Adjunctive Techniques For Treating Arch Disease: Precurved Fenestrated Graft With Branches And Buffalo Horn Chimney Stents
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Objectives:
Endovascular treatment with pre-curved fenestrated endograft had excellent short-term results in arch aneurysms. However, anatomical indication is still limited for patients without an adequate proximal landing zone. Adjunctive techniques are required to treat those type of aortic arch aneurysms and dissections.

Methods:
Buffalo Horn Chimney technique: A bared stent was implanted through brachiocephalic artery to left common carotid or left subclavian artery to extend proximal landing of the fenestrated endograft for the patient who had proximal sealing zone in the aortic arch without proximal anchoring zone.

Side branch technique: Stentgrafts for supra-aortic vessels were implanted through the fenestrations which are modified as a port for side branches for the patient who had proximal landing zone in ascending aorta.

From January 2012 to September 2013, among 375 patients who required stent-graft landing in the aortic arch with a precurved fenestrated endograft, 14 and 6 patients were treated with buffalo horn chimney technique and side branches.

Results:
Buffalo Horn Chimney technique: an additional bared stent were implanted through brachiocephalic artery to left common carotid artery in 7 patients and to left subclavian artery in 7 patients. Two type I endoleak and no cerebral infarction were observed in 14 cases. The mean operative and fluoroscopic times were 188 and 43 min.

Side branch technique: Single side branch + T-bypass, single branch + fenestration, and double side branches were performed in 2, 2, 2 patients, respectively. One type I endoleak, one ascending aortic dissection, and one minor stroke were observed in these 6 cases. The mean operative and fluoroscopic times were 272 and 63 min.

Discussions:
This adjunctive endovascular technique for the precurved fenestrated endograft is useful to extend anatomical indication for aortic arch disease. However, operative and fluoroscopic time are longer than simplified fenestrated TEVAR (161 and 26 min), and relevant complications are occurred in this small number of branched cases. Further development of the device and techniques is required to provide safe and less invasive endovascular procedure.

At this time, we should know the risk and benefit of each kind of endovascular treatment, and think about what kind of therapeutic method is the best for each patient.