

Intraoperative Assessment of Right Ventricular Strain During Lung Transplant Using Tissue Tracking Technology

A. Berardino¹, J. Qua Hiansen², S. Keshavjee³, M. Meineri⁴

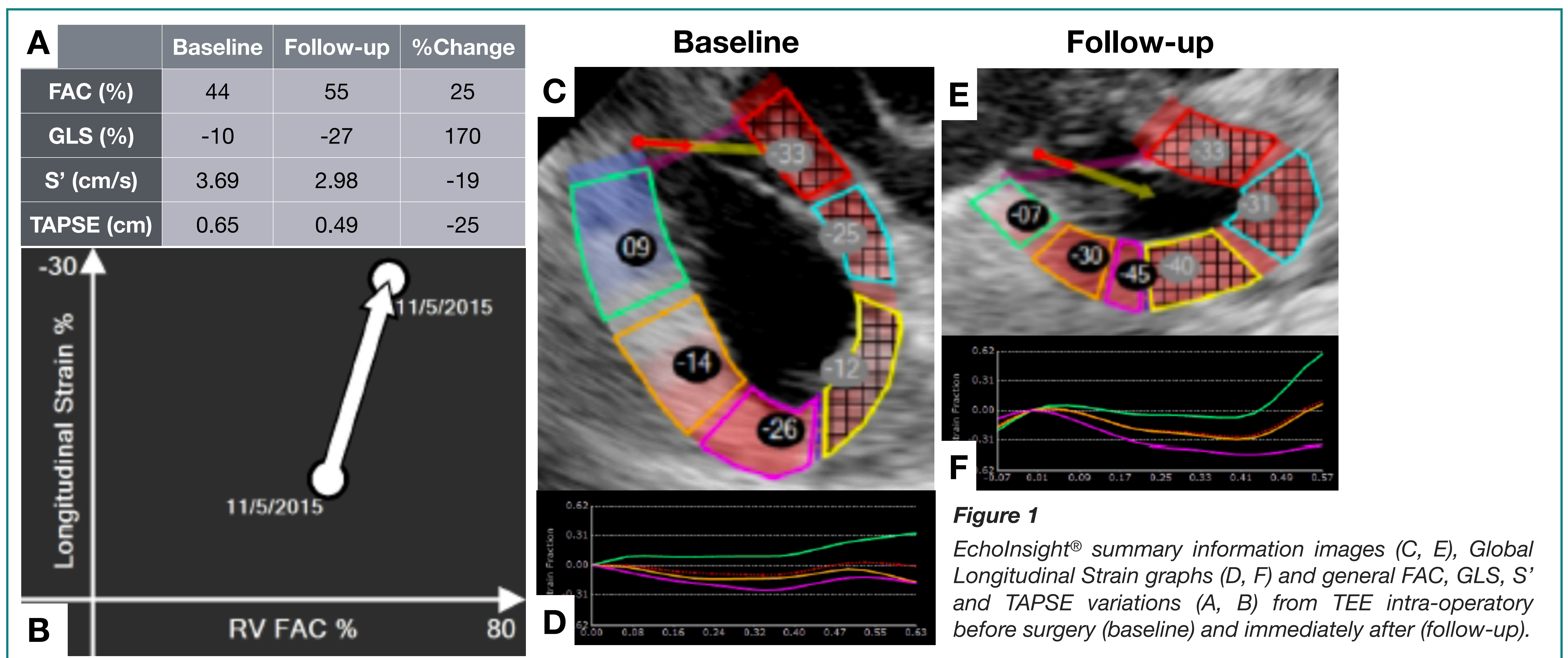
¹School of Medicine, University of Turin, Torino, Italy; ²Department of Anaesthesia, Toronto General Hospital, Toronto, ON, Canada; ³Division of Thoracic Surgery, Toronto General Hospital, Toronto, ON, Canada; ⁴Department of Anaesthesia and Interdepartmental Division of Critical Care, Toronto General Hospital, Toronto, ON, Canada,

Introduction

Most patients undergoing lung transplantation present to the operating room with some degree of RV dysfunction. Evidence suggests that improvement in RV function and remodelling do occur months after lung transplant. Little is known on intraoperative changes in RV function. RV strain by speckle tracking is a new echocardiographic parameter that allows precise determination of RV function and correlates with long-term outcomes in patients with pulmonary hypertension.

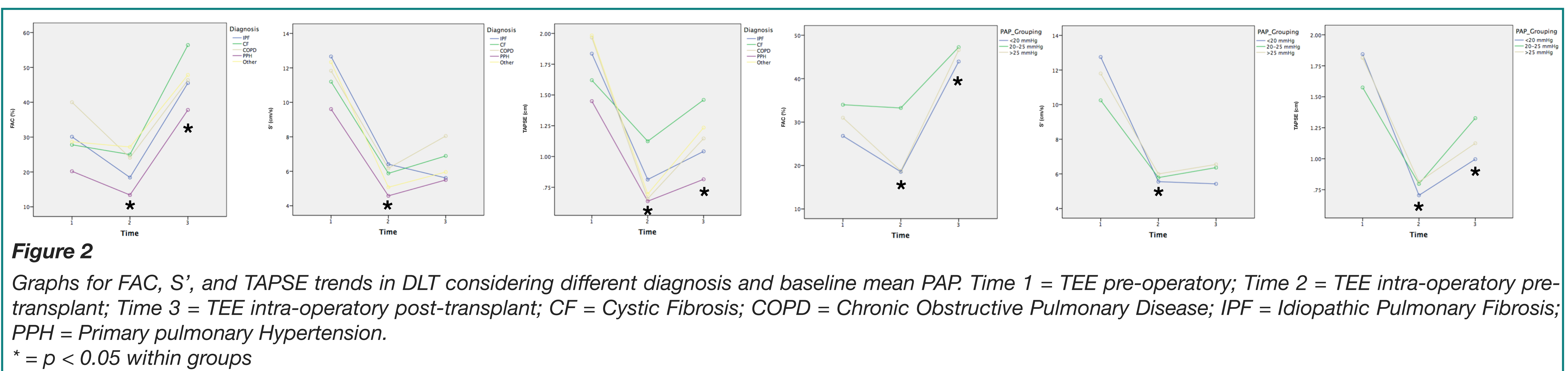
Methods

After Institutional Research Ethic Board Approval we reviewed patient who underwent single and double lung transplantation at Toronto General Hospital between July 2014 and August 2017 and had an intraoperative transesophageal echocardiography (TEE). Midesophageal RV images were analysed using EchoInsight® software to assess RV Global Longitudinal Strain (GLS), Fractional Area Change (FAC), Tricuspid Annular Plane Systolic Excursion (TAPSE) and S' at baseline and after lung transplant (Figure 1).



Results

156 double (DLT) and 28 single lung transplants (SLT) recipients were included. After DLT, we found a statistically significant improvement of all RV function parameters. After SLT a similar trend was observed with the exception of a worsening of S' and TAPSE measurements. In DLT, the improvement of all RV function parameters was irrespective of underlying lung pathology and baseline mean pulmonary artery pressure (PAP) (Figure 2).



Conclusion

RV GLS, FAC, S' and TAPSE demonstrated a statistically significant improvement in RV function immediately after lung transplant regardless of indication and pulmonary arterial pressure. A lack of improvement of some traditional parameters RV function was noticed for SLT recipients. Further analysis is needed to determine the impact of RV function on short and long term.