It is relatively difficult to treat restenosis when restenosis occurs following carotid artery stenting. Endarterectomy with simultaneous stent removal is an effective approach when restenosis occurs. The treatment method is still not well known. The present paper reports a case of restenosis after stenting that was treated with endarterectomy with a satisfactory treatment outcome. The patient, a 74-year-old male, underwent stenting 10 months before he was re-hospitalized. He seemed to recover well after stenting until one month before he was re-hospitalized, when he presented symptoms of cerebral ischemia. Imaging examination revealed that in-stent stenosis had reoccurred, with the stenosis degree ranging from 70-99%. He was given endarterectomy treatment, and intra-operative findings showed that the stent grew into a carotid artery plaque and protruded below the adventitia and that the stent lumen was not covered by carotid artery intima. The surgery completely and successfully removed the plaque and the stent, while the adventitia was completely preserved. Follow-up indicated that there was no stenosis in the carotid artery, and the prognosis was good. Relevant literature was also reviewed in this paper, and the authors suggested that carotid artery plaque and stent endarterectomy is beneficial. However, surgical treatment for in-stent stenosis remains a challenging option <sup>10</sup>.

## 2014

319 patients (220 asymptomatic and 99 symptomatic) who underwent carotid angioplasty from 2002 until 2012 for carotid restenosis (CR) that occurred after eversion endarterectomy. During this period, 7993 eversion endarterectomies were done for significant carotid artery stenosis. Significant CR was detected by ultrasound examination and confirmed by digital subtraction angiography or multidetector computed tomography angiography. After angioplasty (with or without stenting), color duplex ultrasound imaging was done after 1 month, 6 months, 1 year, and annually thereafter. End points encompassed myocardial infarction, stroke, and cardiovascular death (fatal myocardial infarction, fatal cardiac failure, fatal stroke), and also puncture site hematoma and recurrent restenosis. Primary end points were analyzed as early results ( $\leq$ 30 days after the procedure), and secondary end points were long-term results (>30 days). Variables and risk factors influencing the early-term and long-term results were also analyzed. Median follow-up was 49.8 ± 22.8 months (range, 17-121 months).

All but one procedure ended with a technical success (99.7%). In the early postoperative period, transient ischemic attack occurred in 2.8% of the patients and stroke in 1.6%, followed by one lethal outcome (0.3%). Stent thrombosis occurred in one patient (0.3%) several hours after the angioplasty, followed by urgent surgery and graft interposition. In the long-term follow-up, there were no transient ischemic attacks or strokes, non-neurologic mortality was 3.13%, and the recurrent restenosis rate was 4.4%. The rate of non-neurologic outcomes during the follow-up was significantly higher in asymptomatic patients than in symptomatic patients (4.54% vs 0%; P = .034). The statically highest rate of transient ischemic attack was verified in patients in whom Precise (Cordis Corporation, New Brunswick, NJ) stents was used (12.2%) and a Spider Fx (Covidien, Dublin, Ireland) cerebral protection device (12.5%) was used. Female gender, coronary artery disease, plaque calcifications, and smoking history were associated with an adverse outcome after angioplasty.

Carotid artery stenting is safe and reliable procedure for CR after eversion endarterectomy treatment, with low rate of postprocedural complications. Type of stent and cerebral embolic protection device may influence the rate of postprocedural neurologic ischemic events <sup>2</sup>.

1)

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## 2)

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