

# Turning the Tide on Ruptured Abdominal Aortic Aneurysm Mortality: A 13-Year Prospective Cohort Study of Multidisciplinary Protocols

Khamin Chinsakchai, MD<sup>1</sup>, Nattharuethai Thanaisawanyangkoon, MD<sup>1</sup>, Kiattisak Hongku, MD<sup>1</sup>, Chumpol Wongwanit, MD<sup>1</sup>, Sasima Tongchai, PhD<sup>2</sup>, Suteekhanit Hahtapornsawan, MD<sup>1</sup>, Nattawut Puangpunngam, MD<sup>1</sup>, Tossapol Prapassaro, MD<sup>1</sup>, Nuttawut Sermsathanasawadi, MD, PhD<sup>1</sup>, Chanean Ruangsetakit, MD<sup>1</sup>

<sup>1</sup>*Division of Vascular Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

<sup>2</sup>*Office for Research and Development, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

**Objective:** To evaluate the impact of a comprehensive multidisciplinary protocol on 30-day overall survival in patients with ruptured abdominal aortic aneurysm (rAAA) and identify factors influencing outcomes.

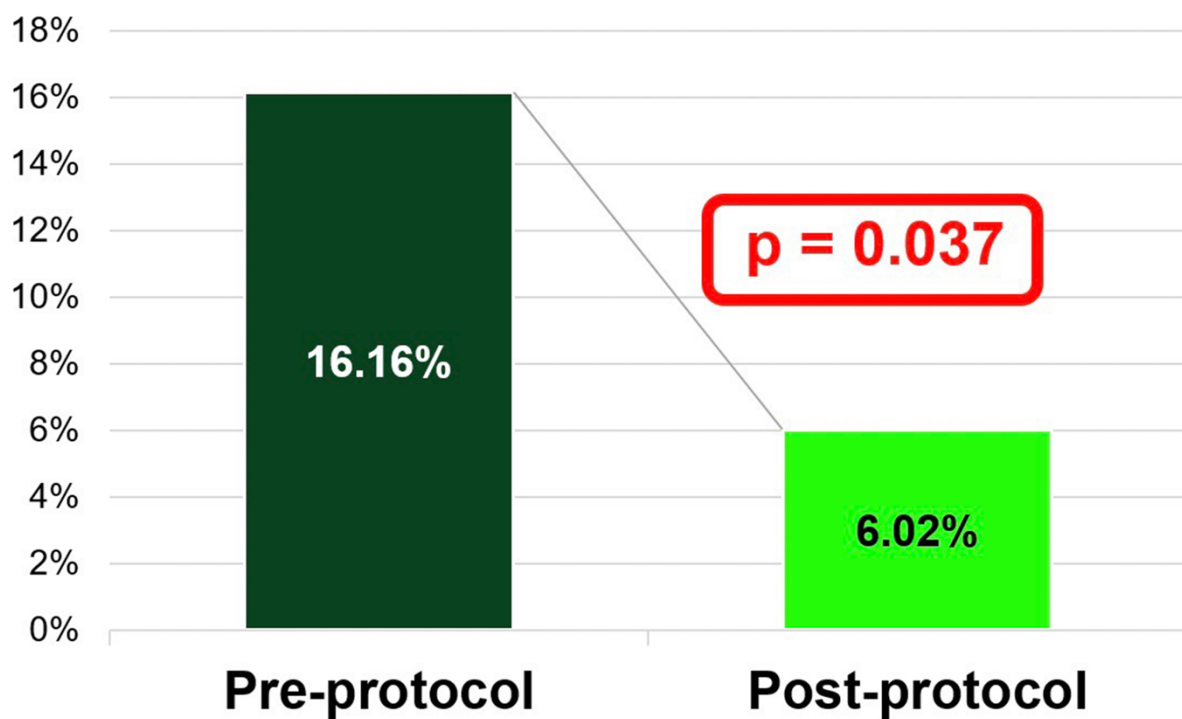
**Methods:** We conducted a prospective cohort study comparing outcomes before and after implementation of a multidisciplinary protocol for rAAA management. The study included 182 patients treated for rAAA at Siriraj Hospital between January 2010 and April 2023. Patients were divided into pre-protocol (n=99, January 2010-December 2017) and post-protocol (n=83, January 2018-April 2023) groups. The primary outcome was 30-day overall survival. Secondary outcomes included factors influencing survival, need for aortic balloon occlusion, operative time, blood loss, length of hospital and ICU stay, and postoperative complications. We used Kaplan-Meier analysis and Cox proportional hazards models to assess survival and identify predictors of mortality.

