Haemodynamics during exposure of the back wall of the heart during OPCAB surgery: x-pose® versus pericardial stitches

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Introduction: Stabilizing systems like the Xpose® (Guidant: Menlo Park, CA; USA) suction device promise to offer better haemodynamic conditions and less mitral valve regurgitation during exposure of the inferior and lateral walls of the heart in beating heart surgery. Haemodynamics in this setting can be impaired [1] and were investigated in this study comparing the Xpose® suction device (XS) vs. simple pericardial stitches (PS).
Method: Twenty seven patients were evaluated after informed consent. Haemodynamic parameters included: heart rate (HR), mean arterial blood pressure (MAP), central venous pressure (CVP) and cardiac index (CI). Baseline measurements were made in a head-down position before the heart was tilted for inferior vessel anastomosis (T0-inf.) or lateral vessel anastomosis (T0-lat.). Measurements were repeated after displacement of the heart: exposing the inferior wall (T1-inf.) in 18 times **(=patients?**) and in 21 times **(=patients?**) exposing the lateral wall (T1-lat.). Displacement of the heart was started using alternately XS or PS as the first technique. After completion of measurments the heart was returned to normal position so haemodynamics could recover to baseline values (T0). Then again the heart was displaced in the same position in the same patient for the second measurement using the alternative exposing technique. Transesophageal echocardiography was used to detect mitral valve regurgitation (MR).
Results: HR showed no significant changes at any time point of measurement. Exposure of the inferior and lateral wall (T1-inf. / T1-lat.) went along with a significant decrease of MAP without differences between XS and PS. CVP showed no significant changes at any time point or between XS and PS. CI decreased significantly during heart displacement (T1-values) without significant differences regarding the inferior or lateral wall or the exposing technique. There was no increase of MR during displacement of the heart except in 3 patients (1 in XS; 2 in PS). Data are expressed in the table as mean values and standard deviation (statistical analysis: Student's *t*-test including Bonferroni correction; significance value **P*<0.05).

	HR (bt/min)	**MAP (mmHg)**	**CVP (mmHg)**	**CI (l min^{-1}m^{-2})**
T0-inf/XS	68.2±15.6	87.6±12.4	10.3±4.4	2.79±0.4
T0-inf/PS	67.4±13.7	88.1±10.2	10.8±3.9	2.71±0.3
T1-inf/XS	69.6±14.5	69.2±12.1*	12.5±4.0	2.08±0.4*
T1-inf/PS	70.8±14.3	68.0±12.6*	13.4±4.9	1.94±0.4*
T0-lat/XS	67.4±14.2	93.4± 9.8	11.3±3.5	2.69±0.3
T0-lat/PS	68.1±12.8	92.1±11.4	10.9±4.1	2.74±0.3
T1-lat/XS	69.9±14.1	66.1±11.4*	15.1±4.1	1.93±0.5*
T1-lat/PS	70.8±15.6	67.7±11.7*	15.1±4.1	1.93±0.5*

Discussion: As haemodynamic parameters and degree of mitral valve regurgitation showed no significant differences, the use of Xpose® did not offer any additional benefit.
References:

1 Raumanns J, Diegeler A, Gummert J, et al. Haemodynamic changes in OPCAB procedures regarding different coronary artery anastomoses. *Eur J Anaesth* 2001; **18** (Suppl. 22): A55.