32nd ESTS MEETING

26 - 28 MAY 2024 • BARCELONA, SPAIN

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EUROPEAN CONFERENCE
ON GENERAL THORACIC SURGERY

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www.ests.org

P-127

LEARNING CURVE OF ROBOTIC LUNG RESECTIONS COMPARED WITH VIDEO ASSISTED THORACIC SURGERY (VATS): EXPERIENCE WITH A NEW MODULAR ROBOTIC SURGICAL SYSTEM

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OBJECTIVES
Over the last few years, new companies have entered the market of robotic surgical systems. This study aims to compare the learning curve of two surgeons performing anatomical lung resections with a new modular robotic system (Versius Surgical System, CMR) and with a standard VATS technique.

METHODS
A RATS port placement with an anterior utility incision, similar to the three-port VATS surgery, was carried out. Port-training was required to correctly set-up the movement of surgical instruments.
The first consecutive 49 RATS anatomical lung resections were compared with the corresponding 49 first triportal VATS cases (collected between October 2010 and September 2015), performed by the same two surgeons. We analyzed the retrospectively collected data by CuSum method.

RESULTS
From November 2021 to January 2024 two surgeons performed 49 typical lung resections with Versius. Demographic data of VATS and Versius groups was comparable. The average operative time of the Versius and VATS groups was 248±56 and 228±49 minutes respectively (p-value = 0,027). From the CuSum plots (reported in figure), it appears that the learning curve is faster for the VATS group. Nevertheless, the effective robotic operating time is about 70% of the whole reported time, which includes the time needed for instruments port training and robot positioning.
Three RATS and two VATS cases required conversion to open surgery to manage intraoperative complications. Important findings concern time to chest tube removal and length of hospital stay: both data seem to favour RATS.

CONCLUSIONS
Surgeons and the whole equipe seem to need more time to learn new approaches using different surgical instruments. Notwithstanding a longer normalization of operating times for the RATS group, the new modular robotic platform can be safely and efficiently implemented in a robot-naive centre, ensuring a reduction in time to chest tube removal and length of hospital stay.

Disclosure: No significant relationships.
Keywords: Learning Curve, Robotic, Thoracic Surgery, Resections.