

Acute stroke with atherosclerotic cervical ICA and tandem intracranial occlusion

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National Steering Committees/PI: Penumbra: 3D Separator Trial, COMPASS Trial, INVEST Trial; Covidien (Now Medtronic): SWIFT PRIME and SWIFT DIRECT Trial; MicroVention: FRED Trial, CONFIDENCE Study; LARGE Trial, POSITIVE Trial,

No consulting salary arrangements. All consulting is per project and/or per hour.

Intravenous Thrombolysis and Endovascular Therapy for Acute Ischemic Stroke With Internal Carotid Artery Occlusion

A Systematic Review of Clinical Outcomes

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Table 4. Outcomes From Systemic Intravenous Thrombolysis vs Endovascular Intra-Arterial Treatment in Patients With Cervical Internal Carotid Artery Occlusion

Outcomes	IV Thrombolysis Group (n=338)	Endovascular Group (n=193)	P	OR (95% CI)
Favorable outcome, n (%)	89 (26.3%)	84 (43.5%)	<0.0001	0.46 (0.32–0.68)
sICH, n (%)	13 (3.9%)	22 (11.4%)	0.0011	0.31 (0.15–0.63)
Mortality, n (%)	92 (27.2%)	51 (26.4%)	0.85	1.041 (0.7–1.56)

CI indicates confidence interval; IV, intravenous; OR, odds ratio; sICH, symptomatic intracerebral hemorrhage.

In patients with cervical ICA occlusion, there is significantly higher rate of favorable outcomes with endovascular treatment compared to IV thrombolysis alone

