Minimal Extracorporeal Circulation – Another Perspective On Minimally Invasive Coronary Bypass Surgery : A Comparative Study

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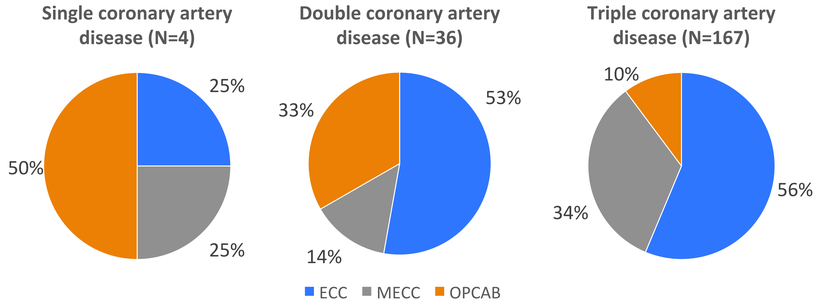
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METHODS

- Type : retrospective study, Geneva University Hospital (HUG), comparison between ECC, MECC and OPCAB
- Surgery : isolated CABG between 1st May 2013 and 31st May 2018 (MECC used in HUG since May 2016)
- Exclusion criteria : previous cardiac surgery, combined surgery, emergency surgeries and recorded non-consent of the patient to participate in research
- Final sample size : 213 patients

DEMOGRAPHICS

	ECC (N=118)	MECC (N=62)	OPCAB (N=33)	P-value
Sex, %				0.346
Male	87.3	91.9	81.8	
Female	12.7	8.1	18.2	
Age, mean	64.15	62.71	65.03	0.453
BMI, mean	27.57	27.35	28.42	0.522
Risk factors	Obesity, Hypertension, Dyslipidemia, Diabetes, Smoker			> 0.05
Personal history	Nothing, MI, Stent, Stroke, Cardiac arrest			> 0.05



No significant differences for demographic and pre-operative data between the three perfusion groups.

STATISTICAL ANALYSIS

- Software : IBM SPSS Statistics 25.0 (IBM Corp. 2017)
- Statistical significance : p-value ≤ 0.05
- Numerical variables :
  - If the distribution was normal (before or after a log transformation) : ANOVA with a Bonferroni post-hoc correction test
  - If the variable was non-parametric : Kruskal-Wallis test with a Dunn-Bonferroni post-hoc correction test
- Categorical variables :
  - Chi-squared test to verify the presence of a significant difference between the 3 sub-categories
  - Fisher's Exact test to determine where the significance laid

RESULTS

ECC *(conventional extracorporeal circulation)* :

- Increased peri-operative transfusions VS MECC and OPCAB
- Increased post-operative creatinine production, higher inotropic score at 6 hours and more total drainage VS MECC

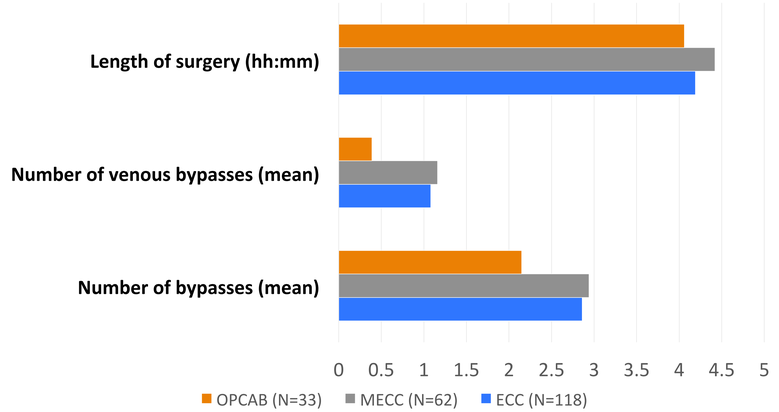
MECC *(minimal extracorporeal circulation)* :

- Longer surgical time VS ECC and OPCAB

OPCAB *(off-pump coronary artery bypass)* :

- Fewer overall bypasses, fewer venous bypasses and decreased post-operative lactate production VS ECC and MECC

Peri-operative outcomes



	ECC (N=118)	MECC (N=62)	OPCAB (N=33)	P-value
Peri-operative transfusion (n)	61	15	6	<0.001
Lactate index (log), mean	0.059	0.064	-0.055	0.01
Creatinine index (log), mean	-0.024	-0.074	-0.036	0.002
Inotropic score 6 hours, mean	604.32	241.92	409.6	0.009
Total drainage ICU (log), mean	3.045	2.865	2.894	0.001

No significant differences for post-operative complications.

CONCLUSION

OPCAB and ECC remain well-practiced and developed techniques that still have their place in the world of CABG. MECC combines advantages of both ECC and OPCAB, proving to be a safe and reliable alternative to both techniques. The increased practice of this technique may mitigate and even cancel the difference in length of surgery.

For more details or a list of references, please contact archana66gk@gmail.com