describe a specific application of a technique that has applicability and utility in pediatric neurosurgery as yet not described for your readership. This technique addresses issues of skin protection and calvarial fixation in infants and young children where skeletal fixation is not appropriate.

In the mid-1970s at the University of Calgary, the adhesive "U" drape in pediatric neurosurgery was conceived as a method to prevent the development of pressure sore(s) on the forehead of infants undergoing vertex craniectomy for sagittal synostosis in the prone position positioned on a horseshoe head rest. Although rare, these injuries were due to (1) the pooling of the skin preparation solution between the forehead scalp and the headrest cushions and (2) the pressure of the head on the headrest during the procedure. Similar pressure and moisture injuries can occur in the supine position on either the horseshoe headrest or "dental" headrests. This risk is not eliminated by gel cushions now used in headrests. To address skin protection, the "U" drape is adhered to the scalp before the application of prep solution so as to exclude prep "rundown" from the operative site to the scalp-headrest cushion contact areas and in the prone position, to the

orbital areas. Any excess prep solution is removed from the drape before final operative site draping, and none is allowed to run onto skin outside of the operative field.

This technique can be very useful in maintaining the head position of infants and young children when positioned on a headrest whether for stereotaxis or not. In the prone position, the technique provides the ability to maintain an appropriate degree of gentle flexion and counters the tendency for the head to fall into a neutral or minimally extended position during the operation. To achieve positional stability, the adhesive on the "U" drape is applied to the scalp around the operative site and to the headrest cushions. The adhesive tails are applied along the neck and on to the back for additional stability.

Removal of the adhesive drape from the cushions at the end of the operation requires gentle traction, facilitated by moist gauze applied to the adhesive-cushion interface, so as not to tear the surface membrane of the gel pads now used in these headrests.

With the general availability of gel-filled pads for headrests, the risk of skin breakdown due to pressure may be less likely; however, the issues of prep "rundown" and pooling, the need to isolate the operative field, and the benefits of scalp/skull fixation in the infant and small child remain. The technique described by Agrawal and Steinbok addresses these issues as well as fixation for stereotaxis.

Reference

1. Agrawal D, Steinbok P (2006) Simple technique of head fixation for image-guided neurosurgery in infants. *Childs Nerv Syst* 22:1473–1474

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