Unruptured Aneurysms: Should All Be Obliterated at Once?

To The Editor: I read with great interest the paper of Drs. Swift and Solomon on the negligible danger of controlled postoperative volume expansion in unruptured unclipped aneurysms (Swift DM, Solomon RA: Unruptured aneurysms and postoperative volume expansion. J Neurosurg 77:908-911, December, 1992). The authors analyzed 199 cases operated on within 3 days of aneurysmal rupture and found 31 patients harboring multiple aneurysms. Although their policy was to clip all accessible lesions, 31 cases still had unprotected unruptured aneurysms. This implies that not all of the additional aneurysms could be handled during the first operation, which is usually true only when the additional lesion is contralateral to the exposure. Neither the tables nor the text explained why complete clipping was not feasible. The location of 34 unclipped aneurysms was identified as 22 on the carotid artery (four of them ophthalmic), seven middle cerebral artery aneurysms, and five others; the side was not indicated. The exact location of the additional aneurysms is crucial, since the message of the paper is controversial. Other series of multiple aneurysms show an average incidence of additional aneurysms that are inaccessible via the routine unilateral frontotemporal craniotomy as low as 20%, with a number of ruptured aneurysms located in the midline. Surgery to treat these lesions allows clipping of additional aneurysms at the same session.

Although Drs. Swift and Solomon focused on the risks of controlled volume expansion in unprotected aneurysms, their conclusion (in fact, their final sentence) could be misleading. I do not doubt that the reported patients tolerated the volume expansion therapy well and benefited from it, but I am convinced they have been fortunate that the aneurysms remained unruptured. Since the rapid increase in transmural pressure is just one among the numerous causes that lead to aneurysmal rupture, there is little place for arguing against volume expansion therapy, even in cases with unclipped aneurysm. However, the danger of rupture versus the theoretical risk of radical surgery for multiple aneurysms must be emphasized.

The authors themselves reported that one of their patients bled from the previously unruptured aneurysm, although after volume expansion therapy had been completed. This means a 3% probability of hemorrhage in a group of unruptured aneurysms. The authors quoted Kassell, et al.,1 who mentioned another case with fatal rupture of a previously unruptured aneurysm. As Yaşargil commented at the 1991 meeting of the European Association of Neurosurgical Societies in Budapest, all centers have such cases. Drs. Swift and Solomon call them anecdotal because these have not been rigorously reported, but these mishaps continue to occur. The National Institute of Neurosurgery in Budapest, however, reported this risk 7 years ago.3 The policy of leaving open aneurysms proved to be rather dangerous in our series and has continued to be so ever since.2 Based on our poor experience in such cases, we proposed as complete aneurysm repair as possible at one session.4 That even includes performing contralateral clipping of aneurysms or bilateral frontotemporal craniotomies.2 This aggressive one-stage management has been associated with no negative sequelae due to the extended operation in 114 cases treated so far. Unilateral craniotomy for bilateral aneurysms was also helpful in gaining experience in exploring and clipping pericallosal1 and ophthalmic artery aneurysms, of which some lesions projected medially under the optic nerve could easily be clipped via a contralateral approach. In agreement with Drs. Swift and Solomon, we concluded that the hemodynamic flows in the perioperative stage may be blamed for the higher incidence of rupture of previously silent aneurysms.

The fact that some individuals survive aneurysmal rupture does not mean that the policy resulting in rupture was correct; no type of management can be supported that allows rupture to occur. That is not the volume expansion but the incomplete repair. Hesitation to perform one-stage surgery in cases of multiple aneurysms seems unfounded.

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References
RESPONSE: Dr. Vajda brings up a number of interesting and valid points regarding the management of unruptured intracranial aneurysms in patients with aneurysmal subarachnoid hemorrhage (SAH). However, our experience differs from that of Dr. Vajda, and therefore our conclusions regarding the proper management of this group of patients are not the same. Since our original report last year, we have accumulated 14 more cases. In 45 patients with one or more unruptured and unclipped aneurysms who received hypervolemic and/or hypertensive treatment during the immediate postoperative period, we still have not experienced a single rupture of an unprotected aneurysm.

