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FEASIBILITY AND SAFENESS OF LASER PULMONARY ANATOMIC RESECTION IN PATIENTS WITH INCOMPLETE FISSURES. RESULTS OF A RANDOMIZED, PHASE II, CONTROLLED TRIAL.

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Purpose:

The aim of the study is to evaluate feasibility and safety of Thulium 2010 nm laser to perform anatomic resections of lung parenchyma in patients with incomplete fissures, as compared to standard resection with mechanical staplers ± sealants.

Methods:

40 patients scheduled for segmentectomy or lobectomy were enrolled in the study. After intraoperative confirmation of the extent of resection and the finding of incomplete fissures (type 2,3 or 4 according to Craig and Walker), they were randomized and assigned to the arms: laser resection by Thulium (Group A) or mechanical staplers with or without sealants (Group B). Intraoperative data and postoperative course were analyzed. An analysis of costs for surgical devices was also performed.

Results:

20 patients were assigned to group A (19 lobectomies, 1 segmentectomy), and the remaining 20 to group B (18 lobectomies, 2 segmentectomies). No postoperative 30 days-mortality was observed in both groups. Median operative times were 152,5 minutes in group A and 142,5 minutes in group B ($p=0.385$). The median time to removal of drainages was 5 days in group A and 4 days in group B, while the median length of Hospital stay (7days) were the same for both groups. Prolonged air leaks >7 days were observed in 7 patients of group A (35%) and in 5 patients of the group B (25%, $p=0,73$). An intraoperative costanalysis demonstrated an advantage for group A (mean 623.7+/-113.55 euro) vs group B (mean 1047+/-276.37 euro, $p<0.0001$).

Conclusions:

According to the data of the present study, the use of laser to complete fissures during pulmonary resection is feasible and safe, as compared to the standard technique, and could provide a reduction of intraoperative costs. Anyway, further enrollment is needed in order to assess more conclusive results, because of the high incidence of air leaks in the population of the study (30%).