Results of MISTIE III

Presented at International Stroke Conference
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Evaluating Image-Guided, Minimally Invasive Surgery for ICH: MISTIE III Results
Presented by Daniel F. Hanley, MD

MISTIE III Surgical Results: Efficiency of Hemorrhage Removal Determines mRS
Presented by Issam A. Awad, MD

Publication of Study Results

Efficacy and safety of minimally invasive surgery with thrombolysis in intracerebral haemorrhage evacuation (MISTIE III): a randomised, controlled, open-label, blinded endpoint phase 3 trial.
Hanley DF, Thompson RE, Rosenblum M, Yenokyan G, Lane K, McBee N, Mayo SW, Bistran-Hall AJ, Gandhi D, Mould WA, Ullman N, Ali H, Carhuapoma JR, Kase CS, Lees KR, Dawson J, Wilson A, Betz JF, Sugar EA, Hao Y, Avadhani R, Caron JL, Harrigan MR, Carlson AP, Bulters D, LeDoux D, Huang J, Cobb C, Gupta G, Kitagawa R, Chicoine MR, Patel H, Dodd R, Camarata PJ, Wolfe S, Stadnik A, Money PL, Mitchell P, Sarabia R, Harnof S, Barzo P, Unterberg A, Teitelbaum JS, Wang W, Anderson CS, Mendelow AD, Gregson B, Janis S, Vespa P, Ziai W, Zuccarello M, Awad IA; MISTIE III Investigators. Lancet. 2019 Feb 6. pii: S0140-6736(19)30195-3. doi: 10.1016/S0140-6736(19)30195-3.

Removing ICH with MIS is Safe

Safety Outcomes[1]

	MISTIE (n=255)	Standard medical care (n=251)	p value
Died within **0–7 days**	**2** (1%)	**10** (4%)	**.018**
Died within **0–30 days**	**24** (9%)	**37** (15%)	**.066**
Died within **0–180 days**	**39** (15%)	**57** (23%)	**.033**

