

E-004 PROPACK 1: PROSPECTIVELY MEASURING PACKING DENSITY REDUCES ANEURYSM RECURRENCE RATES

¹A Windsor, ^{1,2}B Woodward*. ¹Tennessee Neurovascular Institute, Knoxville, TN, USA; ²Vista Radiology, Knoxville, TN, USA

10.1136/jnis-2023-SNIS.104

Purpose In the treatment of intracranial aneurysms using coil embolization, higher packing densities are inversely correlated with aneurysm recurrence.¹ In review of our single center data, we have noticed a trend towards decreased recurrence rates when the first coil volume is at least 15% of that of the aneurysm volume.² We hypothesize that, by prospectively selecting a first coil with a volume that is at least 15% of the aneurysm volume (First Coil Packing Density), higher final packing densities and decreased aneurysm recurrence rates can be achieved.

Methods 25 patients presenting with ruptured or unruptured intracranial saccular aneurysms 4-20 mm were consented for enrollment in the prospective arm. Inclusion criteria were used from the Matrix and Platinum Science (MAPS) trial for comparison purposes. All aneurysms were treated using Target Detachable Coils (Stryker Neurovascular), in which the first coil length was selected with a goal of the First Coil Packing Density being at least 15% of the aneurysm volume.

Historical data from 20 patients enrolled from our center in the MAPS trial served as the control arm. All target aneurysms in the control arm were packed using GDC Detachable Coils (Stryker Neurovascular). In the MAPS trial, packing density was not actively calculated prior to coil selection.

The independent core lab results from the MAPS trial were used to evaluate for aneurysm recurrences at one-year angiography. All patients in the prospective arm that returned for the one-year angiogram were adjudicated by an independent core lab.

Results While there was no significant difference in aneurysm size and dome-to-neck ratio between the two groups, there was a trend for larger aneurysms in the prospective arm (8.0 vs 7.2 mm). Additionally, the prospective arm had a higher proportion of ruptured aneurysms (36%) compared to the control arm (30%).

We showed a statistically significant increase in the mean final packing density from the control arm (22.4%) to the prospective arm (33.0%, $p < 0.001$). We were able to achieve 15% first coil packing density in 72% of subjects, but this goal could not be met on larger aneurysms, as coil lengths are limited.

Seventeen patients returned for one year DSA follow up in each arm. There were no residual aneurysms with dome filling in the prospective arm, with only 1 neck remnant seen, yielding a recurrence rate of 6%. In the control arm, residual filling of the dome was seen in 2 patients, and a neck remnant was seen in 3 patients, yielding a recurrence rate of 29%.

Conclusion Prospectively choosing Target Detachable Coils that yield at least 15% First Coil Packing Density led to higher final packing densities overall and decreased target aneurysm recurrences.

REFERENCES

- Sluzewski M, et al. Relation between aneurysm volume, packing, and compaction in 145 cerebral aneurysms treated with coils. *Radiology* 2004;**231**:653-658.
- Woodward B. O-009 prospective packing density: a single center study investigating the effects of prospectively measuring packing density prior to choosing coils for the treatment of intracranial aneurysms. *Journal of NeuroInterventional Surgery* 2014;**6**:A5-A6.

Disclosures A. Windsor: None. B. Woodward: 1; C; Stryker.

E-005 ROBOTIC NEUROENDOVASCULAR INTERVENTIONS: A SYSTEMATIC REVIEW OF THE USA EXPERIENCE

A Ghaith*, M Ghanem, R Jarrah, O Akinnusotu, M Bydon, B Bendok. *Mayo Clinic, Rochester, MN, USA*

