

Outcomes Of Single Vessel And Multiple Vessel Disease In Robotic Assisted Minimally Invasive Direct Coronary Artery Bypass

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Background

- Robotic-assisted coronary artery bypass surgeries have been mainly performed for single-vessel disease
- Robotic-assisted multiple vessel bypass operations have not been popular due to technical challenges resulting in scant literature on the subject
- We present our results of Robotically assisted Single Vessel and Multi Vessel grafting

Methods

- Retrospective analysis using Lumedx data registry and electronic health records
- All patients from January 2012 to March 2022 that underwent robotic-assisted harvest of internal mammary artery/s and minimally invasive direct coronary artery bypass (MIDCAB)
- 23 patients were excluded due to hemodynamic instability
- Patients grouped into single vessel disease (n=505) and multivessel disease (n=109) groups
- No significant differences between the two groups were found in patient gender, preoperative renal disease, BMI, left ventricular ejection fraction, diabetes status, or congestive heart failure

Characteristic	Single Vessel (n=505)	Multi Vessel (n=109)	p-value
Age (Years) Mean (SD)	66.33 (12.02)	69.90 (9.20)	<0.001
Gender (Male) (%)	363 (71.88)	82 (75.23)	0.478
Cerebrovascular Disease (%)	123 (24.36)	38 (34.86)	0.024
Extubated (<6hrs) (%)	148 (129.31)	79 (72.48)	<0.001
Post op AFib	83 (16.44)	29 (26.61)	0.013
Reop Bleeding	4 (0.79)	2 (1.83)	0.316
Length of Stay (Days) Mean (SD)	7.58 (5.32)	8.60 (4.77)	0.65
Post Op AKI	3 (0.59)	0 (0)	0.42
30 day Mortality – Alive (%)	500 (99.01)	109 (100)	0.297

- Continuous measures are reported as mean with standard deviation (SD)
- Categorical variables are reported as counts and percentages
- Data were compared between two groups using a chi-squared test and a t-test
- All analyses done using Jamovi (version 2.3)

Results

- Single-vessel group (n=505) received an average of 1.25 grafts
- Multi-vessel group averaged 2.47 grafts
- The single-vessel group had more patients with planned PCI (HYBRID) and later extubation times
- Multi-vessel group had older patients, more cerebral vascular disease, and more postoperative atrial fibrillation compared to the single-vessel group
- No significant difference was found in the postoperative length of stay or 30-day mortality

Conclusion

- Robotic-assisted multi-vessel MIDCAB can be performed safely with comparable results to single vessel bypass in an experienced center.
- We present one of the largest series of such cases in published literature with good outcomes.
- With complex comorbidities, an aging population, and the demands for a quick recovery Robotic assisted multiple vessel MIDCAB may be a valuable tool.