Percutaneous Coronary Intervention vs Coronary artery bypass graft in female patients with unprotected Left main disease: A Meta-Analysis

Introduction:

Percutaneous coronary intervention (PCI) has become a mainstay of treatment in patients with unprotected left main disease (ULMD) with low-intermediate SYNTAX score (0 to 32) and increased surgical risk. However, evidence supporting these recommendations is derived from RCT's with an underrepresentation of females. Hence, we performed a meta-analysis, comparing PCI and CABG in females with ULMD.

Methods:

PubMed, Embase and Cochrane databases were searched for all studies comparing PCI vs CABG in female patients with ULMD. The primary outcome was long term all-cause mortality. Secondary outcomes include myocardial infarction (MI), major adverse cardiac and cerebrovascular event (MACCE) and ischemia driven (ID) revascularization. Pooled odds ratios (OR) with their corresponding 95% confidence intervals (CIs) were calculated using the Mantel-Haenszel random-effects model.

Results:

4 studies met the inclusion criteria, with a total of 2344 patients (PCI group 1408, CABG group 936) and mean follow-up of 45 months. There was no significant difference in all-cause mortality between PCI and CABG group (OR 1.10 [0.56-2.14]; p=0.78). Although there was higher incidence of MACCE in PCI group, the difference was not statistically significant (OR 1.61 [1.00-2.59]; p=0.05). MI and ID revascularization rates were significantly higher in the PCI group than in CABG group. (OR 2.20 [1.30-3.73]; p=0.003) (OR 2.66 [1.60-4.44]; p=0.0002) [Figure 1]

Conclusion:

Although no significant difference all-cause mortality, females undergoing PCI for ULMD have significantly higher long-term MI and ID revascularization rates as compared to CABG. Thus, further evidence is warranted to further stratify revascularization strategies in females.

Figure 1: Forest plots of primary and secondary outcome

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	PCI CABG		Odds Ratio			Odds Ratio			
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	Year		M-H, Random, 95% CI
Buchanan et al	69	489	23	328	28.1%	2.18 [1.33, 3.57]	2014		
Serruys et al	24	226	26	215	26.4%	0.86 [0.48, 1.56]	2018		-
Park et al	47	593	38	308	28.9%	0.61 [0.39, 0.96]	2019		
Hironori et al	8	100	5	85	16.6%	1.39 [0.44, 4.42]	2020		
Total (95% CI)		1408		936	100.0%	1.10 [0.56, 2.14]			+
Total events	148		92						
Heterogeneity: Tau ² = 0.35; Chi ² = 14.58, df = 3 (P = 0.002); i ² = 79%						79%		0.005	01 1 10 200
Test for overall effect: Z = 0.27 (P = 0.78)								0.005	Favours [PCI] Favours [CABG]

(A) All-cause mortality

(B) Major Adverse Cardiac Events (MACCE)

PCI		CAB	G	Odds Ratio			Odds Ratio				
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	Year	M-H,	Random, 95%	CI	
Buchanan et al	149	489	51	328	38.2%	2.38 [1.67, 3.40]	2014				
Park et al	115	593	50	308	37.7%	1.24 [0.86, 1.79]	2019		-		
Hironori et al	26	100	18	85	24.1%	1.31 [0.66, 2.60]	2020		-		
Total (95% CI)		1182		721	100.0%	1.61 [1.00, 2.59]			•		
Total events	290		119								
Heterogeneity: Tau ² =	i ² = 6.8	5, df = 2 (0.02 0.1	-	10	50				
Test for overall effect:	Z=1.98	(P = 0.0)	15)					Favours	PCI Favours	[CABG]	~~

(C) Myocardial Infarction (MI)

	PCI		CABG		Odds Ratio			Odds Ratio			
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	Year	M-H, Random, 95% CI			
Buchanan et al	21	489	5	328	28.8%	2.90 [1.08, 7.77]	2014				
Serruys et al	26	226	14	215	60.7%	1.87 [0.95, 3.68]	2018				
Hironori et al	6	100	2	85	10.6%	2.65 [0.52, 13.48]	2020				
Total (95% CI)		815		628	100.0%	2.20 [1.30, 3.73]		◆			
Total events	53		21								
Heterogeneity: Tau ² = 0.00; Chi ² = 0.58, df = 2 (P = 0.75); I ² = 0%						6		0.01 0.1 1 10 100			
Test for overall effect:	Z= 2.92	(P = 0.0	103)					Favours [PCI] Favours [CABG]			

(D) Ischemic driven revascularization

	PCI		CABG		Odds Ratio				Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	Year		M-H, Random, 95% CI
Buchanan et al	74	489	17	328	36.2%	3.26 [1.89, 5.64]	2014		
Serruys et al	30	226	19	215	33.0%	1.58 [0.86, 2.90]	2018		+
Park et al	71	593	11	308	30.9%	3.67 [1.92, 7.04]	2019		
Total (95% CI)		1308		851	100.0%	2.66 [1.60, 4.44]			+
Total events	175		47						
Heterogeneity: Tau [*] = Test for overall effect:	P = 4.3	5, df = 2 ()002)	P = 0.1	1); l² = 54	%		0.01	0.1 1 10 100 Favours [PCI] Favours [CABG]	