



Poster 14. **TRANSESOPHAGEAL RIGHT UPPER PULMONARY LOBECTOMY - *In Vivo* PORCINE EXPERIMENTAL STUDY**

João Moreira-Pinto, MD<sup>1,2,3</sup>; Aníbal Ferreira, MD<sup>1,2,4</sup>; Alice Miranda, DVM<sup>1,2</sup>; Carla Rolanda, MD, PhD<sup>1,2,4</sup>; Jorge Correia-Pinto, MD, PhD<sup>1,2,5</sup>

<sup>1</sup>Surgical Sciences Research Domain, Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, Braga, Portugal; <sup>2</sup>ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal; <sup>3</sup>Pediatric Surgery division, Centro Hospitalar do Porto, Porto, Portugal; <sup>4</sup>Department of Gastroenterology, Hospital de Braga, Braga, Portugal; <sup>5</sup>Pediatric Surgery division, Hospital de Braga, Braga, Portugal.

**Background and Study Aims**

Video-assisted thoracoscopic surgery (VATS) has been widespread as the better approach to carry out pulmonary lobectomy. Natural Orifice Transluminal Endoscopic Surgery (NOTES) is being assessed as an alternative to the transthoracic endoscopic surgery. We designed this study to test the feasibility of peroral transesophageal right upper pulmonary lobectomy with the assistance of a single transthoracic trocar.

**Material and Methods**

In ten anesthetized pigs (35-45 Kg), we performed right upper pulmonary lobectomy using a forward viewing single-channel gastroscope (introduced perorally) and an operative thoracoscope with a 5 mm working channel (introduced through a single-transthoracic 10 mm port) (Karl Storz). After introducing the gastroscope throughout an oroesophageal overtube into the esophagus, a 1 cm transverse esophagotomy was carried out in the upper third using an ESD-knife under thoracoscope control. Anatomic dissection of the right upper hilum was performed using flexible (gastroscope) and rigid (thoracoscope) instruments. After individual dissection, right upper pulmonary arteries, veins and correspondent bronchus were independently stapled using a 45-mm long, linear endostapler (EndoPath®, Ethicon Endo-Surgery) introduced through the oroesophageal overtube. After completing the lobe resection using an endoscopic snare with cautery, the specimen was extracted retrogradely through the mouth. The esophagotomy was stitched and tied using Endo Stitch™ (Covidien) and a long knot-pusher, which were handled through the oroesophageal overtube.

**Results**

Esophagotomy was performed safely in all animals. Dissection of the right upper lobe hilum elements (arteries, veins and bronchus) was also carried out in all animals without significant problems. Oroesophageal handling of the endostapplers for independent ligation of the hilum elements under transthoracic imaging was surprisingly feasible, reasonably easy to perform and reliable in 7 cases. In two cases ligation of the vessels was *en bloc*. In one case, severe hemorrhage occurred from incomplete vein ligation, although we could control it using electrocoagulation. Esophagotomy closure was feasible but its reliability was not tested in survival studies. All but one animal were kept alive until the end of the acute experiment when they were sacrificed.

**Conclusions**

Transesophageal right upper pulmonary lobectomy using single transthoracic trocar assistance is feasible and it may represent a step towards scarless pulmonary lobectomy. Additional survival studies are necessary to test the reliability of this procedure.

**Apresentador:**

João Moreira-Pinto, Médico Interno de Cirurgia Pediátrica, CHP.

[moreirapinto@gmail.com](mailto:moreirapinto@gmail.com)