

### Novel Stitching Technique for Aortic Valve Replacement

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#### Background:

"NextStitch" (Teleflex Medical) is a double-stranded suture chain of linked horizontal mattress sutures which was developed to decrease the number of needle holes around the annulus during aortic valve replacement (AVR), thereby decreasing the cross-clamping time. In addition, it has the potential benefit of reducing para-valvular leaks due to the chain nature of pledges as compared to separate pledges in the conventional technique. In this study we evaluated our short-term experience with the "NextStitch" novel technology.

#### Methods:

Fifteen patient who underwent AVR only or AVR and coronary bypass (combined procedure) using the "NextStitch" technique were compared to 43 similar patients who were operated using the traditional technique. The variables compared were: cross-clamp time, bypass time, mean and peak pressure postoperative aortic valve gradients, and complications.

#### Results:

The total cohort was divided into three groups according to type of operation performed (Table 1). No significant statistical differences were found between the two groups in terms of cross-clamp and bypass times. The postoperative peak pressure gradient for the "NextStitch" group was  $30.63 \pm 8.29$ , compared with  $34.09 \pm 12.02$  for the traditional method ( $P=0.92$ ). The mean peak pressure gradient for the "NextStitch" group was  $16.5 \pm 5.8$ , compared with  $21 \pm 8.6$  for the traditional method ( $P=0.337$ ). The postoperative echocardiography images revealed no para-valvular leaks in either group.

#### Conclusions:

The "NextStitch" suturing technique was found to be safe and feasible. No reduction in cross-clamp time or in bypass time was documented (most probably due to the considerable learning curve required for this new suturing technique). The postoperative echocardiographic results were similar in terms of peak and mean pressure gradients. The potential advantages of using fewer needles, a shorter cross-clamp time and better sealing remain to be proved in the future.

	AVR			AVR + CABG x 1			AVR + CABG x 2		
	"NextStitch"	Traditional	P	"NextStitch"	Traditional	P	"NextStitch"	Traditional	P
No. of patients	4	15		6	13		5	15	
CC time	$86 \pm 3.6$	$91 \pm 19.2$	0.638	$94 \pm 10.5$	$101 \pm 7.1$	0.295	$126 \pm 18.2$	$122 \pm 22.1$	0.792
Bypass time	$108 \pm 5.3$	$113 \pm 27$	0.702	$117 \pm 10.6$	$124 \pm 11$	0.635	$167 \pm 15.5$	$169 \pm 28.2$	0.931