

**P37. Five Year Hemodynamic Performance Of ATS 3F Aortic Bioprosthesis Assessed By Valve Energy Loss And Pressure Gradient**

Xu Yu Jin; Xin Du; Chandi Ratnatunga; Ravi Pillai

*Oxford Heart Centre, John Radcliffe Hospital, Oxford, United Kingdom*

**OBJECTIVES:** Energy loss of aortic prosthesis was shown to provide a more accurate fluid dynamic assessment than pressure gradient or effective orifice area, as the former takes the pressure recovery into account while the later only reflects the vena contracta orifice area. The present study aimed to elucidate the medium term changes in aortic prosthesis energy loss after 3f cusp replacement (3f AVR) and compared this with pressure gradient.

**METHODS:** Seventy-six patients (72±7 yr, 46 males) receiving a 3f AVR were prospectively studied using echocardiography up to 5 years. Its mean systolic pressure gradient (PG), energy loss and LV mass were determined by Doppler echocardiography.

**RESULTS:** In un-operated aortic stenosis, there was 28% recovery of pressure gradient. After 3f AVR, the mean PG fell 81% and energy loss fell 86%; and the pressure gradient recovery increased from 28% to 60% (p<0.05); LV mass index regressed towards normal level for up to 5 years.

**CONCLUSIONS:** 3f AVR not only effectively reduced pre-operative PG and energy loss, but also doubled the proportion of pressure recovery after AVR. This resulted in continued very low energy loss and satisfactory LVH regression in the first 5 years of implantation.

Variable	Pre-AVR	1 Yr AVR	3 Yr AVR	5 Yr AVR	p value
Mean PG, mmHg	41.0±16.7	8.6±4.1	7.7±3.5	7.3±2.8	<0.01
Energy Loss, mmHg	32.1±14.3	5.1±3.3	4.6±2.4	4.6±2.3	<0.01
PG Recovery, %	28±9	59±15	61±14	60±13	<0.01
LVMI, g/m <sup>2</sup>	182±48	136±34	126±31	126±30	<0.01