Predictors of neoaortic insufficiency after Ross procedure

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Objective: To examine predictors of neoaortic insufficiency (neoAI) after Ross operations.

Material and Methods: Ross procedure was performed in 215 consecutive patients from 1996 to 2016. The mean age at the time of operation was 145±101 months (from 1 to 648 months). 159 patients were male - 159 (74%) and 56 (26%) - female. Patients age was less than 5 years in 48 (22.3%), 6 - 10 years in 39 (18.2%) - , 11 - 17 years in 66 (30.7%) - and more than 18 years in 62(28.8%). Aortic stenosis was found in 113 (52.5%) patients, aortic insufficiency in 73 (33%) and complex lesion in 29(14.5%) patients. Overall mortality was 9%, 14 (6.5%) patients died in early postoperative period, 5 (2.3%) – during follow-up. Follow-up was 96% complete i.e. in 188 patients. Regression and correlation analysis were used to assess the results.

Results: 11 (5.8%) patients required neoAV reoperation (in 4 cases – repair of AV and in 7 cases - AVR). Indications for reoperation were severe neoAV insufficiency and AscAo dilatation, n=10 (5.1%), reSubAo stenosis n=1 (0.5%). The mean period before neoAV reoperation was 154,3±35 mon (from 27 to 212 mon). Freedom from neoAV reoperation was 98,9%, 95,4%, 93,7% after 10, 15 and 20 years respectively.

Independent predictors of neoAI more than mild were older age of patients at the time of surgery ($r = 0.277, p = 0.003$), acquired AV lesion (rheumatism ($r = 0.252, p = 0.001$) and infective endocarditis ($r = 0.314, p = 0.006$), LV dilatation before surgery ($r = 0.477, p = 0.001$). Surgical technique modification - neoaortic root reinforcement ($r = -0.287, p = 0.002$), congenital nature of aortic valve lesion ($r = -0.405, p =0.001$), bicuspid aortic valve ($r = -0.351, p= 0.001$) had a positive effect on the long-term outcome.

Conclusions: RP has low risk of autograft reoperation (5.8%). Independent predictors of neoAI after RP were: older age of patients at the time of surgery, cause of AV lesion (rheumatism, infective endocarditis), LV dilatation before surgery.