The Hybrid Surgery combined carotid endarterectomy and carotid arterial stenting improved the outcome of patients with high risk carotid stenosis

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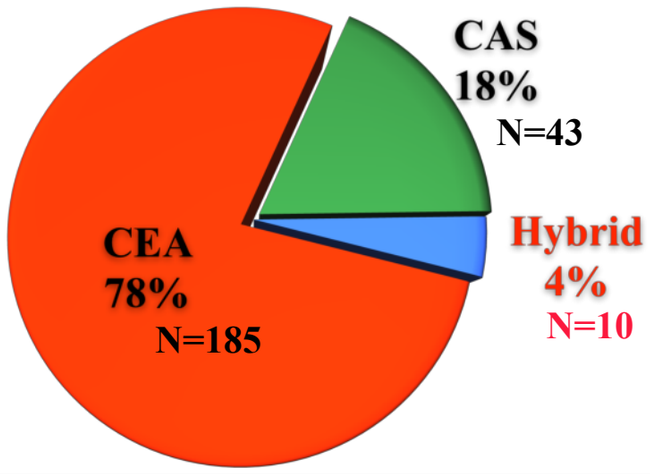
Background

The perioperative complication rate of carotid stenosis patients should be controlled in fewer than 6% of symptomatic cases and 3% of asymptomatic cases. Therefore, we evaluate various factors and select the surgical option, carotid endarterectomy (CEA) or carotid arterial stenting (CAS), whichever is safer. However, in case of long carotid plaque formation, both CEA and CAS could be high risk options. Based on our clinical experience, we developed hybrid surgery combined CEA and CAS and got successful outcome.

Methods

Fig. 1 Patient volume with carotid stenosis for surgery



We prospectively analyzed 238 consecutive surgical cases in patients with carotid stenosis in New Tokyo Hospital, between January 2016 and December 2018 (Fig.1).

We classified carotid plaque in 3 types.
1) Short lesion type: CEA group
2) Re-stenosis type or Long lesion type: CAS group
3) Long vulnerable plaque type: Hybrid group (combined CEA and CAS)

Fig. 2 Surgical strategy

The carotid plaque characterization and plaque location are the most important factors for our surgical strategy.
Plaque evaluation were determined by carotid ultrasoundsonography and MRI for plaque imaging.

