Rotational Atherectomy In Coronary Heart Disease Patients with different rotational speed:In hospital and Six-month Outcomes

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Abstract

Objectives: To date, there is no consensus on optimal speed for rotational atherectomy (RA) in patients with coronary heart disease (CHD). Here, we aimed to investigate interventional outcomes of RA at different rotational speeds and analyze its clinical effect in the patients with CHD. **Methods:** A total of 372 CHD patients were retrospectively analyzed between February 2017 and December 2021. The patients received RA at different rotational speeds. The patients were divided into four groups based on the maximum RA speed: group 1 (¡150,000rpm, 76 cases), group 2 (150,000rpm, 156 cases), group 3 (160,000rpm, 90 cases) and group 4 ([?]170,000rpm, 50 cases). The perioperative endpoints included hypotension, vasospasm, dissection, slow flow, perforation, bradyarrhythmia, burr entrapment, rotawire fracture during RA as well as the incidence of heart failure, stent thrombosis, and cardiac death during hospitalization. Six-months incidence of major cardiovascular and cerebrovascular events (MACCE) such as a composite of myocardial infarction (MI), stent thrombosis, target vessel revascularization (TVR), cardiogenic death, all-cause death or stroke were the long-term primary endpoints. On the other hand, long-term secondary endpoint was chronic heart failure. **Results:** Our analysis showed that patients in group 4 had a higher incidence of slow flow during the RA operation (P=0.025). There was no significant difference in other complications among the four groups. Besides, there was no significant difference in six-month MACCE among the four groups (P=0.452). After adjusting for confounding factors, increase in rotational speed led to a higher probability of slow flow (P for non-linearity = 0.131; adjusted model) and MACCE (P for non-linearity = 0.183; adjusted model). Logistic regression analysis showed that rotational speed was a predictor of slow flow during RA operation (OR=1.24, 95%CI:1.05˜1.47, P=0.013), as well as six-month incidence of MI (OR=2.22, 95%CI:1.04˜4.71,p=0.038). Moreover, the analysis demonstrated that a rotational speed of ¡150,000rpm was a predictor of vasospasm during RA operation (OR=3.62, 95% CI:1.21˜10.8, P=0.021). **Conclusion:** Our findings showed that CHD patients treated with RA at a rotational speed of [?]170,000rpm had a higher risk of slow flow. In contrast, a rotational speed of ¡150,000rpm was shown to be an independent risk factor for spasm during RA in CHD patients. Moreover, rotational speed is an independent risk factor for slow flow and six-month MI in CHD patients. There was no significant difference in six-month outcomes in comparison to elective CHD patients with different rotational speeds, and the probability of MACCE was intensified with increase in rotational speed.

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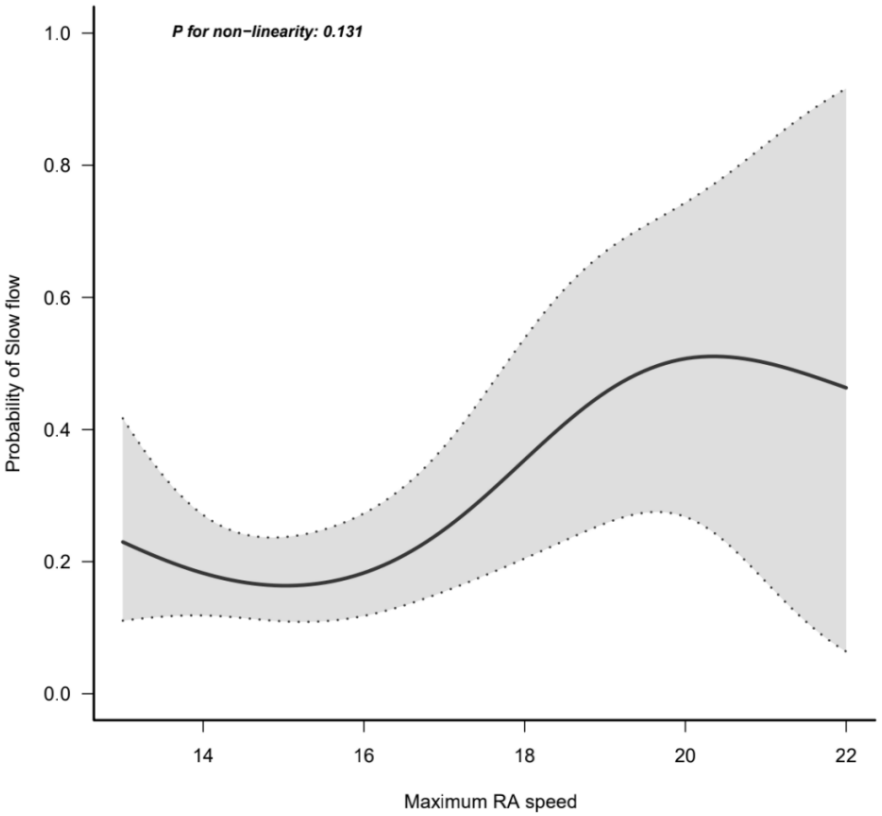

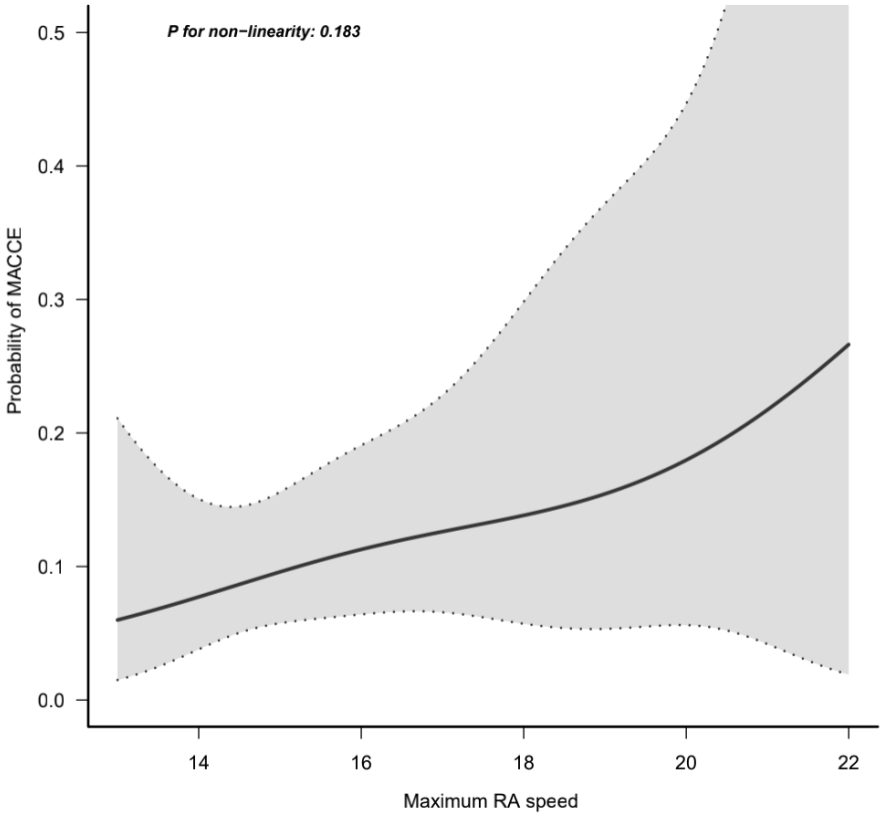

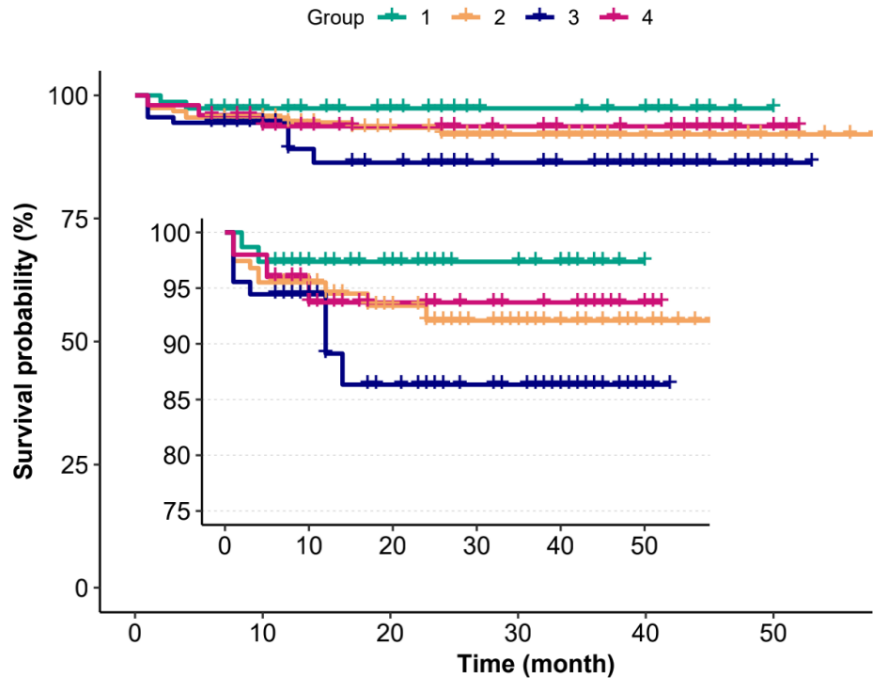

Number at risk

Group 1	76	31	20	11	9	1
2	156	106	76	52	24	9
3	90	75	58	44	24	3
4	50	42	30	26	21	5

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