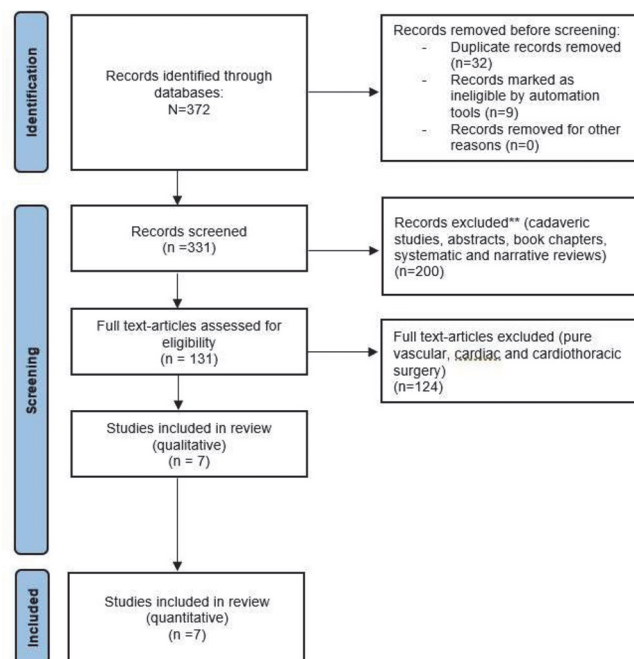
10.1136/jnis-2023-SNIS.105

Objective To discuss the early experience of the robotic system used for endovascular treatment in multiple centers across the USA.

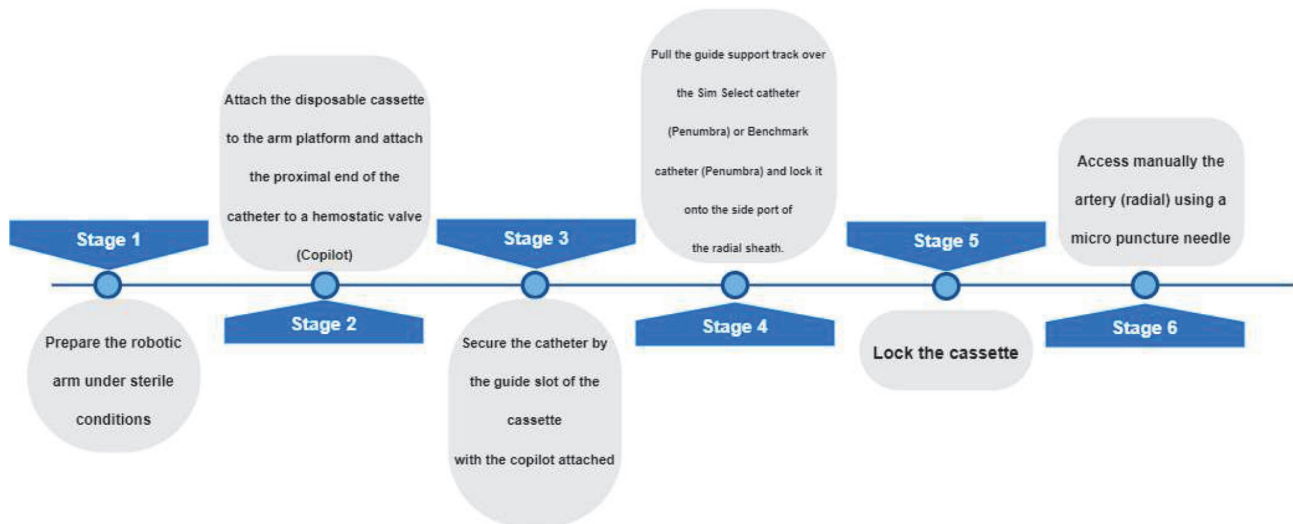
Introduction Neuroendovascular interventions using novel technical developments rapidly evolve in neuroradiology and replace open procedures. As a result, they are becoming the first-choice approach for life-threatening neurovascular conditions. The second generation of CorPath GRX's robotic-assisted platform was initially supported and used for peripheral vascular intervention and is currently the only available device for endovascular surgery in the USA.

Methods We performed a systematic review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A literature search of electronic databases was conducted using PubMed, Medline, Embase, and Scopus for studies from all available dates. Studies were included only if they reported any information concerning any neurologic intervention (diagnostic or therapeutic) using the CorPath GRX robot, along with any subsequent procedural outcomes.

Results Our literature search yielded 7 studies, including 39 patients, all of whom underwent robotic endovascular neurologic procedures between 2019 and 2021. This robot was used for three different indications: Symptomatic carotid stenosis (n=20, 51.3%), intracranial aneurysmal procedure (n=13, 33.3%), and cerebral angiography (n=6, 15.4%).



