

**E-227 FEASIBILITY OF ROBOTIC-ASSISTED
NEUROENDOVASCULAR PROCEDURES**

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Background Global geographic inequity exists in access to advanced neuroendovascular procedures for the management of acute ischemic stroke and aneurysmal subarachnoid hemorrhage. Robotic technologies may enable long-distance telestroke intervention in the future. This study assessed the feasibility of a robotic-assisted system for neuroendovascular intervention.

Methods In this clinical case series, we used the assistance of a CorPath GRX Neuroendovascular Robotic System, (Corindus, A Siemens Healthineers Company, Waltham, MA USA) to perform intracranial, endovascular procedures in 6 patients with complex, wide-necked intracranial saccular aneurysms. We evaluated technical success, periprocedural complications, and need for conversion to manual procedures.

Findings Between November 2019 and February 2020, we treated six patients (five female) ranging from 63 to 84 years old. All procedures were successful with no complications or changes in baseline neurological status. There were no conversions to manual required for the procedures. Team communication and collaboration were excellent, even without line of sight between the bedside team and the primary operator of the robotic controls.

Interpretation We have demonstrated initial feasibility and safety of remote-controlled, robotic-assisted intervention during neuroendovascular procedures. This case series represents an incremental but important step toward the eventual realization of long-distance stroke care and geographic equalization of access to advance neuroendovascular procedures.

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**E-228 A NOVEL STENT-BALLOON DEVICE FOR TREATMENT OF
SIDEWALL INTRACRANIAL ANEURYSMS**

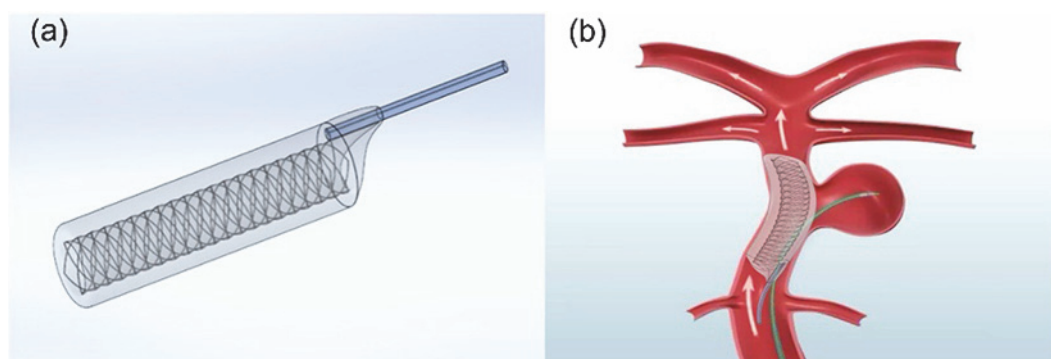
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Introduction Intracranial aneurysm rupture claim 15,000 American lives per year and impair over 9000 with neurological deficits. Current treatments are unable to remove the aneurysm threat permanently. Even after an endovascular treatment, an aneurysm could still regrow (recanalize) and rupture. Approximately 25% of patients receiving medical treatment will still die from an aneurysm rupture. Endovascular treatments can benefit from a novel medical device that seals along the aneurysm neck during device delivery to the aneurysm sac while allowing blood flow to perfuse the parent artery, thereby reducing the occurrence of complications resulting from endovascular device placement.

Methods The stent-balloon device is composed of a ultra-high compliant urethane balloon that extends over a self-expandable, shape-memory Nitinol braided stent/mesh (100–500 um average pore size) attached to a 0.010–0.018' micro-guidewire/retriever (figure 1-a). The stent/mesh (similar dimensions to an LVIS Jr[®]) is delivered through the large (~0.018' ID) primary lumen and the balloon is inflated around the stent/mesh from the small (~0.006') secondary lumen (50:50 contrast agent and sterile water). Blood flow in the parent vessel is maintained through the deployed stent/mesh and the balloon provides a smooth-consistent seal along the aneurysm neck (figure 1-b). The diameter of the expanded stent is at least 70–80% of the parent vessel artery. Subsequently, after device delivery, the jailed microcatheter is removed. The balloon is deflated, and the stent/mesh is retracted into the microcatheter.

Results The stent-balloon device can temporarily seal off the aneurysm neck during complementary device deployment while maintaining blood flow in the parent vessel, provide a smooth surface at the aneurysm neck to maximize device placement in the aneurysm sac, stop device migration into the parent vessel short-term, and reduce aneurysm recanalization risk long-term. The device with the stent and ultra-high compliant balloon can be used for treating sidewall aneurysms and bifurcation aneurysms where the stent can provide flow in the



Abstract E-228 Figure 1 (a) Balloob stent/mesh device (b) The position of device in front of aneurysm sac