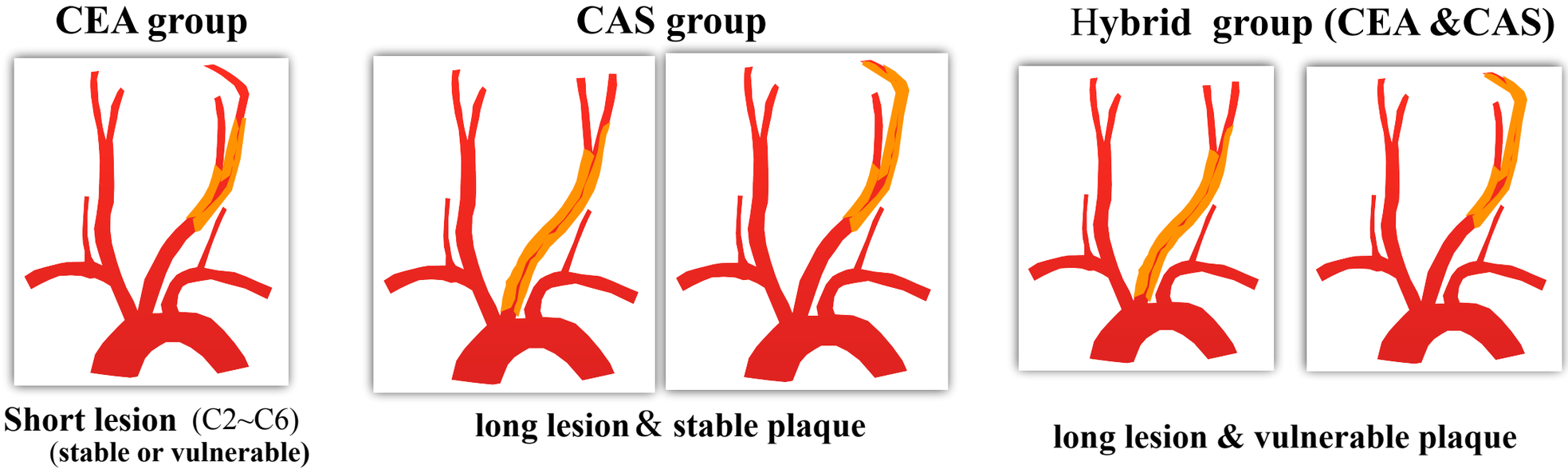
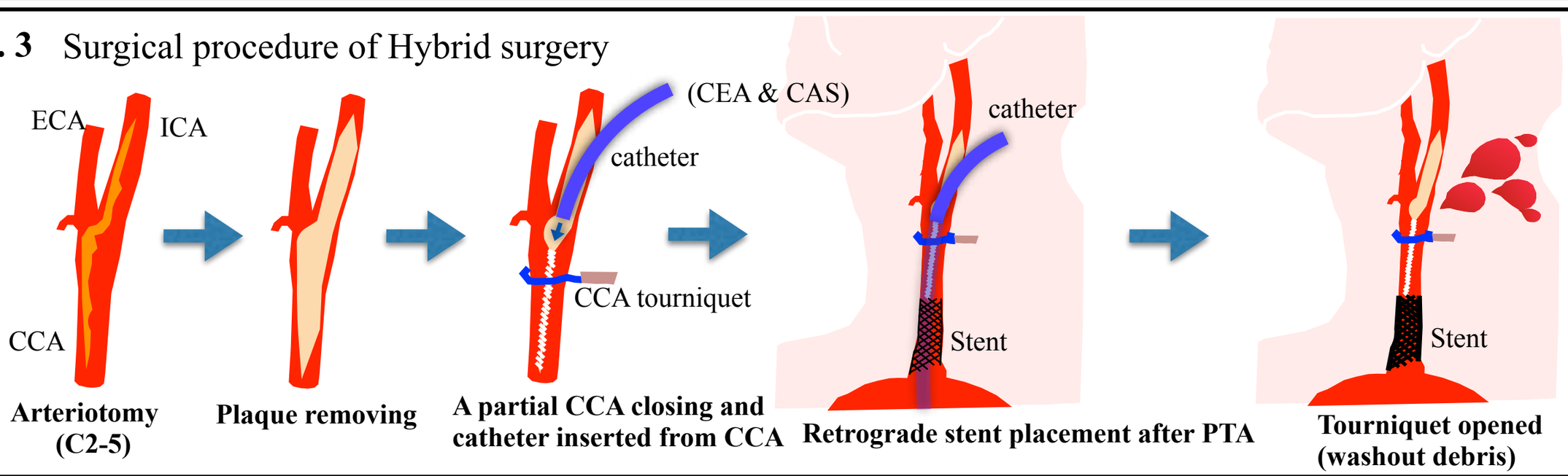


Fig. 3 Surgical procedure of Hybrid surgery



Results

We performed CEA for 185 cases, CAS for 43 cases and hybrid surgery combined CEA and CAS for 10 cases.

The perioperative complication rate (during postoperative 30 days) **: 0.8% (2 cases)**

Case1; acute occlusion (CEA after 1days)

Case2; postoperative bleeding in wound area (CEA after 14 days)

Conclusion

We demonstrated the successful surgical outcome of carotid stenosis cases with developing hybrid surgery combined CEA and CAS. This hybrid surgery is a good therapeutic option to take advantage of CEA and CAS technique to compensate for each imperfection. Our hybrid surgery for high-risk group with long and vulnerable plaques improved overalll surgical outcome for the patients with carotid artery stenosis.