SUMMARY

INTRODUCTION. In the last two decades, the vlave-conserving surgery of regurgitant heart valves has been evolving. The aortic valve-sparing operations have been developing rather over the last decade, despite the clear benefit of mitral valve repair has been shown. There is an indisputable advantage of valve-sparing operations attributed to the elimination of certain risks related to aortic valve replacement. Conversely, aortic valve repair is technically more demanding and there is a substantial risk of repair failure.

AIM: The aim of this study is to analyze and assess short- and mid-term results of aortic valve-sparing operations in patients with aortic regurgitation, to examine the impact of aortic valve cuspidity (bicuspid or tricuspid) and different type of aortic repair (without and with root replacement) on the short- and mid-term results with regards to survival, reoperation and recurrence of aortic regurgitation (AR). Another aim is to assess the effectiveness and pulsatility of the external aortic ring annuloplasty in the patients´ subgroup using cardiac-CT.

METHODS. One hundred patients with aortic regurgitation (24 females; median age 52 years; range 23–77 years) underwent aortic valve-sparing operation between November 2007 and October 2012. Sixty patients had bicuspid aortic valve and 82 patients demonstrated with AR > 2. All patients were followed in outpatient clinic with clinical assessment and transthoracic echocardiography (TTE). Follow-up ranged from 1 to 59 months (cumulative of 220 patient-years; median 25 months) and was complete in 100%.

The probability of freedom from event was calculated according to the Kaplan-Meier method. Freedom-from-event curves were compared by log-rank test.

RESULTS. In 33 patients (27/60 with bicuspid and 6/40 with tricuspid valve) isolated aortic valve repair was performed and replacement of aortic root/ascending aorta was performed in 67 patients (33/60 with bicuspid and 34/40 with tricuspid). Aortic valve-sparing root replacement was performed in 41 patients (15/60 with bicuspid and 26/40 with tricuspid valve). Additional aortic annulus stabilization (annuloplasty) was required in 48 cases (31/60 with bicuspid and 17/40 with tricuspid valve). Aortic cusp repair was necessary in 74 patients (53/60 with bicuspid and 21/40 with tricuspid valve).

There was no 30-day mortality and 2 patients died during the follow-up (overall 4-year survival was 98% and freedom from cardiac death at 4 years was 99%). During the follow-up 8 patients underwent aortic valve-related reoperation due to progression of aortic regurgitation and another 6 patients showed AR > 2. In both aspects there was no statistically significant difference between patients with bicuspid or tricuspid valve ($p = 0.456$ and $p = 0.866$) and between patients without and with aortic root replacement ($p = 0.402$ and $p = 0.650$). There wase no significant bleeding, thromboembolic event or endocarditis during the follow-up.

CONCLUSIONS. Short- and mid-term data analysis in patients undergoing aortic valve-sparing operations did not reveal significant differences compared to data published in literature. Concerning the valve cuspidity and the type of valve repair no significant differences in short- and mid-term results were found, especially with regards to survival, aortic valve-related reoperation and recurrent AR. The effectiveness of external ring annuloplasty was confirmed by reduction in all postoperatively measured parameters, however the pulsatility was not proved.

Aortic valve-sparing operations are safe and reproducible surgical procedures presenting with acceptable short- and mid-term result.