69%

Average clot reduction

59%

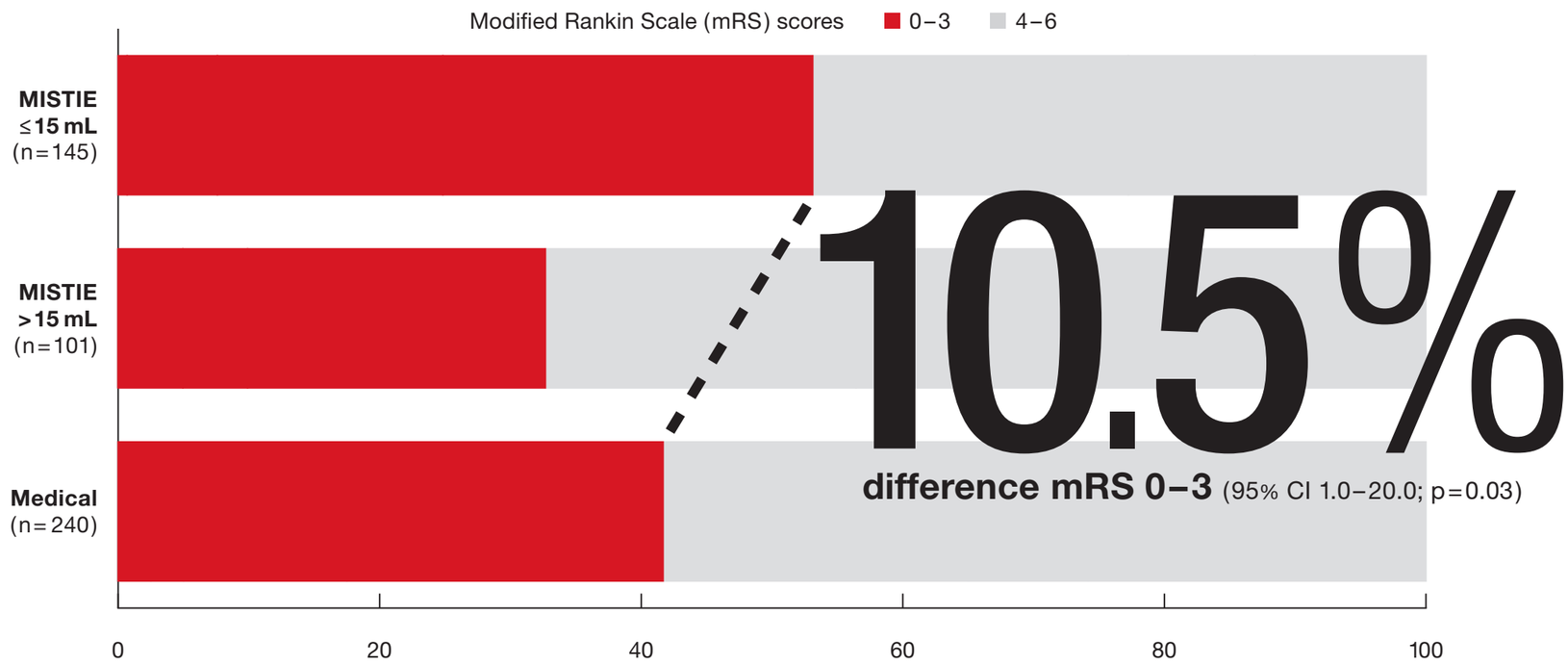
Patients with ≤15 mL EOT

145/246 patients randomized to MISTIE procedure

1. Frequency of survival is modestly improved without a "price" in surgical risk or vegetative state.

Minimally Invasive Surgical Reduction of Clot Volume to ≤15 mL Produces Better Functional Outcomes

Dichotomized Outcome with ≤15 mL EOT (Residual) Volume at Day 365 (as Treated)



- Cases with ≤15 mL EOT (residual) volume had lower mortality and better functional outcome
- Reduction beyond 15 mL significantly increased the chance of a good functional outcome, by 10% for each additional mL hematoma removed (p = .002)
- Further volume reduction beyond 70% removal carries a significant benefit, with 6% improvement in chance of achieving mRS 0–3 per additional mL removed (p = .002)

MISTIE III Trial Design

Study Protocol

Inclusion Criteria

- ICH ≥30 mL
- ICH/IVH/IVH catheter tract/BP stability
- Randomize 12 to 72 hours post onset
- Age ≥18 years
- Historical modified Rankin Scale score ≤1

Exclusion Criteria

- Vascular defect R/O by CTA
- Infratentorial hemorrhage; evidence of brain stem involvement; large IVH
- Anticoagulation required; irreversible platelet count <100,000 or INR >1.4
- Uncontrollable systemic bleeding
- Other comorbidity preventing use of thrombolytic therapy or follow-up

Baseline Characteristics (mITT Group)

	MISTIE (n=250)	Standard medical care (n=249)
Sex		
Men	159 (64%)	146 (59%)
Women	91 (36%)	103 (41%)
GCS score at randomization*		
3–8	64 (26%)	63 (25%)
9–12	111 (44%)	108 (43%)
13–15	75 (30%)	78 (31%)
Diagnostic CT at presentation		
ICH volume (mL)	42.7 (30.4–54.5)	41.5 (30.9–55.3)
Stability CT (last CT before randomization)		
ICH volume (mL)	45.8 (35.4–59.6)	45.3 (35.4–57.2)
Clot location		
Deep	163 (65%)	144 (58%)
Lobar	87 (35%)	105 (42%)
mRS score before stroke		
0	230 (92%)	233 (94%)
1	20 (8%)	16 (6%)

Penumbra, Inc. USA
One Penumbra Place
Alameda, CA 94502
USA
1.888.272.4606
T 1.510.748.3200
F 1.510.748.3232
order@penumbrainc.com
info@penumbrainc.com

Penumbra Europe GmbH
Am Borsigturm 44
13507 Berlin
Germany
T +49 30 2005 676-0
T +49 30 2005 676-10
de-order@penumbrainc.com
info@penumbrainc.de

Penumbra Neuro Australia Pty Ltd
Suite 3, Level 5, 1 Oxford Street
Darlinghurst NSW 2010
Australia
T +61-1300 817 025
F +61-1300 817 026
order.anz@penumbrainc.com

Penumbra