3D ESOPHAGEAL RECONSTRUCTION WITH MULTI SLICE 64 COMPUTED TOMOGRAPHY AND PASSIVE FUSION WITH ESOPHAGUS SHELL. A NOVEL APPROACH TO GUIDE PULMONARY VEIN ISOLATION.

ACC Poster Contributions  
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Background: Catheter ablation (CA) has proven as standard procedure for drug-refractory atrial fibrillation (AF). Atrioesophageal fistula has been described as an infrequent but lethal complication of this procedure. Several approach and different techniques were described to avoid this tremendous complication. We have described the tridimensional (3D) esophagic reconstruction from multi slice-64 computed tomography (MSCT-64) to determinate its position and relation with the posterior wall of left atrium. The aim of this study is describe the feasibility and reproducibility of passive fusion of esophagus shell with MSCT-64 esophagus image to avoid atrioesophageal fistula complication in a selected cohort of patients.

Methods: Single-center prospective analysis of consecutive patients who underwent ablation of AF and received a MSCT-64 prior to procedure from May 2009 to October 2010. A MSCT-64 was optimized for imaging of pulmonary veins. We performed the tridimensional reconstruction of the esophagus to determinate the relation with the pulmonary vein ostium (PVO). We designed the left atrium shell. The esophagus shell was designed advancing a quadripolar catheter inside the esophagus and pulling back towards the pharynges. We performed the fusion of left atrium with the MSCT-64 image using Verismo® tool. We obtain the fiducially points from the PVO and transport passively the esophagus shell.

Results: 83 patients in sinus rythm were included with a mean age 61±9.7 yrs, 90% male and a mean BMI of 26.5±6.4 kg/m2.

The accuracy obtained was of 62.02 % (fit between tridimensional reconstruction and esophagus shell) when MSCT-64 was performed more than 48hs prior to procedure. When we discriminate studies performed less than 48 h we have obtained 83.82% of accuracy (p value <0.05). The range of mismatch between each structure after fusion was 6 mm ± 10 mm.

Conclusions: The passive fusion technique of the esophagus has a high accuracy to determinate the esophagus position if the MSCT-64 is performed during the last 48h before the procedure. This allows avoid this critical structure during AF ablation and lets us modify the strategy during ablation procedure.