Thoracic aortic endovascular grafting after induction chemoradiation to safely enable R0 resection of lung cancer invading the posterior chest wall and aorta

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Objectives:
T4 lung tumors abutting or invading the descending aorta and posterior chest wall represent a technical challenge to obtain a R0 resection and can lead to catastrophic intraoperative bleeding if insufficiently planned. We present a successful case.

Methods:
A 60 year old male presented with a squamous cell carcinoma arising from the superior lower lobe segment with close contact and possible invasion of the posterior chest wall. Preoperative staging including FDG PET-CT, Brain MRI and invasive mediastinal staging showed no loco regional nor distant metastasis. Upon thoracotomy the tumor unexpectedly showed to infiltrate the thoracic aortic wall and posterior chest wall over a distance of 5 cm. Resection was aborted and after interdisciplinary consultation neoadjuvant treatment followed by thoracic endografting prior to the definitive resection was decided.

Results:
The patient received concurrent chemoradiation with Cisplatin, Etoposide and 45 Gy in 25 fractions. Restaging was done by thoracoabdominal CT scan including angio-CT for display of vascular anatomy including possible Adamkiewicz artery. Thoracic endografting via right femoral access using a Valiant Thoracic (R) endograft was done 4 days after completion of induction treatment and restaging. 20 days after that the oncologic resection was carried out. Left posterolateral thoracotomy, left lower lobectomy with en bloc resection of the posterior upper lobe segment, chest wall, including partial resection of 6th and 7th rib and hemicircumferential periaortic resection of the outer adventitial layer was carried out. Complete resection was achieved. The intra- and postoperative course was uneventful and the patient was discharged on the 6th day. The final tumor stage was ypT4ypN1M0 G3 R0.

Conclusion:
In locally advanced lung cancer with suspected invasion of the thoracic descending aorta should warrant the insertion of an aortic endograft besides an induction treatment prior to the resection. This allows complete resection avoiding cardiopulmonary bypass and in experienced hands has a low procedural complication rate. Multidisciplinary team approach is the key to a successful oncologic operative treatment option in these cases.

References:
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