

# Improvement of Ocular Circulation and Chronic Ocular Circulation after Carotid Artery Revascularization

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## Introduction

Background: The authors evaluated the effect of the carotid revascularization surgery for the ocular circulation and chronic ocular ischemic syndrome (OIS).

## Methods

Methods: We examined ninety with carotid artery stenosis (more than 70% stenosis) at its origin treated with carotid endarterectomy (CEA) (N=56) or carotid artery stenting (CAS) (N=34). Twenty-five patients complained of chronic OIS. Ocular circulation and symptoms were examined before, at 1 week, 1 month, and 3 months after CEA or CAS based on the ophthalmic artery (OphAr) and central retinal artery (CRA) color Doppler flow imaging and ophthalmological examinations.

## Results

Results: 1) Ocular circulation: Preoperatively, 25 patients showed reversed OphAr flow. The average OphAr peak systolic flow velocity (Vs) was 0.05 m/sec, and the average CRA Vs was 0.07 m/sec. At 1 week after surgery, all 86 patients showed the antegrade OphAr flow. The flow direction of the OphAr flow was corrected significantly. The average OphAr Vs increased to 0.32 m/sec significantly ( $p < 0.05$ ), and the average CRA Vs also increased to 0.12 m/sec significantly ( $p < 0.05$ ). At 1 month and 3 months after surgery, there were no significant changes as compared to the findings at 1 week after surgery. 2) OIS: During the follow-up period (mean: 3.6 years), 15 patients (60%) showed the visual acuity improvement, and no patients complained of the amaurosis fugax and worsened the chronic OIS.

## Learning Objectives

Effects of CEA & CAS for ocular circulation and chronic ocular ischemic syndrome in carotid artery stenosis.

## Conclusions

Conclusion: Carotid revascularization surgery was effective in improving the ocular circulation, and it was also useful for the chronic OIS due to the carotid artery stenosis.