

# Intraarterial Therapy for Acute Ischemic Stroke Patients

**Fizel Himyari<sup>1</sup>**

<sup>1</sup>Hammurabi Medical College/ University of Babylon, [fizel.himyari@uobabylon.edu.iq](mailto:fizel.himyari@uobabylon.edu.iq)

Corresponding author Email: [fizel.himyari@uobabylon.edu.iq](mailto:fizel.himyari@uobabylon.edu.iq)

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## Abstract

Cerebro vascular accident causes many health problems. Stroke causes death in the world as a third cause as well as a cause of dementia (Vascular dementia). It is also a cause of disability. Many revascularization techniques have been used in stroke units.

New techniques in the management of stroke are intravenous thrombolysis, intraarterial treatment, bridging therapies and mechanical thrombectomy procedures. Seven randomized controlled trials will be reviewed in the article.

We summarized that Intraarterial mechanical thrombectomy or Intraarterial thrombolytic therapy give good results.

This conclusion is because of wider window period and high recanalization rates.

## Key words:

Stroke, Endovascular Therapy, TPA

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## 1. Introduction

The third leading cause of death is stroke after cancer and Myocardial infarction. Permanent disability is also caused by stroke [1].

Stroke treatment has changed so much since the advent of thrombolytic therapy in the 1990's. Intravenous thrombolysis with tissue plasminogen activator (TPA, altepase) has been used for the last decades with a window period up to (4.5) hours. [2].

The low proportion of treated patients by Intravenous Altepase is due to its short window period, low recanalization rate and complications [3].

Prognosis in stroke is linked to recanalization in many studies. [4][5][6].

Several different studies should a relationship between a good clinical outcome and arterial revascularization [5].

The timing to revascularization is considered a key point in the prognosis of acute ischemic stroke. Several trials with intravenous [7] and intraarterial [8] TPA have showed that time is very important for a good revascularization.

## Methods:

Seven randomized clinical trials were reviewed in this article.

1. PROACT □ Trial [9].
2. MERCI and Multi MERCI Trials [10] [11].
3. SWIFT Trial [12].
4. TREVO 2 Trial [13].
5. SYNTHESIS Trial [14].
6. IMS III Trial [15].
7. RECANALISE study [16].

## Results

In this review article, we summarized the following:-

### 1. Intravenous Thrombolytic therapy:

It can be given with (4.5) hours and the prognosis is better if less than (3) hours. The recanalization rate is low with complication rate of 10% especially Intracerebral Haemorrhage. Dose (0.9 mg/kg).

### 2. Intraarterial thrombolytic therapy:

It is usually within (6) hours and better prognosis if less than (4.5) hours with good recanalization rate and less than 5% complication rate. Dose (0.5 mg/kg). Maximum Dose (40)mg for the procedure.

### 3. Bridging Therapy:

Both Intravenous thrombolytic therapy followed by Intraarterial thrombolytic therapy. It is done with (4.5) hours with a dose of (0.6 mg/kg). It has good recanalization rate with complications rate (6-8%).

### 4. Mechanical Thrombectomy:

Thrombus retrieval or disruption using different instruments belonging to different companies such as solitaire device which is like astent goes on and off until retrieving the thrombus from the artery. The recanalization rate is high and the complications depends on the talents and the skills of the Neurointerventionist.

## Discussion

Permanent disability, dementia, and death all can be caused by Stroke. About (10-20%) of strokes are due to large artery occlusions causing severe disabling strokes. 80-85% of strokes are Ischemic in nature.

The intravenous therapy could be done within (4.5) hours from the onset of the Acute stroke (Infarction) and best if less than (3) hours. It is widely available, fastly initiated but with low recanalization rates of proximal occlusions. The Intraarterial thrombolytic therapy is done within (6) hours and better if less than (4.5) hours with high recanalization rates in the proximal occlusions but it is only available in specialized centers.

The Bridging therapy which is both Intravenous followed by Intraarterial thrombolytic therapy is also done in specialized centers and done with (4.5) hours with high recanalization rates for proximal occlusions.

The mechanical Thrombectomy devices done within (6-8) hours, also have high recanalization rates for proximal occlusions.

We conclude in this review article, that mechanical Thrombectomy or Intraarterial thrombolytic therapy are better due to the wider window period and less complication rates.

### Conflict of interests.

There are non-conflicts of interest.

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