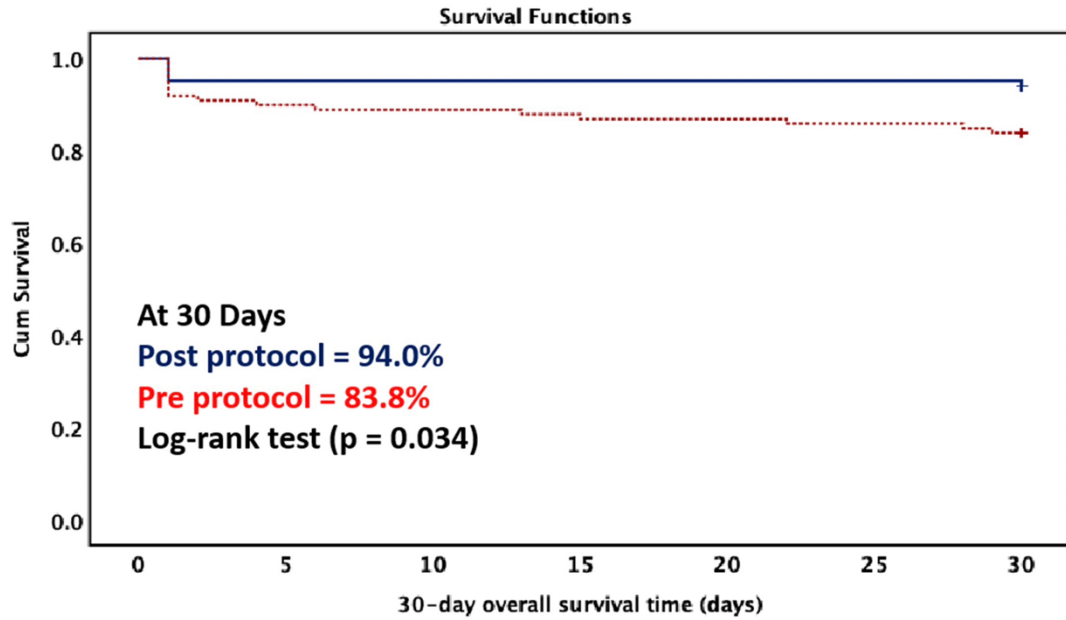
**Results:** The 30-day mortality rate significantly decreased from 16.16% in the pre-protocol group to 6.02% in the post-protocol group (p=0.037), Figure 1. Kaplan-Meier analysis showed improved 30-day overall survival in the post-protocol group (94.0% vs 83.8%, p=0.034), Figure 2. Multivariable analysis revealed that protocol implementation was associated with a 49.1% reduction in the hazard of 30-day mortality (adjusted HR 0.509, 95% CI 0.175-1.478, p=0.213), although not statistically significant. Cardiac arrest (aHR 8.180, 95% CI 3.382-19.785, p<0.001) and unfit patient status (aHR 6.420, 95% CI 1.876-21.965, p=0.003) emerged as independent predictors of 30-day mortality. The post-protocol group demonstrated significant reductions in postoperative complications, notably myocardial ischemia (7.2% vs 21.2%, p=0.015) and septicemia (1.2% vs 20.2%,

p<0.001), compared to the pre-protocol group. No significant differences were observed in operative time, blood loss, or length of hospital and ICU stay between the two groups.

**Conclusions:** Implementation of a multidisciplinary protocol for rAAA management was associated with improved 30-day survival and reduced postoperative complications. This study supports the use of structured protocols and collaborative efforts in the management of rAAA.

**Fig 1** Comparison of 30-Day Mortality Rates Between Pre- and Post-Implementation of Multidisciplinary Protocol for Ruptured Abdominal Aortic Aneurysm Management





No. at risk	0	5	10	15	20	25	30
Post-protocol	83	79	79	79	79	79	78
Pre-protocol	99	89	88	86	86	85	83

**Fig 2** Kaplan-Meier Curves Illustrating 30-Day Overall Survival in Patients with Ruptured Abdominal Aortic Aneurysm

**Author Disclosures:** K. Chinsakchai: None, N. Thanaisawanyangkoon: None, K. Hongku: None, C Wongwanit: None, S Tongchai: None, S. Hahtapornsawan: None, N. Puangpunngam: None, T. Prapassaro: None, N. Sermsathanasawadi: None, C. Ruangsetakit: None