MR CLEAN



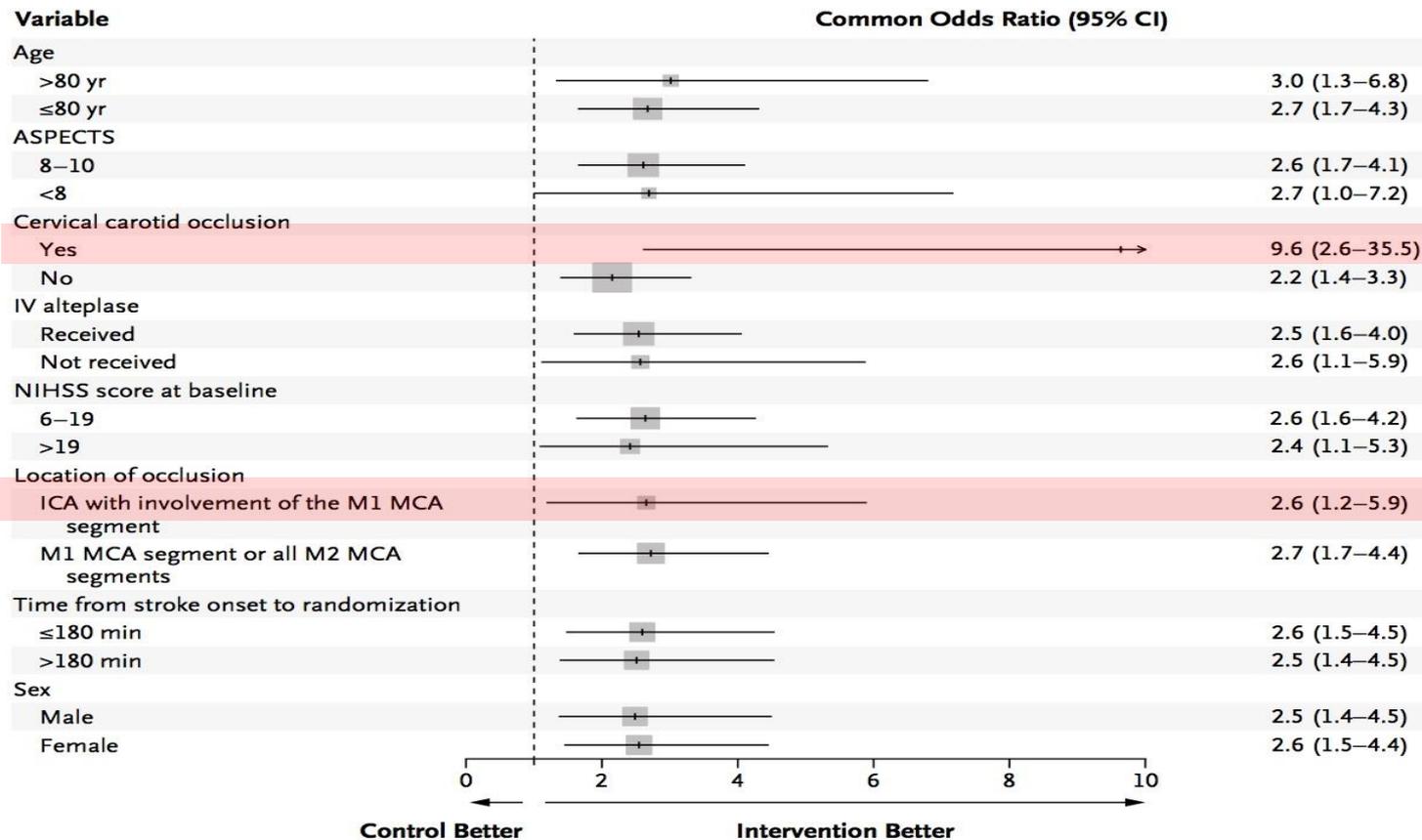
**145/500 with
tandem occlusions**

Table 1. Baseline Characteristics of the 500 Patients.*

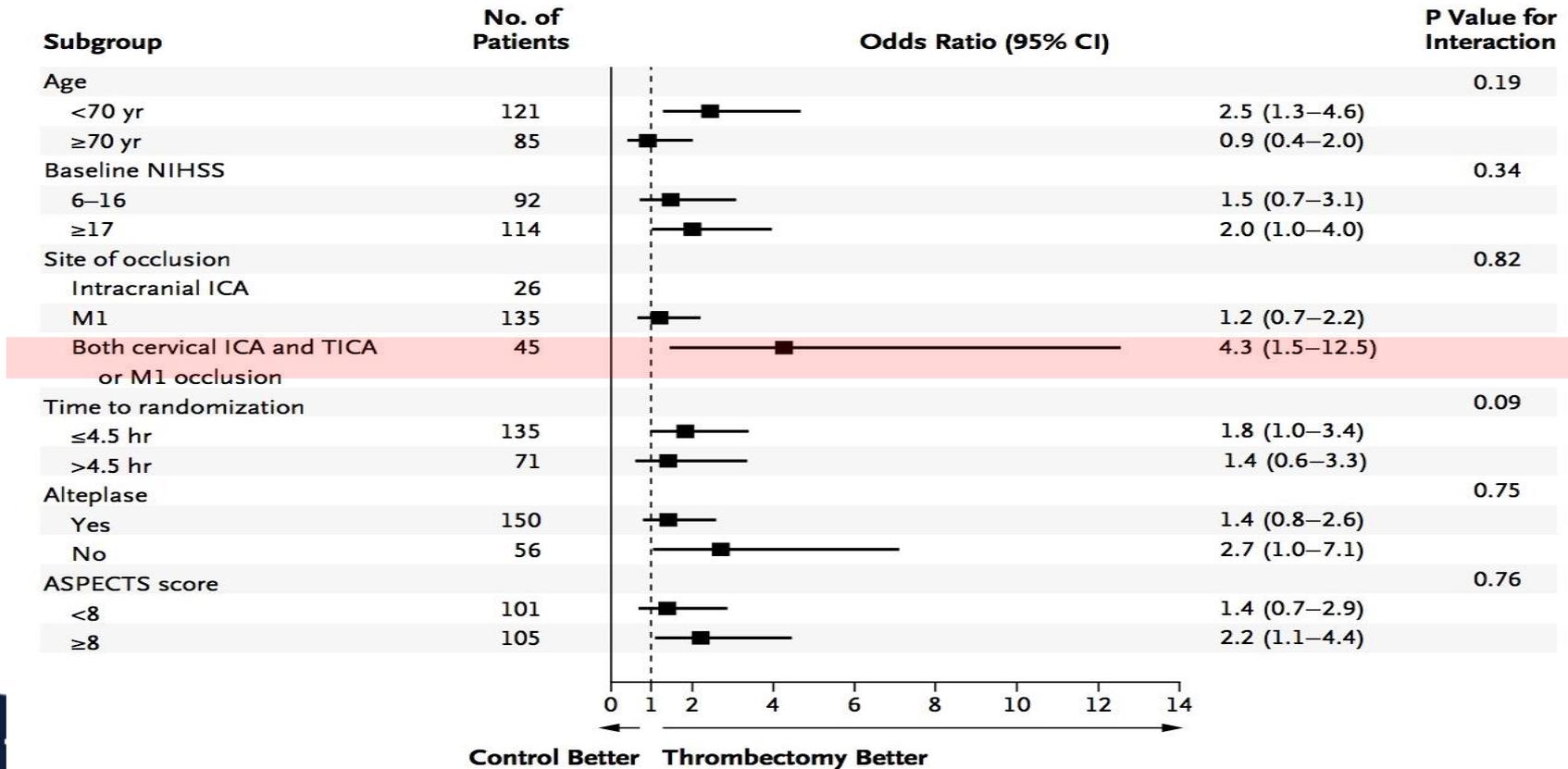
Characteristic	Intervention (N=233)	Control (N=267)
Age — yr		
Median	65.8	65.7
Interquartile range	54.5–76.0	55.5–76.4
Male sex — no. (%)	135 (57.9)	157 (58.8)
NIHSS score†		
Median (interquartile range)	17 (14–21)	18 (14–22)
Range	3–30	4–38

