

Aspirational embolectomy in contemporary management of pulmonary embolism

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Use of percutaneous catheter-directed treatment of pulmonary embolism (PE) has increased. Current guidelines recommend such treatment for patients with high-risk PE and contraindication for fibrinolysis (class IIa, level C), as well as an alternative to thrombolytic therapy for patients with intermediate risk PE and hemodynamic deterioration (class IIa, level C)¹. Several options are available for catheter-directed treatment of PE. Methods which avoid the use of fibrinolytic therapy are gaining more attention. Inari Flowtriever offers an option for a large bore (20F/24F) catheter aspiration of centrally positioned thrombi. Catheter is positioned in front of the thrombus over the stiff wire. Vacuum aspiration is performed by a 60 ml syringe. Repositioning of the catheter should always be performed over the stiff wire. Advancing of the catheter is obligatory performed with introducer inserted into the catheter. This makes catheter navigation more complex. In addition, if the thrombus is not engaged, 60 ml of blood is wasted. A system for filtering and reinfusing clot-free blood is available, however it has not yet been introduced in Europe. Despite the shortcomings, the possibility of complete thrombus aspiration, even in the setting of extreme thrombus size, is exceptionally practical. Thus far we performed 12 procedures in 11 patients, including a procedure in failed fibrinolysis and thrombus-in-transit setup. All the procedures were successful. Lightning Intelligent Aspiration System (Penumbra) offers an alternative for aspirational embolectomy. An active aspiration system is delivering suction over highly steerable 12F catheter. Aspiration is active when thrombus is engaged, performing fragmentation and extraction of thrombotic masses. When thrombus is not engaged, suction is suspended, thus limiting blood loss. Such features make negotiating of multiple pulmonary artery branches less demanding. For now, we have no experience with the device. Comparison with Inari system in efficacy and completeness of thrombus extraction should be verified in everyday work. Both systems have been widely used in patients with intermediate-high risk PE. Lack of randomized control studies and a particular guideline make aspirational embolectomy debatable, despite promising initial experiences.

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LITERATURE

1. Konstantinides S, Meyer G, Becattini C, Bueno H, Geersing GJ, Harjola VP, et al. 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism. *Eur Heart J.* 2020 Jan 21;41(4):543-603. <https://doi.org/10.1093/eurheartj/ehz405>