Minimally invasive aortic valve replacement (AVR) compared to standard AVR

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Objectives:
Minimally invasive cardiac surgery has been developed to offer patients the benefits of open heart operations with decreased pain and limited skin incision. A limited superior median sternotomy has been shown to provide a good exposure for aortic valve replacement (AVR) and good results. In this study we report the results of minimally invasive AVR compared to standard sternotomy AVR performed in the same period.

Methods:
From May 1996 to January 1998, 86 patients received isolated aortic valve replacement by the limited superior median sternotomy (group 1) As a control group (group 2), 78 patients were enrolled who underwent isolated aortic valve replacements by standard sternotomy in the same period.

Results:
Median ischemic time and median bypass time between the two groups showed no significant difference (p<0.05). Median entire operation time in group 1 was obviously shorter than that in group 2 (p<0.01). Median postoperative drainage was 229 ml in group 1, 369 ml in group 2. The difference between the two groups (p<0.05) was significant. Median postoperative respiritory support time was 7.43 h in group 1, 11.26 h in group 2, with a significant difference (p<0.05). Median duration of hospital stay was 6.2 d in group 1, 9.4 d in group 2, with a significant difference (p<0.01). Reoperation for bleeding were two in group 1, four in group 2, superficial wound infection and sternum disruption occurred once in group 1 and four times in group 2. There were two hospital deaths respectively in two groups (not procedure related).

Conclusions:
The limited superior median sternotomy provides good exposure to the left ventricular outflow tract, aortic valve, ascending aorta, and even to the mitral valve through the roof of the left atrium. Therefore it seems to be suitable for all kinds of aortic valve operations. Besides less pain, shorter skin incision, shorter respiratory support time and lower blood loss, it has more advantages as opening and closure of the sternum is faster; decreasing infection and disruption of the sternum, and finally decreasing the time required for hospitalization and recovery.

Keywords: Minimally invasive surgery; Valve replacement; Partial sternotomy

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