INTERCOSTAL MUSCLE FLAP TO REINFORCE THE BRONCHIAL STUMP AFTER VATS PNEUMONECTOMY

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In open surgery, the buttressing of bronchial stump is a common procedure, in order to prevent the occurrence of bronchopleural fistula after pneumonectomy or after anatomic resections in high-risk patients (i.e. induction chemotherapy, inflammatory disease, diabetes mellitus, arteriopathy).
Several techniques have been proposed for the prophylactic coverage of the bronchial stump, most of them using parietal pleura, pericardial fat pad, or intercostal muscle flap.
In our Institution, we routinely cover the bronchial stump with an intercostal muscle flap after both left and right pneumonectomy, and in case of sleeve lobectomy; the flap is usually prepared before rib spreading, for maintaining an adequate blood flow.
Intercostal muscle flap in VATS surgery is rarely utilized, even in high-risk patients; there are only few decriptions in Literature.
We describe a VATS procedure of protecting the bronchial stump with an intercostal muscle flap, harvested with an harmonic scalpel from the utility incision.
We evaluated two patients for VATS pneumonectomy in the last year, both after induction chemotherapy. The first patient was a 54-year-old women, with an adenocarcinoma of the right lung, previously treated with cisplatin and gemcitabin for 3 cycles for a huge hilar nodal involvement.
The second patient was a 57-year-old male, with an adenocarcinoma of the left lung, treated with 3 cycles of cisplatin and gemcitabin for N2 disease, confirmed by endobronchial ultrasonography.
Both patients had a three-ports technique approach.
In the first case, after the bronchial closure, the stump was verified to have no air leak. The intercostal muscle flap was harvested with an harmonic scalpel from the under surface of the fifth rib, paying attention to not injure the vascular structures. The flap was transacted and sutured to the bronchial stump with an interrupted 4/0 readsorbable suture.
In the second case, the flap was dissected at the beginning of the operation, after the utility incision, and positioned out from the soft tissue retractor. The technique of flap mobilization and the suture to the bronchial stump was the same of the previous case. The time required for harvesting the flap was very short, almost 5 minutes.

Both patients had an uneventful postoperative course; this procedure helped to avoid negative consequences of pneumonectomy, without providing technical difficulties. The only caution is taking care to preserve vascular supply.

In conclusion, we believe that intercostal muscle flap is a valid choice, increasing the vascularity of the bronchial stump; the procedure is easy to perform, even in VATS.