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Hybrid Endovascular Exclusion of a Bleeding Innominate Artery Pseudoaneurysm in a Patient with No Open Surgical Options

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Abstract Body:

Objective: We report a challenging case involving bleeding from a mycotic pseudoaneurysm of the innominate artery in a hostile surgical field.

Methods: A 58-year-old female with Stage IIIB squamous cell lung cancer had a left upper lobectomy via a trap door incision after failing chemoradiation. Post-operatively she developed a deep sternal and mediastinal infection requiring multiple surgical debridements before definitive reconstruction with a myocutaneous flap. Five months later a mycotic pseudoaneurysm of the innominate artery was identified on CT Angiography (CTA). Cardiothoracic surgery deemed her not to be an open surgical candidate because of the hostile, irradiated surgical field and previous myocutaneous flap. Initially, a stent graft was placed in the innominate artery to exclude the pseudoaneurysm. Follow up CTA demonstrated incomplete apposition of the stent to the wall of the innominate artery and persistent pseudoaneurysm. No active contrast extravasation was noted. One week later, she returned with pulsatile bleeding from her chest wound. CTA showed extravasation of contrast from the base of the pseudoaneurysm (Figure A).
**Figure A:** CT angiography thorax (sagittal) demonstrating focal extravasation of contrast from base of innominate artery pseudoaneurysm (white arrow)

A second surgical intervention included the following: pseudoaneurysm exclusion via left to right carotid-carotid bypass, Amplatzer plug in the proximal innominate artery, thoracic aortic stent graft across the aortic arch, excluding the origins of all three aortic arch vessels. Inflow was preserved via a stent graft snorkeled from the left common carotid artery to the descending thoracic aorta for preservation of cerebral circulation (Figure C).

**Figure C:** 3-D reconstruction demonstrating hybrid management of pseudoaneurysm with left to right carotid-carotid bypass, occlusion of innominate artery with Amplatzer plug, thoracic stent graft deployment with a snorkeled left common carotid artery stent graft
**Results:** The pseudoaneurysm was excluded and she remained neurologically intact. She has not had any further bleeding episodes at 10-month follow up. Imaging studies to date show a
completely excluded innominate artery pseudoaneurysm. The patient was continued on an 8-week course of piperacillin-tazobactam and currently remains on lifelong suppression with Amoxicillin. Conclusion: Mycotic pseudoaneurysms of the innominate artery are commonly managed with open surgery with aneurysm exclusion with or without arterial reconstruction. In this case, open surgical options were of prohibitive risk and the pseudoaneurysm was successfully excluded with a hybrid-surgical approach performed exclusively by vascular surgery.

Author Disclosure Block: