

Effectiveness of MIDCAB vs OPCAB in LAD revascularization procedures in octogenarians: results from KROK Registry

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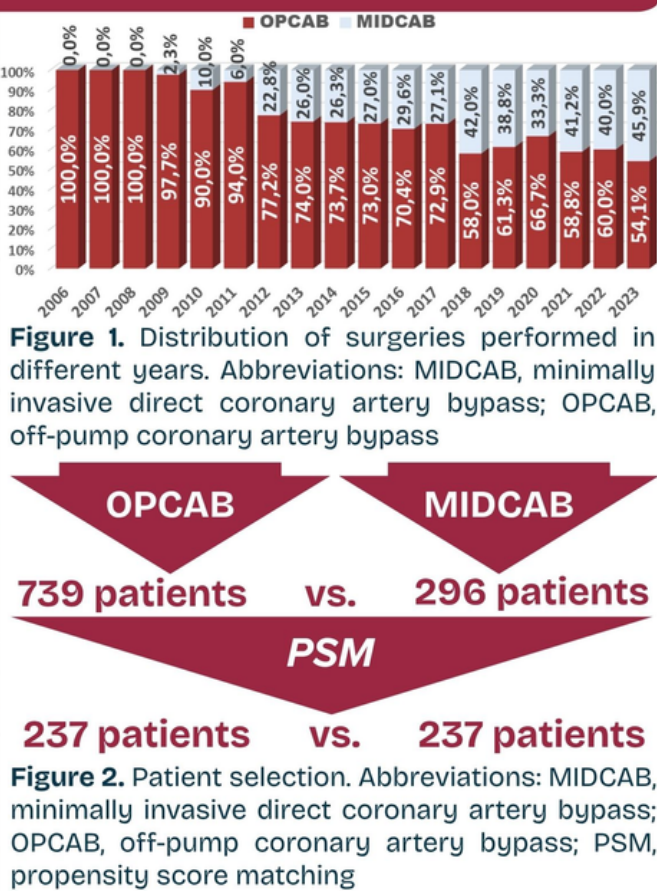
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Introduction & Objectives

Despite a clear preference for transcatheter procedures over surgical ones in **80-year-olds** minimally invasive approaches for coronary artery bypass grafting offer a **valuable alternative** to conventional median sternotomy and on- or off-pump surgery. The clinical relevance of **off-pump** procedures continues to grow in the context of an aging population. However, comparative data between **minimally invasive direct coronary artery bypass (MIDCAB)** and **off-pump coronary artery bypass (OPCAB)** via sternotomy in **octogenarians** remain **limited**. **This study aimed to retrospective compare the outcomes of MIDCAB and OPCAB in patients aged >80 years** with 1 vessel disease, using data from the **Polish National Registry of Cardiac Surgery Procedures (KROK)** [1].

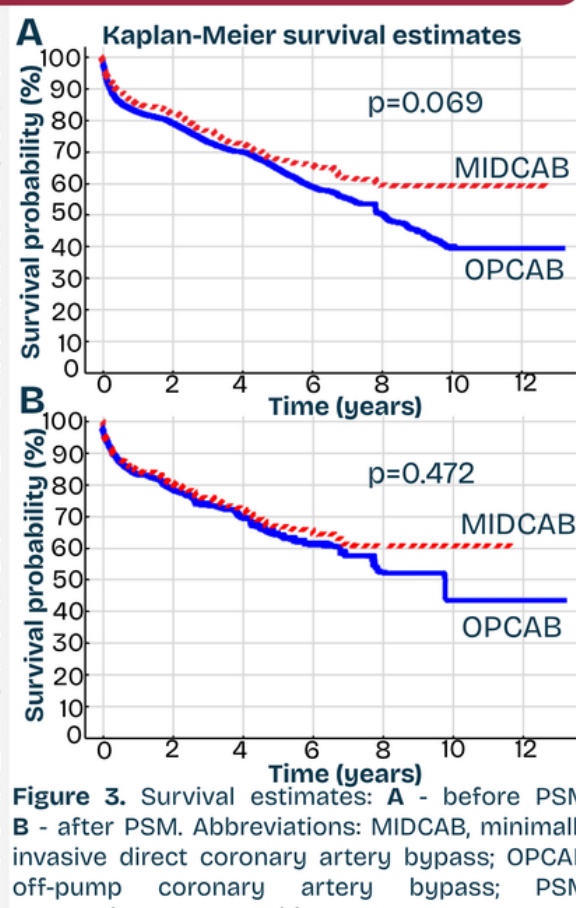
Materials & Methods:

In this retrospective study, 1035 consecutive patients undergoing left anterior descending artery revascularization with the left internal thoracic artery between **2006 and 2023** were analyzed (Fig. 1). All patients were registered in the KROK registry [1]. Perioperative data were **prospectively collected, electronically archived, and catalogued** in the nationwide electronic database. Patients with coronary artery disease were qualified for surgery based on the **decision of the Heart Team**. The **choice** between a minimally invasive approach and median sternotomy was based on an **individualized assessment of the patient's characteristics** and the **surgeons' experience**. The study was based on retrospective data collected from the **KROK - a nationwide registry of all cardiac surgery procedures in Poland** [1]. The distribution of continuous variables was assessed using the **Shapiro–Wilk test**. Depending on the normality of the distribution, comparisons between groups were performed using either the **Student's t-test (for normally distributed data)** or the **Mann–Whitney U test (for non-normally distributed data)**. Categorical variables were compared using the **χ² test with Yates' correction** for continuity. Continuous variables were presented as medians with interquartile ranges. To minimize baseline differences between groups and reduce confounding bias, **propensity score matching (PSM)** was applied (Fig. 2).



Results

Between January 2006 and December 2023, **1035 patients** underwent a single-vessel off-pump coronary artery bypass surgery of the **left anterior descending artery** with the **left internal thoracic artery**. MIDCAB was performed in **296 (28.6%)** patients, while **739 (71.4%)** cases were performed via OPCAB. Over the recent years the number of MIDCAB procedures performed in this patient cohort steadily grew. In all cohort, 365 (35.3%) patients were female, median age was **82 (81–83) years** in the MIDCAB group and **82 (81–84) years** in the OPCAB group. The **operative time was shorter** in patients undergoing OPCAB; however, this procedure was associated with a **higher incidence of respiratory complications** (including mechanical ventilation lasting more than 24 hours, and/or patients who developed pneumonia), **dialysis**, and a **longer duration of mechanical ventilation**. After PSM, **no significant** differences were observed in the incidence of any complications between the groups; however, a **significantly longer hospital stay was noted in OPCAB** group (median and interquartile ranges: 10 (8-13) days vs. 8 (7-13) days, p=0.004). The 30-day mortality rate among patients undergoing MIDCAB and OPDCAB surgery after PSM use was 6.7% and 5.6%, respectively (P = 0.759). The 5-year survival rate for these techniques was 29.3% and 40.2%, and the 10-year survival rate was 1.7% and 6.2%. **No significant differences in survival** were observed between the study groups at any postoperative time point (Fig. 3A). After PSM, **no significant differences** between the groups were observed in survival at any postoperative time point (Fig. 3B).



Conclusion

Patients over 80 years of age constitute an important target group for coronary surgery, reflecting increased life expectancy. At the same time, patient selection and evaluation of surgical efficacy **should consider** somewhat different parameters than those applied to younger individuals. Procedures performed **without the use of extracorporeal circulation** represent a favourable option for this patient population. While MIDCAB surgery is associated **with a longer operative time** compared with OPCAB, it simultaneously **may reduce the risk of respiratory complications**. This topic warrants further investigation in the cohort of the oldest patients.

Bibliography:
1. www.krok.csioz.gov.pl (accessed: October 9, 2025)