Abstract E-005 Figure 1



Abstract E-005 Figure 2

Outcomes of all procedures showed that two patients only had residual stenosis 30 days after the intervention. Three patients experienced long-term complications (early stasis in an aneurysm remnant and brainstem infarct). No death was reported in any of the cases.

Conclusion This review demonstrates the feasibility and safety of robotic use for neurovascular interventions, including aneurysmal and CAS procedures. Future clinical investigations can potentially assess its usefulness for acute stroke interventions with inherent geographic locations.

Disclosures A. Ghaith: None. M. Ghanem: None. R. Jarrah: None. O. Akinnusotu: None. M. Bydon: None. B. Bendok: None.

E-006

U.S. HEALTH CARE SYSTEM-WIDE TRANSITION FROM ALTEPLASE TO TENECTEPLASE BEFORE MECHANICAL THROMBECTOMY: FUNCTIONAL OUTCOMES, EARLY REPERFUSION RATES, INTRACRANIAL BLEEDING AND FEMORAL ACCESS SITE COMPLICATIONS

¹M Collins, ²C Schirmer, ²G Weiner, ¹O Goren, ²I Melamed, ¹S Dalal, ¹M Kole, ¹A Noto, ¹P Hendrix*. ¹Geisinger, Danville, PA, USA; ²Geisinger, Wilkes-Barre, PA, USA

10.1136/jnis-2023-SNIS.106

Background The third generation thrombolytic tenecteplase (TNK) is a bioengineered variant of alteplase (TPA). With its genetic modifications, it overcomes TPA's major shortcomings resulting in a decreased plasma clearance, higher fibrin-specificity and improved resistance against plasminogen activator inhibitor 1. Mounting evidence established TNK as a non-inferior alternative to TPA in acute ischemic stroke (AIS). However, whether TNK exerts distinct benefits in large vessel occlusion (LVO) AIS is still being investigated. Here, the authors portray their first-year experience after a U.S. health-care system-wide transition from TPA to TNK as the primary thrombolytic.

Methods AIS patients who received intravenous thrombolytics between 01/2020 and 08/2022 were retrospectively reviewed.

All patients with LVO considered for mechanical thrombectomy (MT) were included in this analysis. In 05/2021, our healthcare system switched from TPA to TNK as the primary thrombolytic for all stroke patients facilitating the comparison of TPA versus TNK groups. Early recanalization was a composite variable of reperfusion >50% of the target vessel territory on cerebral angiography or rapid, significant neurological recovery averting MT. Intracranial hemorrhage (ICH) was assessed using the ECASS classification. Femoral access-site complications were grouped into major (requiring surgery) and minor (managed conservatively).

Results A total of 148 patients were included, 51/148 (34.5%) received TNK and 97/148 (65.5%) TPA. The MCA M1 (60.8%) and M2 (29.1%) were the most frequent sites of occlusion. Baseline demographics were similar between both groups. Spontaneous recanalization was significantly more frequently observed in the TNK compared to the TPA groups (23.5% vs. 10.3%, $p=0.032$). Symptomatic ICH was observed in 2/51 (3.9%) and 1/97 (1.0%) of TNK and TPA patients ($p=ns$). Hemorrhagic infarction and parenchymal hematoma (PH) types 1 and 2 were similar between groups (27.5% versus 25.8%). Additionally, PH2 rates did not differ between groups (5.9% vs. 7.2%). Among 137 patients undergoing transfemoral access with comparable technique, conservatively managed groin hematomas occurred in 2.2% and 4.3% of TNK and TPA patients ($p=ns$). In each group, one patient (2.2% vs 1.1%) suffered arterial occlusion with necessity of open vascular surgery ($p=ns$). Mortality and functional independence were similar at 90-follow-up (19.1% versus 21.1%, and 59.6% and 61.1%, respectively, $p=ns$).

Conclusions The first-year experience demonstrates the effectiveness and safety of the transitioning from TPA to TNK. The higher early recanalization rates with TNK are striking. Additional studies are required to investigate whether TNK is superior to TPA in the setting of LVO stroke.

Disclosures M. Collins: None. C. Schirmer: None. G. Weiner: None. O. Goren: None. I. Melamed: None. S. Dalal: None. M. Kole: None. A. Noto: None. P. Hendrix: None.