

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

D. P. Muzumdar

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Dear Editor:

I read with interest the technical note by Agrawal and Steinbok [1] describing the technique of head fixation for image-guided neurosurgery in infants entitled “Simple technique of head fixation for image-guided neurosurgery in infants.”

However, we have earlier described a novel technique [3] of using plaster of Paris mould for head fixation during stereotactic surgery in 48 patients, which has not been referenced in the present manuscript. We feel that our technique has important points relating to the fixation of head during image-guided surgery in pediatric patients. It has a crucial bearing on the technique and should have been discussed in relation to the technique described by the authors.

It is well known that image-guided surgery in pediatric population is evolving and technical standardization for frame fixation is still not firmly established. The differential variations in the thickness of the calvaria in infants and young children as well as the reduced pin pressure provide impedance in the performance of the procedure. Commercially available pediatric pins are not suitable for fear of depressed fracture. The authors’ technique of using an adhesive drape for firm head fixation obviates the problems related to pin fixation.

The authors remark that any kind of pin fixation may be hazardous in infants as changes in cerebrospinal fluid volume can potentially decrease the size of the infants’ head and allow for loss of fixation and scalp lacerations. The authors mention that simultaneous use of pins and horseshoe has been attempted [2]. However, we have recently described a novel method of a plaster of Paris

mould for rigid frame fixation to the head using pins during stereotactic surgery in 48 patients [3]. It is a useful adjunct that can help mould to the various sizes and shapes of the head. It circumvents the need for a set of pins of varying length and thickness. The Plaster of Paris cast is simple, easily available, not labor-intensive, and is cost-beneficial. The multiple layers of the plaster of Paris provide and imparts a symmetrical, smooth, and even surface for the pin application. The spatial relation of the stereotactic frame to the “virtual head” remains constant during the entire stereotactic procedure. It is ideal for children with a low pain threshold. Prolonged sedation and anesthesia can be avoided.

The authors use an adhesive drape over a horseshoe such that the adhesive edge is partly on the head and partly on the horseshoe and the tails of the adhesive drape stuck down inferiorly along the front of the shoulders and the chest. However, the potential variability in the elasticity of the adhesive drape may be a limiting factor in achieving a rigid head fixation and maintaining the accuracy of registration with the image guidance system. They further remark that the head fixation is not absolutely rigid and there is a possibility of relative motion between the head and the horseshoe. In contradistinction, the plaster of Paris cast is snugly fit around the head and the firm setting of the plaster allows for secure placement of the pins and rigid fixation of the head.

References

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D. P. Muzumdar (✉)
Department of Neurosurgery,
King Edward VII Memorial Hospital,
Mumbai 400012, India
e-mail: dmuzumdar@hotmail.com