

**Thrombectomy for ischaemic stroke: Patient characteristics, structural requirements and (differential) diagnostics**

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**Background:** The current best practice to treat ischaemic stroke is the systemic lysis within a stroke unit. Results of recent studies suggest that mechanical thrombectomy combined with standard care is superior to standard care alone for the treatment of ischaemic stroke in selected patients. The intention of this paper is to show under which circumstances and for which patients mechanical thrombectomy could be a viable option. Furthermore, an overview of thrombectomy devices which are currently in use and in development will be given.

**Methods:** A hand search for information about thrombectomy devices has been conducted. Additionally, a horizon scanning for future developments regarding thrombectomy was performed. We extracted information from international guidelines, systematic reviews and recent RCTs. The search for relevant literature was mainly conducted by hand. The search for guidelines was supplemented by a systematic search.

**Results:** The thrombectomy devices currently available can be classified into clot-retrievers, aspiration-devices and stent-retrievers. 15 CE-certified devices were found, six of which are also certified by the FDA. Recent guidelines recommend thrombectomy for certain patients in addition to standard care. Thrombectomy is now, according to the guidelines, the first line treatment for patients with contra-indications against the systemic lysis. The positive effects of thrombectomy were shown only under certain conditions, like careful patient selection, non-invasive vascular imaging prior the treatment and through the use of stent retriever devices.

**Conclusions:** A potential advantage of thrombectomy is that the treatment could be performed after 4.5 hours after symptoms onset. But the number of potentially eligible patients is limited, because the treatment has shown its effectiveness only in patients with anterior stroke occlusions. The effect in posterior circulation occlusions is currently unknown. Additional patient selection criteria further limit this number (e.g. NIHSS above a certain score). Stent-retrievers are the only devices which have shown superior efficacy. At least MRA or CTA should be conducted prior to thrombectomy. The qualification requirements for the performing physicians are currently unclear.

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