Complete Resection of Left Paratracheal Nodes for Stage IIIA Disease Can Be Achieved with Robotics During Left Upper Lobectomy After Neoadjuvant Chemotherapy and Radiation

Objective
There is limited high-level evidence to support the use of minimally invasive surgical approaches for resection after induction therapy. Here, we present a challenging case of a stage IIIA squamous cell carcinoma (SCC) for which robotics was used to achieve vascular control and more complete lymph node dissection compared to open or VATS techniques.

Case Video
The patient is a 63-year-old male 40 pack-year smoker with diabetes who was found to have a 1.4cm left upper lobe (LUL) nodule on screening CT with level 4L and 5 lymphadenopathy. PET/CT and brain MRI revealed no distant metastases and biopsy of a 4L lymph node showed SCC (+p40, -PDL1). The patient underwent neoadjuvant chemotherapy (carboplatin/taxol) and mediastinal radiation (50Gy) rather than immunotherapy given his negative PDL1 status and due to concerns for the surgical resectability of the 4L node. Restaging PET/CT showed a response to treatment with decrease in size and uptake of the LUL nodule and mediastinal nodes.

The patient then underwent robotic left upper lobectomy and mediastinal lymph node dissection. After resection the posterior hilar dissection, the PA was exposed in the fissure with subsequent ligation of the lingular and apicoposterior PA branches. Resection of the level 5 and 4L nodes posed a unique challenge in this patient but was achieved robotically due to the wristed instruments. There was significant post-radiation fibrosis surrounding the anterior PA. We therefore obtained vascular control of the left main PA and inferior pulmonary vein and first divided the superior pulmonary vein and upper lobe bronchus to increase exposure to the anterior PA branch. The bedside assistant applied traction on the vessel loops while the anterior PA branch was safely ligated with the robotic stapler. Given the patient's prior radiation, an intercostal muscle flap was harvested and buttressed to the bronchial stump to prevent bronchopulmonary fistula.

The patient tolerated the procedure well and did not develop voice hoarseness to indicate injury to the recurrent laryngeal nerve. Final pathology showed 0% residual tumor with 7 lymph node stations examined and only one 0.1mm focus of SCC found in the resected 4L lymph node. Final staging was ypT0pN2a1M0.

Conclusions
Robotics can be used as a component of trimodal therapy in stage III lung cancer to achieve equivalent oncologic outcomes to thoracotomy without compromising safety and surgical outcomes.

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