Neurosurgery in obsessive-compulsive disorder

To the Editor: We read with interest the recent publication by Sheehan et al.\(^1\) (Sheehan JP, Patterson G, Schlesinger D, et al: Gamma Knife surgery anterior capsulotomy for severe and refractory obsessive-compulsive disorder. Clinical article. J Neurosurg 119:1112–1118, November 2013). The authors suggested performing Gamma Knife surgery (GKS) for severe obsessive-compulsive disorder (OCD). Four (80%) of 5 patients demonstrated remarkable improvement, with more than a 50% reduction in the Yale-Brown Obsessive Compulsive Scale (YBOCS) score at a median 24-month follow-up. We are conducting an ongoing study of deep brain stimulation (DBS) for OCD in Asia, which makes us interested in Dr. Sheehan’s report.

As he mentioned, growing evidence shows that GKS could provide OCD patients unwilling to undergo DBS or radiofrequency ablation with a safer approach and reasonable improvement.\(^2\) Although the precise correlation between radiosurgical technique and patient outcome will be confirmed in future larger trials, a placebo effect cannot be eliminated in such a non-blinded treatment and device study.

In 2009, the United States FDA approved DBS for OCD under the humanitarian device exemption program. While the targets of DBS are variable and a dreadful surgical morbidity risk does exist (such as intracerebral hemorrhage), DBS affords adjustable strategies for OCD with different characteristics and severities. Stimulation side effects are transient and sometimes provide a prognostic factor as well.\(^1\) Furthermore, precise localization of active contacts and their effects also make refinement of DBS electrode positions possible.\(^2\)

Recently, Dr. Sheth and colleagues described their thermoelectric ablation techniques for treatment-refractory OCD.\(^3\) At a mean 63.8-month follow-up, nearly one-half of the patients (47%) revealed ≥ 35% reductions in YBOCS scores. This study reminds us that such conventional stereotactic lesioning could also provide results comparable to those of DBS or GKS. In addition, neurophysiological characterization during surgery provides not only scientific underpinning of clinical improvement, but also evidence on how human behavioral adaptation reacts with external stimuli.\(^4\)

Accurate target nuclei localization and the presumed territory of influence from treatments are prerequisite to a successful outcome for stereotactic neurosurgery. Given that more neurosurgeons adopt various stereotactic techniques for neuropsychiatric patients, a comparative study in the future could provide more insight into how we weigh pros and cons. We can anticipate that this evidence could provide our neuropsychiatric patients with more clear information without bias, which would make them more willing to accept such treatments.

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The authors report no conflict of interest.

References

Response: We appreciate the interest that Dr. Tsai and colleagues have in our recent publication. There has been a recent resurgence of interest in the use of GKS for the treatment of functional disorders including severe and refractory OCD.\(^4\)\(^,5\) Our group and others have also begun to explore the application of focused ultrasound (FUS) for functional disorders such as trigeminal neuralgia and OCD.\(^6\)

Beyond the selection of a neurosurgical tool (for example, Gamma Knife, DBS, radiofrequency ablation, or FUS) and a target (for example, anterior internal capsule, nucleus accumbens, and so forth), neurosurgeons need to shed more light on both the fundamental pathophysiology that occurs in OCD patients and the beneficial changes that an intervention facilitates. To that end, Figee et al. recently showed that DBS targeted at the nucleus accumbens (NAc) normalized its activity and reduced excessive connections between the NAc and the prefrontal cortex.\(^3\)
Cecconi et al. showed that GKS-produced ventral capsulotomy induced a significant regional increase in gray matter volume in the right inferior frontal gyrus (Brodmann area 47).

We look forward to the results of Dr. Tsai and colleagues’ study of DBS for OCD. As they indicated, higher levels of evidence are preferred for neurosurgical studies. However, randomization or double-blinded techniques for studies involving patients with young-onset Parkinson’s disease, much less psychiatric ones, raise challenges in terms of design, financing, statistical power, and clinical equipoise. In such instances, we will have to glean as much as possible from studies even if they are imperfect. It seems clear that neurosurgery is poised for a new era of meaningful therapeutic intervention for patients with severe, medically intractable OCD.  

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In this article, the authors present a case of schwannoma (4.4 × 4.2 cm) extrinsic to the sciatic nerve at the sciatic notch that was resected (piecemeal) through an infragluteal approach. Only a few cases of schwannoma at this location have been reported, and therefore this case is an important addition to the literature.

Although the case is interesting, we do not agree with the authors that the infragluteal approach should be favored in sciatic notch schwannoma, because, as they mention, neurosurgeons routinely operate through small windows.

As the authors probably know best, multiple roads lead to Rome. Likewise multiple approaches may be used for the surgical treatment of schwannomas at the sciatic notch. In the Discussion the authors mention the other approaches (the transgluteal approach,1 and the combined 1-stage transabdominal-transgluteal approach4), but they state that the transabdominal approach may be complicated by nerve, vessel, and visceral injuries (sacral plexus, sciatic nerve, sigmoid colon and upper rectum, ureter, and iliac and gonadal vessels) and the transgluteal approach (as least we assume that they mean “transgluteal” instead of “infragluteal” on p. 754) by nerve and vessel injuries (posterior femoral cutaneous and sciatic nerve, gluteal nerves, and gluteal veins and arteries). They also added a drawing to illustrate that the cases by Spinner et al.5 and Consales et al.1 could have been performed through the infragluteal approach.

We advocate that when deciding on the approach for a sciatic notch schwannoma several factors should be considered, including the size of the tumor, its relation to neurovascular structures (for example, the lumbosacral plexus), whether it is extrinsic or intrinsic to the sciatic nerve, its proximal and distal extensions, patient-related factors (for example, previous abdominal or hip surgery), and the experience of the surgeon.

We recently operated on 2 schwannomas at the sciatic notch through the transgluteal approach. These lesions were located anterior to the sciatic nerve, which was located anterior to the piriformis muscle (Fig. 1). The tendinous portion of the piriformis muscle was temporarily detached from the greater femoral trochanter and was retracted medially to expose the sciatic nerve and the underlying schwannomas (Fig. 2). The schwannomas were separated from the sciatic nerve, and the proximal and distal branches were identified. There was no muscle

Fig. 1. Coronal (left) and transverse (right) T2-weighted MR images demonstrating 2 schwannomas in the left sciatic notch region, anterior to the piriformis muscle. The arrows indicate the lesions. There is scarring on the right side from previous hip prosthesis surgery. GM = glutaeus maximus muscle; PI = piriformis muscle.