

Mechanical Thrombectomy, The Change is Coming.

T.H. Lo¹

¹Department of Neuroradiology, University Medical Center, Utrecht, Netherlands

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Corresponding author: E-mail: T.H.Lo@umcutrecht.nl

INTRODUCTION

Acute Ischaemic Stroke (AIS) is the second cause of death and disability in Europe.¹

Mechanical thrombectomy has proven efficacy in the management of patients with large vessel occlusions.² It brings hope to the treatment of AIS, but the development of this technique is still ongoing. Technological developments, especially thromboaspiration, offer promising results. The need for the timely identification, transfer, and treatment of acute ischaemic stroke patients requires improved coordination of care at the local level.

A breakthrough in the treatment of stroke

Intravenous thrombolysis, the standard of care until recently, has been documented to have limited efficacy in acute ischaemic stroke patients with confirmed large vessel occlusions. Recent randomized controlled trials comparing intravenous thrombolysis and combination mechanical thrombectomy with intravenous thrombolysis have demonstrated the efficacy of mechanical thrombectomy in these patients with large vessel occlusions. Mechanical thrombectomy enabled improved functional outcomes and reduced long-term disability. These clearly positive results were demonstrated in several international randomized controlled trials, including the landmark MR CLEAN trial² that was published in December 2014.

Beyond confirming the clinical efficacy of mechanical thrombectomy, these studies revealed underlying issues of patient management in which stakeholders of the stroke care chain play a key role.

The time factor, a priority to integrate in the patient care pathway

While the treatment of heart attack is now well organized, stroke is at the beginning of optimization and establishment of systems of care. Stroke treatment involves multiple stakeholders (ambulance teams, emergency physicians, radiologists, neurologists, interventional neuroradiologists, care-givers) requiring effective coordination to minimize the time between symptom onset and treatment.

Another priority is to ensure all patients access to quality care throughout the European territory, a point on which many health authority departments are currently working.

Thromboaspiration, a promising technique

During the last decade, medical devices related to mechanical thrombectomy have evolved. Since the stent retrievers, a new technique has been increasingly acclaimed: thromboaspiration.

This intervention involves the introduction of a reperfusion catheter dedicated to removing the thrombus (clot) directly into the brain of the patient.

The recent results of the RACER study, presented at WFITN (World Federation of Interventional and Therapeutic Neuroradiology), with over 1,000 specialists attending from around the world, have shown that this aspiration thrombectomy technique holds promise to improve clinical efficacy over the latest devices available on the market. RACER is a European multi-centre registry investigating the front-line use of the ACE64 (Penumbra Inc., Alameda, CA, USA), the latest generation reperfusion catheter. Dr. Annika Kowoll (Bochum, Germany) presented very encouraging clinical outcomes at 3 months (mRS 0-2) of 54.5%.* As a reminder, the results of the two larger studies, mostly performed with stent retrievers, were 32.6% for MR CLEAN² and 53% for ESCAPE,³ respectively. In 2016, new results are expected to confirm the efficacy of thromboaspiration and provide medico-economic data on the major public health challenge posed by stroke.

REFERENCES

1. http://www.who.int/medicines/areas/priority_medicines/BP6_6Stroke.pdf
2. Berkhemer OA, Fransen PSS, Beumer D, et al.; MR CLEAN Investigators. A randomized trial for intraarterial treatment for acute ischemic stroke. *New England Journal of Medicine* 2015;372:11–20.
3. Goyal M, Demchuk AM, Menon BK, et al.; ESCAPE Trial Investigators. Randomized assessment of rapid endovascular treatment of ischemic stroke. *New England Journal of Medicine* 2015 Feb.

*mRS 0-2 in the anterior circulation sub-group.