Objective(s): Data regarding the treatment of tandem carotid artery lesions at the bifurcation and ipsilateral, proximal common carotid artery (CCA) is limited. It has been suggested that concomitant treatment with carotid endarterectomy (CEA) and proximal retrograde carotid artery stenting (rCAS) confers a high risk of stroke and death. The objective of this study is to evaluate the technique and outcomes of this hybrid procedure at a single institution.

Methods: Retrospective chart review was performed including patients who underwent CEA+rCAS for treatment of atherosclerotic carotid artery disease between December 2007 and April 2017. Primary endpoints were postoperative myocardial infarction (MI), neurologic event, and perioperative mortality.

Results: Twenty-three patients (15 male, 65%) underwent CEA+rCAS with a mean follow up of 2.7 +/- 2.5 years. The mean age was 70.9 +/- 5.8 years old, all with prior smoking history (9 current [39%]). Thirteen patients (57%) were treated for symptomatic disease and 4 had a prior ipsilateral CEA (1 also w/CAS). Computed tomographic angiography imaging was performed preoperatively in 22 patients (96%). CEA was performed first in 19 (83%) patients followed by rCAS. CEA was performed with a patch in 21 and eversion endarterectomy in 2 patients. Ipsilateral CCA was stented in 22 patients (96%) and 1 innominate was stented in a patient with a right CEA. Additional endovascular interventions were performed in 3 patients: 1 innominate stent, 1 distal ipsilateral internal carotid artery (ICA) stent, and 1 right subclavian artery stent. All proximal stents were placed retrograde with sheath access through the patch in 13 (57%), CCA in 7 (30%), and arteriotomy prior to patch in 3 (13%). Distal clamping was performed in 22 (96%) of patients prior to rCAS. All proximal lesions were successfully treated endovascularly with no open conversion for treatment of proximal lesions. Two dissections were created, one stented and other treated medically without complication. One perioperative stroke (4.3%) occurred in a patient treated for symptomatic stenosis, 1 postoperative MI (4.3%), and 2 (8.7%) patients with cranial nerve injuries. There was one 30-day mortality after discharge.

Conclusions: Concomitant CEA+rCAS can be safely performed in high risk patients with low risk of MI, neurologic events, and perioperative mortality when careful surgical technique is employed, utilizing direct carotid access and distal carotid clamping for cerebral protection prior to stenting.