We do not believe that the incidence of rupture of an unprotected aneurysm in this setting is zero. In fact, it is quite likely that we have been fortunate that this group of aneurysms has remained unruptured. However, what is clear from our experience is that the incidence of rupture of a previously unruptured aneurysm must be extremely low, probably in the 1% to 2% range. In order to justify additional surgery on this group of patients, we must propose a procedure that carries no more than 1% risk of complications. Are we to assume, for example, that following the clipping of a ruptured left posterior communicating artery aneurysm, proceeding to clip an unruptured basilar apex aneurysm would not increase surgical morbidity by more than 1%? In a Grade III patient with a large-volume hemorrhage from a ruptured posterior communicating artery aneurysm, the added risk of clipping an unruptured basilar aneurysm during the same surgical procedure would seem to be enormous when compared to the risk that the aneurysm might rupture during normal postoperative management of a patient with SAH. Conversely, our experience with unruptured aneurysms which are treated in an elective fashion has been extremely gratifying.

Similarly, I do not believe that the extension of anesthesia time, additional brain retraction, and further manipulation of blood vessels required to accommodate bilateral craniotomies are warranted in patients with acute SAH. It has been our philosophy that good results during early aneurysm surgery are predicated on achieving maximum brain relaxation, minimizing brain retraction, compulsively avoiding intraoperative hypotension, and minimizing the duration of the operation. Failure to adhere to these guidelines might lead to an increased incidence of postoperative ischemic complications, increased hydrocephalus, increased postoperative infections, and increased incidence of medical complications. These complications might simply be ascribed to the initial SAH and not recognized as additional risks of prolonged aggressive surgery.

Because our series consists of a relatively small number of patients, it may become necessary in the future to alter our approach, if experience so dictates. In the setting of a ruptured intracranial aneurysm where the patient has one or more unruptured aneurysms, we presently focus our attention on the ruptured intracranial aneurysm. It is our policy to clip unruptured middle cerebral, carotid, or anterior communicating artery aneurysms that can be approached through the same craniotomy that was used to clip the ruptured aneurysm. Even in this setting, if conditions are not ideal following clipping of the ruptured aneurysm, additional dissection and clipping may be aborted. At the present time, during surgery in the setting of acute SAH, we would not usually consider clipping an unruptured basilar artery aneurysm, a pericallosal artery aneurysm, or a contralateral carotid or middle cerebral artery aneurysm. These aneurysms can be safely handled at a future craniotomy 1 to 3 months following the original SAH.

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Percutaneous Endoscopic Discectomy

TO THE EDITOR: The new technique described by Mayer and Brock (Mayer HM, Brock M: Percutaneous endoscopic discectomy: surgical technique and preliminary results compared to microsurgical discectomy. J Neurosurg 78:216-225, February, 1993) is a technical variation and certainly an improvement on intradiscal surgery. Yet, like all of its predecessors, this technique has nothing more to recommend it since, as the authors themselves point out, its application (if it has any at all) is limited to a small number of patients with lumbar disc problems.

The authors have undertaken treatment of the most controversial disc disorder — the so-called "contained disc" — comparing endoscopic with microsurgical discectomy. While their objective and subjective results indicate improvement of symptoms in both groups, in neither group was there better than a 50% excellent surgical outcome; this is far below the range of 90% or higher expected from surgery for cases of rupture/extrusion, those inaccessible by percutaneous procedures, and many treated by microsurgical discectomy. It is well known that the majority of patients with this type of disc prominence or protrusion, indeed many patients with fully ruptured discs as well, recover without specific treatment. Another 40 patients "randomized" to receive no treatment, if evaluated after 2 years, would quite likely have had similar results.

While the authors comment that a number of failures of discectomy are related to a surgical approach through the spinal canal, it is abundantly clear that each successive intradiscal approach has had more than its share of failures as well. Their conclusion that only 10% to 15% of all patients who have submitted to surgical treatment for disc herniation are candidates for percutaneous endoscopic discectomy is a forthright evaluation that should be taken seriously by all who employ similar percutaneous procedures. It is entirely predictable, however, that this important conclusion will be totally overlooked in the headlong rush to employ this latest technique (with or without a laser!). Its use can be anticipated for many thousands of patients with degenerated discs and countless others in whom the disc plays no symptomatic role. It is also likely to be employed for patients after industrial or vehicular injury, at great cost and probably with some disasters.

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