ASPECTS — median (interquartile range)¶	9 (7–10)	9 (8–10)
Intracranial arterial occlusion — no./total no. (%)		
Intracranial ICA	1/233 (0.4)	3/266 (1.1)
ICA with involvement of the M1 middle cerebral artery segment	59/233 (25.3)	75/266 (28.2)
M1 middle cerebral artery segment	154/233 (66.1)	165/266 (62.0)
M2 middle cerebral artery segment	18/233 (7.7)	21/266 (7.9)
A1 or A2 anterior cerebral artery segment	1/233 (0.4)	2/266 (0.8)
Extracranial ICA occlusion — no./total no. (%) **	75/233 (32.2)	70/266 (26.3)

ESCAPE



REVASCAT



Tandem Lesions: Review

Stent-Retriever Thrombectomy for Acute Anterior Ischemic Stroke with Tandem Occlusion: A Systematic Review and Meta-Analysis

Rotem Sivan-Hoffmann^{1,2,3} • Benjamin Gory^{1,2} • Xavier Armoiry^{4,9} • Mayank Goyal⁵ • Roberto Riva¹ • Paul Emile Labeyrie¹ • Anne-Claire Lukaszewicz^{2,6,7} • Jean-Jacques Lehot^{2,6,7} • Laurent Derex⁸ • Francis Turjman^{1,2}

Tandem Lesions

- **11 studies**
- **237 patients (all underwent stent retriever thrombectomy)**
 - **81% recanalization rate**
 - **44 % favorable outcomes ($mRS \leq 2$)**
 - **13 % mortality**

Tandem Lesions

- *193 of 237 patients underwent acute carotid stenting*
 - *83% recanalization rate*
 - *46 % favorable outcomes ($mRS \leq 2$)*
 - *13 % mortality*
 - *Symptomatic ICH 4 %*

Tandem Lesions

- *Thrombectomy has favorable outcomes*
- *In the acute setting:*
 - *Do we need TPA in this cohort of patients?*
 - *Should we stent?*
 - *Pre or Post Thrombectomy Stenting?*
 - *Open or closed cell stent?*

Buffalo Protocol for Tandem Lesions

- *In the acute setting of intracranial LVO and cervical ICA occlusion on initial CTA (arch to vertex):*
 - *Patient loaded with aspirin and Brillinta in ED*
 - *tPA administered as per guidelines based on plain CT Head*

Antero- vs Retrograde Stenting

Anterograde

- Address the primary/causative lesion
- Prevent distal emboli
- Improve collateral restoration

Retrograde

- Shorter angiographic times
- Revascularize the symptomatic lesion first

Antero- vs Retrograde Stenting

Management of acute ischemic stroke due to tandem occlusion: should endovascular recanalization of the extracranial or intracranial occlusive lesion be done first?

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Hussain Shallwani, MD,^{1,5} Sirin Gandhi, MD,^{4,5} Jason M. Davies, MD, PhD,^{1,2,5}
Kenneth V. Snyder, MD, PhD,^{1,4,5,7} Elad I. Levy, MD, MBA,^{1,3,5,7} and Adnan H. Siddiqui, MD, PhD,^{1,3,5,7,8}**

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Noted that proximal stenting followed by distal thrombectomy compares favorably to other series in terms of outcomes and angiographic times.

Buffalo Protocol for Tandem Lesions

- *9 french femoral sheath*
- *9 french balloon guide catheter*
- *0.014 wire used to cross the lesion under flow arrest*
- *If unable to cross with 014, 035 soft exchange with quick cross utilized*
- *Angioplasty and Stenting of cervical ICA under flow arrest followed by aggressive aspiration*
- *IVUS used in select cases if concern for luminal thrombus – dealt with by aspiration or stenting*
- *Mechanical thrombectomy performed with ADAPT or stent retriever*

Conclusions

- **Almost 25% of anterior circulation LVO associated with cervical ICA occlusion**
- **Revascularization highly beneficial**
- **Unclear which lesion to deal with first**
- **We stent first thrombectomy second**
- **Unclear if tPA is beneficial in this cohort**
- **Dual antiplatelet therapy likely increases risk of ICH**



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