Editorial

Contralateral approach to the atrium of the lateral ventricle

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In this issue of the Journal of Neurosurgery, Wang and colleagues provide a well-written, concise report of an anatomical cadaveric study that they conducted on a proposed contralateral approach to the atrium of the lateral ventricle. They performed the approach bilaterally in 6 fresh adult cadaveric heads, and essentially it consisted of a contralateral interhemispheric approach in the parietooccipital region with the development of a window in the falx to allow access to the contralateral atrium through an incision in the precuneus. They emphasize that an integral part of this approach was the use of neuronavigation, which, they reasonably claim, would be more accurate because there should be little or no manipulation of the contralateral hemisphere up to the point where the precuneus is entered. They claim that this approach has the theoretical advantages of increasing the working angle as compared with that provided by the ipsilateral interhemispheric approach, and that no retraction on the side of the brain harboring the lesion is necessary, which is likely to make neuronavigation more accurate. Somewhat disappointingly, they do not discuss possible disadvantages of this approach. They do provide a very nice discussion of the disadvantages of all the other well-established approaches to the atrium.

Let me begin by saying that I believe that this approach is well conceived and ingenious and may be useful in specific cases. Although we commonly use the contralateral interhemispheric approach to a variety of deep lesions, personally I have never used this route to access the contralateral atrium; however, after carefully reading their description, I believe that if I find the appropriate case, I will try it.

I do see several limitations to their approach. First and foremost, there is a risk of bilateral hemispheric damage, particularly in the case of a relatively large lesion or lesions that involve the lateral wall of the ventricle where damage to the contralateral visual radiations is likely to occur. Damage to the ipsilateral hemisphere can occur by 2 main mechanisms. If retraction of the ipsilateral hemisphere is quite posterior in the occipital lobe, the approach can result in damage to the ipsilateral visual cortex and a partial or complete hemianopia, which could be catastrophic if combined with damage to the contralateral visual radiations during removal of the lesion. A more superior approach, although shorter and less likely to result in hemianopia, runs a higher risk of venous infarction since while the more posterior occipital region is usually free of important bridging veins, the veins become larger and more important as one moves more superiority in the parietal region. Incidentally, the authors recommend an ipsilateral craniotomy without exposure of the superior sagittal sinus, and if I were to use this approach, I would certainly carry the craniotomy to the other side to expose the superior sagittal sinus completely to minimize the degree of retraction necessary and therefore reduce the chance of ipsilateral hemispheric damage.

The authors performed this cadaveric study with the head in the semi-sitting position. I learned early on, from bad experience, that an occipital interhemispheric approach in the semi-sitting position generally requires a fair amount of retraction and is quite likely to result in at least partial hemianopia from retraction or backward herniation of the tip of the occipital lobe through the dural opening. This problem was eliminated when I began to use the lateral position with the ipsilateral side down and a lumbar drain to withdraw CSF early, because there is no early access to any large cistern to withdraw CSF with this approach. In this position and after adequate CSF drainage there is generally no need for retraction, and I would certainly recommend this latter position to anyone who wishes to try the authors’ approach clinically. The problem is that on this lateral position with the ipsilateral side down, it is relatively clumsy (but not impossible) to use the probe for neuronavigation.

I personally prefer and will continue to use the transcortical parietooccipital approach to most lesions involving the general region of the atrium. Although this approach has typically been described as the superior parietal lobule approach, I prefer a slightly more medial cortical incision centered at about 9 cm above the inion and about 3 1/2 cm from the midline, as I have described
before. By entering the atrium more medially, one is more likely to avoid the visual radiations; and although I have encountered partial field cuts with this approach, the majority of patients have not had a major field deficit even when treated for complex lesions such as arteriovenous malformations of this region. As stated above, however, I think that the approach described by the authors would be worth trying for a small lesion that is either purely intraventricular or involves only the medial wall of the ventricle, which is free of optic radiations. The problem is that small lesions of this region are unlikely to be found clinically because they are usually asymptomatic—with the exception of cavernomas and arteriovenous malformations, which can become symptomatic by bleeding.

Finally, as the authors make clear, it should be emphasized that their investigation is a cadaveric anatomical study of a theoretical surgical approach. It is possible that as the approach is tried clinically, other pitfalls may become apparent that cannot be appreciated on a cadaveric head.

The authors deserve credit for taking to the laboratory an ingenious specific application of the contralateral interhemispheric transfalcine approach that we use routinely for some lesions of the lateral ventricle, the superior thalamus, and the medial hemisphere.

References