Intracranial Aneurysm Management

There is a plethora of microsurgical and endovascular techniques for the treatment of both ruptured and unruptured intracranial aneurysms. There is no definitive consensus as to the best treatment option for this cerebrovascular pathology. The Aneurysm, Arteriovenous Malformation, and Chronic Subdural Hematoma Roundtable Discussion With Industry and Stroke Experts discussed best practices and the most promising approaches to improve the management of brain aneurysms.

Methods: A group of experts from academia, industry, and federal regulators convened to discuss updated clinical trials, scientific research on preclinical system models, management options, screening and monitoring, and promising novel device technologies, aiming to improve the outcomes of patients with IA.

Results: Aneurysm, Arteriovenous Malformation, and Chronic Subdural Hematoma Roundtable Discussion With Industry and Stroke Experts suggested the incorporation of artificial intelligence to capture sequential aneurysm growth, identify predictors of rupture, and predict the risk of rupture to guide treatment options. The consensus strongly recommended nationwide systemic data collection of unruptured IA radiographic images for the analysis and development of machine learning algorithms for rupture risk. The consensus supported centers of excellence for preclinical multicenter trials in areas such as genetics, cellular composition, and radiogenomics. Optical coherence tomography and magnetic resonance imaging contrast-enhanced 3T vessel wall imaging are promising technologies; however, more data are needed to define their role in IA management. Ruptured aneurysms are best managed at large volume centers, which should include comprehensive patient management with expertise in microsurgery, endovascular surgery, neurology, and neurocritical care.

Clinical and preclinical studies and scientific research on IA should engage high-volume centers and be conducted in multicenter collaborative efforts. The future of IA diagnosis and monitoring could be enhanced by the incorporation of artificial intelligence and national radiographic and biologic registries. A collaborative effort between academic centers, government regulators, and the device industry is paramount for the adequate management of IA and the advancement of the field [1)].

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Tjoumakaris SI, Hanel R, Mocco J, Ali-Aziz Sultan M, Froehler M, Lieber BB, Coon A, Tateshima S, Altschul DJ, Narayanan S, El Naamani K, Taussky P, Hoh BL, Meyers P, Gounis MJ, Liebeskind DS, Volovici V, Toth G, Arthur A, Wakhloo AK; ARISE I Consortium. ARISE I Consensus Review on the Management of Intracranial Aneurysms. Stroke. 2024 May;55(5):1428-1437. doi: 10.1161/STROKEAHA.123.046208. Epub 2024 Apr 22. PMID: 38648283.