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Preoperative atrial fibrillation in patients undergoing cardiac surgery: Gender versus other factors. Authors’ reply

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We truly appreciate the comment on our recent publication investigating sex differences in long-term survival following cardiac surgery in patients with pre-operative atrial fibrillation (AF) [1] by Drs Engin and Yavuz [2].

Agreeably, the duration of pre-operative AF and type of performed cardiac surgery might affect prognosis. Indeed, however, one of the previously listed limitations of KROK Registry is lack of data on exact type of AF and detailed information on the conversion to sinus rhythm during follow-up [3].
Worth noting are numerically higher rates of surgical ablation (SA) in women (15.2% vs. 13.3%; \(P = 0.056\)) in our cohort and the fact that evidence regarding sex-related differences in patients undergoing SA is limited. Shah et al. [4] found that women undergoing surgical correction of AF are older and more frequently suffer from heart failure, however there are no differences in survival after adjustments. According to the previous research investigating disparities between men and women undergoing catheter ablation, the findings support the notion that women undergoing ablation are older, are more likely to have paroxysmal AF and are at the higher risk of peri-procedural complications and recurrence of arrhythmia with no differences in all-cause mortality [5, 6].

In order to investigate this topic thoroughly in the registry, we have now conducted further analyses focusing on patients undergoing SA (\(n = 696; 41\%\) undergoing concomitant coronary artery bypass grafting). Visual inspection shows worse prognosis in women, which is limited only to the first year after the procedure with curves crossover and no significant differences in survival during the overall follow-up time (log-rank \(P = 0.1\)). In Cox proportional hazard regression, there were no significant differences during: 90-day follow up (hazard ratio [HR] 1.48; 95% confidence interval [CI], 0.78–2.8; \(P = 0.23\)), 1 year (HR 0.92; 95% CI, 0.58–1.48; \(P = 0.74\)), 2 year (HR 0.81; 95% CI, 0.53–1.26; \(P = 0.36\)). Our results indicate that SA might influence differences between men and women in long-term survival. However, due to the relatively small analyzed group, the findings should be considered only hypothesis-generating and guide further research so it includes subgroup investigations, especially based on the pre-operative AF type and post-procedural conversion to sinus rhythm.

Potential sources of disparities in survival between men and women is most certainly multifactorial. Firstly, men had significantly higher rates of most major co-morbidities and more frequently were referred for urgent procedures. The higher rates of urgent surgeries might have influenced lower rates of both SA and left atrial appendage occlusion in men as these procedures often require prolongation of cardio-pulmonary bypass time. Of note, we have noticed a remarkable increase in the rates of left atrial appendage occlusion reported in KROK registry during the observation, reaching 22.9% in the last included year. In our study women had higher rates of post-operative complications, which was also reported before and may be related to the anatomical and hormonal differences and subsequently result in impaired short-term survival. Women may also benefit from better healthcare professionals’ advice compliance, adaptation to
long-term lifestyle modifications and disease control strategies such as rehabilitation, mitigation of risk factors and secondary prevention, which may be reflected in curves crossover 2 years after the index procedure. Finally, the impact of exposome should not be underappreciated as it was shown that influence of environmental factors differs between men and women [7].

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