

THESIS

NEUROANGIOGRAPHY PATTERNS AND ANOMALIES OF THE  
MIDDLE CEREBRAL ARTERY FROM 554 CEREBRAL ANGIOGRAPHY  
RESULTS IN Dr. SOETOMO ACADEMIC MEDICAL CENTER HOSPITAL



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**MASTER'S DEGREE IN CLINICAL MEDICAL SCIENCE**

**FACULTY OF MEDICINE**

**UNIVERSITAS AIRLANGGA**

**SURABAYA**

**2019**

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**2019**

A THESIS

Submitted in fulfilment of the requirements for the degree of

Master's Degree In Clinical Medical Science

In

MASTER'S DEGREE IN CLINICAL MEDICAL SCIENCE

FACULTY OF MEDICINE

UNIVERSITAS AIRLANGGA

By

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**2019**


### STATEMENT OF ORIGINALITY

I confirm that this thesis is all my own work. Any work taken from other sources have been appropriately referenced and acknowledged.

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**STATEMENT OF VALIDATION**

This thesis has been agreed and validated on January 7, 2019 by:

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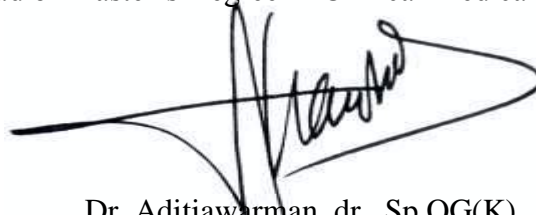
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## FOREWORD

This thesis is written as completion to the Master's Degree in Clinical Medical Science at Universitas Airlangga. Since February 2018 I have been conducting research on this topic. I have experienced this period as very interesting and instructive. My research question was formulated together with my supervisor. At the beginning I had little knowledge of the patterns and anomalies of the Middle Cerebral Artery. This research process was difficult and tiresome. However, I have been able to achieve a result I am very satisfied with.

I would like to thank my supervisors, Dr. Asra Al Fauzi, dr., Sp.BS(K) and Dr. Hari Basuki Notobroto, dr., M.Kes, and the board of examiners, Prof. Dr. Abdul Hafid Bajamal, dr., Sp.BS(K), Dr. Muhammad Arifin Parenrengi, dr., Sp.BS(K), and Dr. Sri Andreani Utomo, dr., Sp.Rad(K), for valuable input to this research. Their valuable insights and directions gave me needful guidance to complete the research and write this thesis.

I also wish to thank all the subjects, without whose cerebral angiography I would not have been able to conduct this research. To Institute of Research and Inovation (LPI) Universitas Airlangga and Endowment Fund for Education (LPDP) Ministry of Finance Republic of Indonesia for their financial support. To my colleagues, all the neurosurgery residents for their help and support. To all my teachers in Department of Neurosurgery Faculty of Medicine Universitas Airlangga for their excellent guidance and support during my residency program. Last but not least, my parents, Bapak Sugeng Tarwiji and Ibu Sri Wardani, my

wife, Mutia Prawitasari, and my daughter, Yassira Husna Kuntawiaji, deserve a particular note of thanks.

Surabaya, January 7, 2019

A handwritten signature in black ink, consisting of stylized, overlapping loops and lines that form the name Yunus Kuntawi Aji.

Yunus Kuntawi Aji

## LETTER OF APPROVAL FOR PUBLICATION

I am the student of Universitas Airlangga who signed below:

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Study Program : Neurosurgery

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