Vascular neurosurgeon

see Hybrid vascular neurosurgeon.

Despite the erosion of microsurgical case volume because of advances in endovascular and radiosurgical therapies, indications remain for open resection of pathology and highly technical vascular repairs. Treatment risk, efficacy, and durability make open microsurgery a preferred option for cerebral cavernous malformations, arteriovenous malformations (AVMs), and many aneurysms.

In a paper, a 21-year experience with 7348 cases was reviewed to identify trends in microsurgical management. Brainstem cavernous malformations (227 cases), once considered inoperable and managed conservatively, are now resected in increasing numbers through elegant skull base approaches and newly defined safe entry zones, demonstrating that microsurgical techniques can be applied in ways that generate entirely new areas of practice. Despite excellent results with microsurgery for low-grade AVMs, brain AVM management (836 cases) is being challenged by endovascular embolization and radiosurgery, as well as by randomized trials that show superior results with medical management. Reviews of ARUBA-eligible AVM patients treated at high-volume centers have demonstrated that open microsurgery with AVM resection is still better than many new techniques and less invasive approaches that are occlusive or obliterative. Although the volume of open aneurysm surgery is declining (4479 cases), complex aneurysms still require open microsurgery, often with bypass techniques. Intracranial arterial reconstructions with reimplantations, reanastomoses, in situ bypasses, and intracranial interpositional bypasses (third-generation bypasses) augment conventional extracranial-intracranial techniques (first- and second-generation bypasses) and generate innovative bypasses in deep locations, such as for anterior inferior cerebellar artery aneurysms. When conventional combinations of anastomoses and suturing techniques are reshuffled, a fourth generation of bypasses results, with eight new types of bypasses. Type 4A bypasses use in situ suturing techniques within the conventional anastomosis, whereas type 4B bypasses maintain the basic construct of reimplantations or reanastomoses but use an unconventional anastomosis. Bypass surgery (605 cases) demonstrates that open microsurgery will continue to evolve. The best neurosurgeons will be needed to tackle the complex lesions that cannot be managed with other modalities. Becoming an open vascular neurosurgeon will be intensely competitive. The microvascular practice of the future will require subspecialization, collaborative team effort, an academic medical center, regional prominence, and a large catchment population, as well as a health system that funnels patients from hospital networks outside the region. Dexterity and meticulous application of microsurgical technique will remain the fundamental skills of the open vascular neurosurgeon [1)].

1)
Lawton, M. and Lang, M. (2019). The future of open vascular neurosurgery: perspectives on cavernous malformations, AVMs, and bypasses for complex aneurysms: JNSPG 75th Anniversary Invited Review Article. [online] Thejns.org. Available at: https://thejns.org/view/journals/j-neurosurg/130/5/article-p1409.xml [Accessed 2 May 2019].