

Reduced Door to Groin Puncture Time is Associated with Increased Mechanical Thrombectomy Survival Benefit

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Introduction

Minimizing door to groin puncture time (DGPT) in acute ischemic stroke patients undergoing mechanical thrombectomy allows maximal preservation of viable brain parenchyma and is associated with improved clinical outcomes. In this study, we sought to determine the relationship between DGPT and patient survival in the context of an ongoing formal quality improvement process.

Methods

We retrospectively analyzed patients who underwent mechanical thrombectomy for acute ischemic stroke between July 2015 and December 2016. Subjects were divided into two groups dependent on whether their DGPT was below or above the median for all treated patients (low DGPT vs. high DGPT). Ordered logistic regression was used to determine the association between low vs. high DGPT and neurologic outcomes, quantified as mRS at 90 days. Additionally, Cox regression and Kaplan-Meier analysis were used to project long-term survival of low vs. high DGPT patients.

Results

Sixty patients underwent mechanical thrombectomy for acute ischemic stroke from July 2015 to December 2016. The average DGPT was 73.4 minutes in the low DGPT group and 184.8 minutes in the high DGPT group. A log-rank comparison of Kaplan-Meier survival functions showed increased survival of low DGPT patients trending towards significance (p=0.07). There was no significant association between DGPT and 90-day mRS (log-odds=1.13, p=0.10). However, Cox regression analysis accounting for presenting mRS demonstrated that high DGPT was associated with significantly higher 90-day mortality than low DGPT (HR=3.45, p=0.04) (Figure 1).



Figure 1: Cox survival curve demonstrating the association between low DGPT and increased survival. High DGPT is significantly associated with an increased Hazard Ratio of death (HR=3.45, p=0.04).

Conclusions

In our study, lower DGPT is associated with reduced 90-day mortality. These results strongly suggest that interventions to reduce DGPT and expedite neurointerventional treatment of acute ischemic stroke are important to optimize clinical outcome.

References

1. Sun CJ, Ribo M, Goyal M, et al. Door-to-Puncture: A Practical Metric for Capturing and Enhancing System Processes Associated With Endovascular Stroke Care, Preliminary Results From the Rapid Reperfusion Registry. Journal of the American Heart Association: Cardiovascular and Cerebrovascular Disease. 2014;3(2):e000859. doi:10.1161/JAHA.114.000859.

2. Goyal M, Demchuk AM, Menon BK, et al. Randomized assessment of rapid endovascular treatment of ischemic stroke. New England Journal of Medicine 2015;372(11):1019-30.

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Learning Objectives

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

1. Describe the importance of reduced DGPT in acute stroke intervention.

2. Discuss in small groups how a formal quality improvement process can optimize patient outcomes.

3. Develop outcome measures to assess the efficacy of stroke intervention workflow.