

SCA 101

LEFT VENTRICULAR FUNCTION IN PATIENTS UNDERGOING OFF PUMP CORONARY ARTERY BYPASS (OPCAB) USING THE TISSUE STABILIZER OCTOPUS R3: A COMPARATIVE STUDY USING THE DEEP PERICARDIAL SUTURES OR THE STARFISH HEART POSITIONER

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Abstract: This study was performed to compare the ventricular function of 52 patients undergoing off pump coronary artery bypass (OPCAB) with the **Octopus R₃** tissue stabilizer using **StarfishTM** (Group A) or deep pericardial retraction sutures (Group B) as the heart positioner. Anesthesia was performed with Oxygen, Midazolam, Fentanyl and Vecuronium. Monitoring included an arterial line, electrocardiography, pulse oximetry, pulmonary artery catheter and transesophageal echocardiography. Mean arterial pressure was maintained using a Neosynephrine drip during exposure of coronary arteries.

There were no significant hemodynamic changes when the **StarfishTM** was used to position the heart while performing the distal anastomosis. When using the deep pericardial sutures, there was a significant decrease in cardiac index, an increase in pulmonary artery pressure and pulmonary capillary wedge pressure (giant V waves). Tissue Doppler Imaging Velocity of the left ventricle (TDIV) and mitral annulus (TDIA) were significantly higher in Group A patients during and after surgery. The incidence of diastolic dysfunction as evaluated by Doppler mitral annular velocities (Ea, La, Sa) was significantly higher in Group B patients. Group A patients had also lower troponin and endothelin levels during and after surgery. Two (2) patients in Group A required Dobutamine administration during surgery, nineteen (19) patients in Group B required Dobutamine and Nitroglycerine administration up to ten (10) hours after surgery. The amount of Neosynephrine used during surgery was significantly higher in Group B than in Group A patients.

Conclusion: **StarfishTM** heart positioner is associated with less hemodynamic changes than deep pericardial sutures during off pump coronary artery bypass (OPCAB) surgery.

Reference:

(1) Buffolo E, de Andrade CS, Branco JN, Teles CA, Auiar LF, Gomes WJ. Coronary artery bypass grafting without cardiopulmonary bypass. *Ann Thorac Surg* 1996; 61:63-6

Table 1. Hemodynamic and Doppler Changes During OPCAB

		Baseline	After Distal Anastom.	5 mins. After Proximal Anastom.	60 mins. After Proximal Anastom.
CI L/min/m ²	A	1.95 .11	1.80 .1	2.10 .08 ^o	2.25 .09 ^o
	B	1.90 .10	1.24 .05 [*]	1.45 .04 [*]	1.82 .14
MPA mmHg	A	17.0 1.5	21 2 ^o	19 3	16 4
	B	16.0 2.0	39 3 ^o	23 2	22 3
TDIV cm/sec	A	2.80 .10	2.70 .15 ^o	3.90 .2 ^o	3.95 .15 ^o
	B	2.85 .12	1.10 .10 ^o	1.30 .15 ^o	1.60 .2 ^o
TDIA cm/sec	A	1.80 .12	1.73 .2 ^o	3.4 .3 ^o	3.60 .3 ^o
	B	1.95 .15	1.05 .05 ^o	0.9 .06 ^o	1.10 .08 ^o
Ea cm/sec	A	12.5 .02	11.8 .01 ^o	13.0 .01 ^o	14.0 .02 ^o
	B	13.0 .03	4.5 .02 [*]	6 .01 [*]	7.50 .02 ^{o*}
La cm/sec	A	11.5 .04	6.2 .01 ^o	7.50 .04 ^o	9.0 .01 ^{o*}
	B	11.0 .03	10.5 .02 ^o	12.0 .01 ^{o*}	12.5 .02 [*]
Sa cm/sec	A	10.5 .04	9.0 .02 ^o	14.5 .01 ^o	16.0 .02 ^o
	B	10.0 .05	2.5 .01 ^o	6 .06 ^o	84 .05 ^o
Trop. I ng/ml	A	0.1 .01	0.2 .02	0.3 .03	0.25 .02
	B	0.1 .02	12 .08 ^o	16 .19 ^o	15 .04 ^o
Endo. pg/ml	A	1.5 .01	1.6 .02	1.70 .03	1.65 .02
	B	1.4 .01	5 .03 ^o	12 .07 ^o	21 .1 ^o

Remarks:

CI- Cardiac Index

MPA- Mean Pulmonary pressure

TDIV- Tissue Doppler Imaging Velocity Left Ventricle

TDIA- Tissue Doppler Imaging Velocity Mitral Annulus

Ea- Early Diastolic PW Mitral Annular Velocity

La- Late Diastolic PW Mitral Annular Velocity

Sa- Systolic PW Mitral Annular Velocity

Trop. I - Troponin I

Endo. – Endothelin

A – Octopus + Apical stabilizer

B – Octopus + Traction

* Significance within group

o Significance between groups