Neuro-interventional DevicesRevolutionizing StrokeManagementaa

Evolution

Over the last few decades, there have been tremendous advances in the field of neuro-interventional devices used for treating various neurological disorders like stroke, aneurysms, and AVMs. Earlier, open surgical procedures were the only option for managing such conditions which posed high risks to patients. The evolution of minimally invasive techniques and novel neuro-interventional devices have transformed the treatment landscape. Some of the key milestones include the development of the first devices for performing angiograms in the late 1960s, followed by the introduction of detachable balloon and coil systems for treating brain aneurysms in the 1990s.

Advancements in Microcatheter and Guidewire Design

Neuro-interventional Devices is breakthroughs was the design of highlytrackable microcatheters and guidewires which enabledsurgeons to precisely navigate the intricate brain vasculature. Continuous engineeringefforts have resulted in microcatheters with smaller sizes, variable stiffness,and specializeddistal tips for supportive catheterization of tortuousvessels. Similarly, newer generation guidewires featuring variable stiffnessalong the shaft with flexible, steerable tips have facilitated first-passcannulation of difficult vessel segments. These refinements haveconsiderably improved device deliverability and procedural success rates. State-of-the-art microcatheters can now access vessels as small as 1mm indiameter.

Evolving Stent Technologies

When it comes to treating ischemic strokes, a key focus has been on improving stent designs to achieve better revascularization. Initially, coronarystents were used off-label for recanalizing blocked arteries in the brain. Later, self-expanding and balloon expandable stents customized for neurovascular use were introduced. Recent advances include flow diverter stents meant for wide-neck aneurysms, stent retrievers to remove large clots during mechanical thrombectomy, and stents coated with drugs to prevent restenosis.