

Factors affecting outcome, complications and recanalization of the Solitaire thrombectomy device in patients with acute ischemic stroke: a large single center study.

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Introduction

The use of mechanical thrombectomy in the management of acute ischemic stroke is becoming increasingly popular. This study deals with the experience of a single center with the Solitaire revascularization device and aims to identify notable factors that affect outcome, revascularization and complications in patients with acute ischemic stroke treated with the Solitaire device.

Methods

89 consecutive patients with acute ischemic stroke treated with the Solitaire revascularization device at Jefferson Hospital for Neuroscience were retrospectively analyzed. Three endpoints were considered in this study: revascularization (Thrombolysis in cerebral infarction, TICI score), outcome (modified rankin scale-mRS at 3 months) and complications including intracerebral hemorrhage and death. Univariate analysis and multivariate logistic regression were conducted to determine the predictors of outcome, revascularization and complications.

Results

Mean patient age was 63 years. Mean time from onset of symptoms to start of intervention was 6.7 hours and mean time from onset to reperfusion was 8 hours. Average procedure length was 58 minutes. The mean NIHSS was 16 on arrival, 12 at 24 hours post thrombectomy and 8 at discharge. 6.7% had a symptomatic intracerebral hemorrhage after mechanical thrombectomy. 10.1% had fatal outcomes within the same hospitalization from various causes. An additional 6.7% mortality was recorded within the 3 months post-op. In multivariate analysis, higher NIHSS on admission (P=0.05) was a significant predictor of higher overall complications. In univariate analysis, increasing NIHSS from admission to 24 hours after the procedure (P=0.05) and then to discharge (P=0.04) was a significant predictor of increased rate of overall complications. Thrombus location in the posterior circulation (mortality=33.3%,P=0.04) and increasing NIHSS (P=0.04) significantly predicted increased mortality. 81.4% of patients had successful recanalization after mechanical thrombectomy. Thrombus location in the M1 segment of MCA was significantly associated with successful recanalization (TICI2b-3) (P=0.003). 56.6% had favorable outcome (mRS at 3 months: 0-2).Increasing age (P=0.01) and higher NIHSS (P=0.002) were significant predictors of poor outcome.

Conclusions

The Solitaire device is safe and effective in achieving successful recanalization after acute ischemic stroke especially in M1 occlusion. Important factors to consider in predicting outcome and mortality include age, NIHSS and location.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1)Describe the importance of age, NIHSS and location in predicting outcome, revascularization and complications of the Solitaire device and describe the importance of mechanical thrombectomy in the management of acute ischemic stroke.
- 2) Discuss in small groups the efficacy and safety of the Solitaire device and discuss the main predictors of outcome, recanalization and complications that were found to be significant in this study.
- 3) Identify the Solitaire device as an effective and safe treatment for patients with acute ischemic stroke.

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