

주최·주관 대한심장혈관흉부외과학회

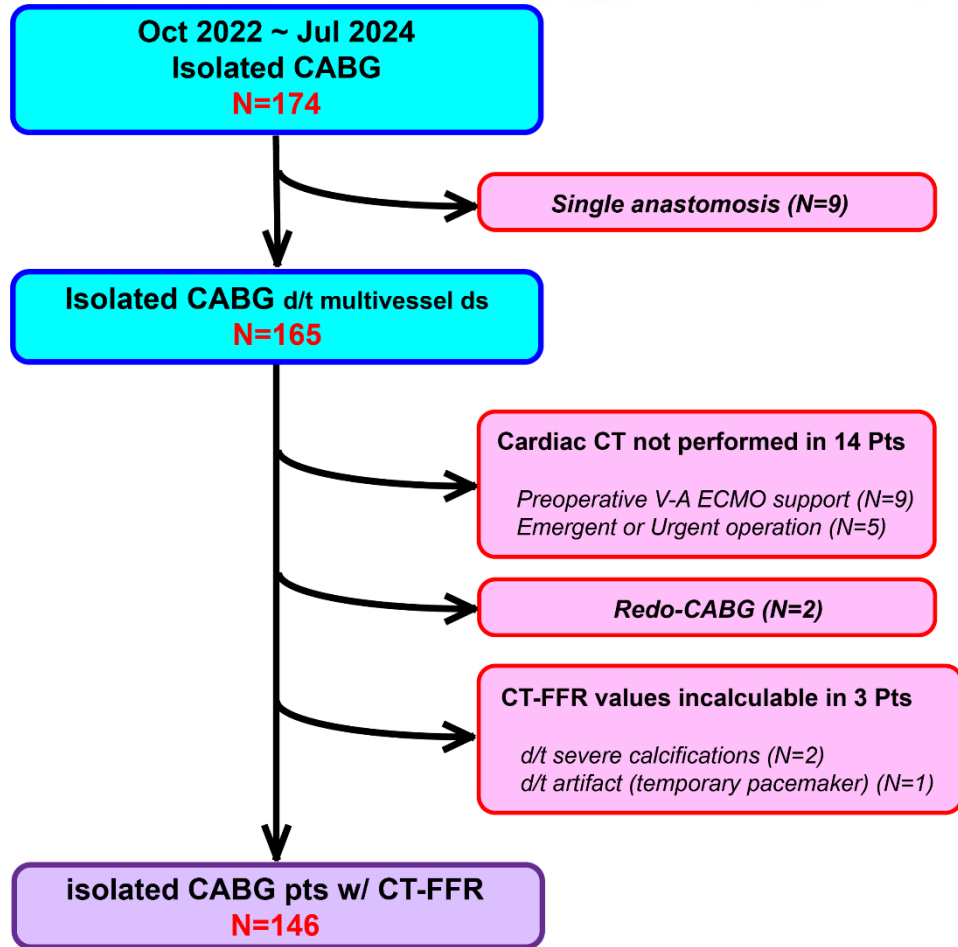
2024 대한심장혈관흉부외과학회 제56차 추계학술대회

2024. 10. 31 (Thu) - 11. 01 (Fri) 여수 엑스포 컨벤션센터



Usefulness of Computed Tomography-Derived Fractional Flow Reserve for Predicting Patency of Coronary Artery Bypass Grafts; Comparison with Transit-Time Flow Measurement

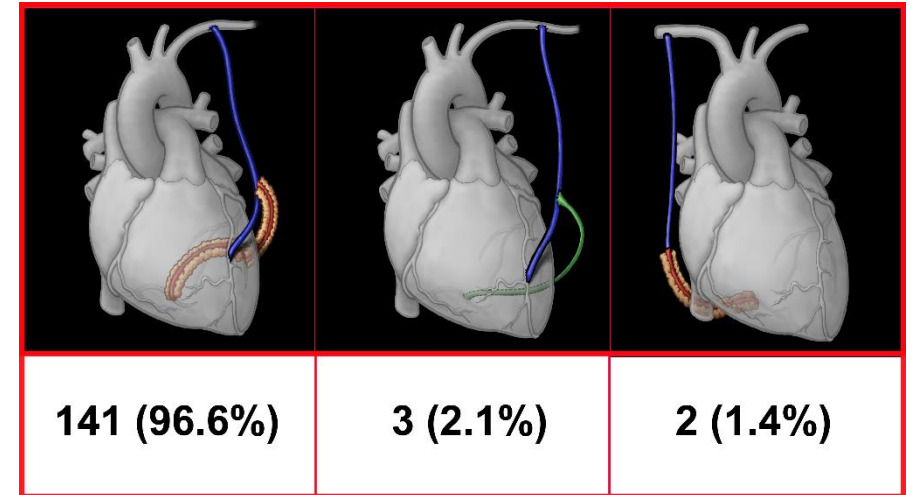
- Transit time flow measurement (TTFM)
 - Quality control in coronary artery bypass grafting (CABG)
 - Mean graft flow (MGF), pulsatility index (PI), diastolic filling (DF)
 - Intraoperative graft assessment;
- Computed tomography-derived fractional flow reserve (CT-FFR)
 - Non-invasive measurement of FFR
 - Good correlation with the invasive FFR
 - Provide FFR values of entire coronary tree
 - Predicting competitive flow after CABG
- Aims of the study
 - To compare the preoperative cardiac tomography-derived fractional flow reserve (CT-FFR) values with the intraoperative transit-time flow measurement (TTFM) values for predicting the early graft patency after coronary artery bypass grafting (CABG).



- Preop CT evaluations
 - 3rd generation dual-source CT scanner (SOMATOM FORCE, Siemens Healthineers, Forchheim, Germany)
 - Thoracoabdominal + cardiac CT angiographies
 - CT studies simultaneously performed w/o additional contrast material
- Postop angiographies
 - 146 of 146 pts (100%) on POD #1 [1,2]
 - Native coronary and graft angiographies
- CT-FFR values
 - HeartMedi+ (AIMedic Inc, Seoul, Republic of Korea)
 - Extracts 3-D model of coronary arteries using CT images
 - FFR calculation via computational fluid dynamics
- Intraop TTFM
 - Medi-Stim, AS, Oslo, Norway
 - Mean graft flow, pulsatility index, diastolic filling %
- Postop angiographic findings were compared with preop CT-FFR & intraoperative TTFM values of each anastomosis

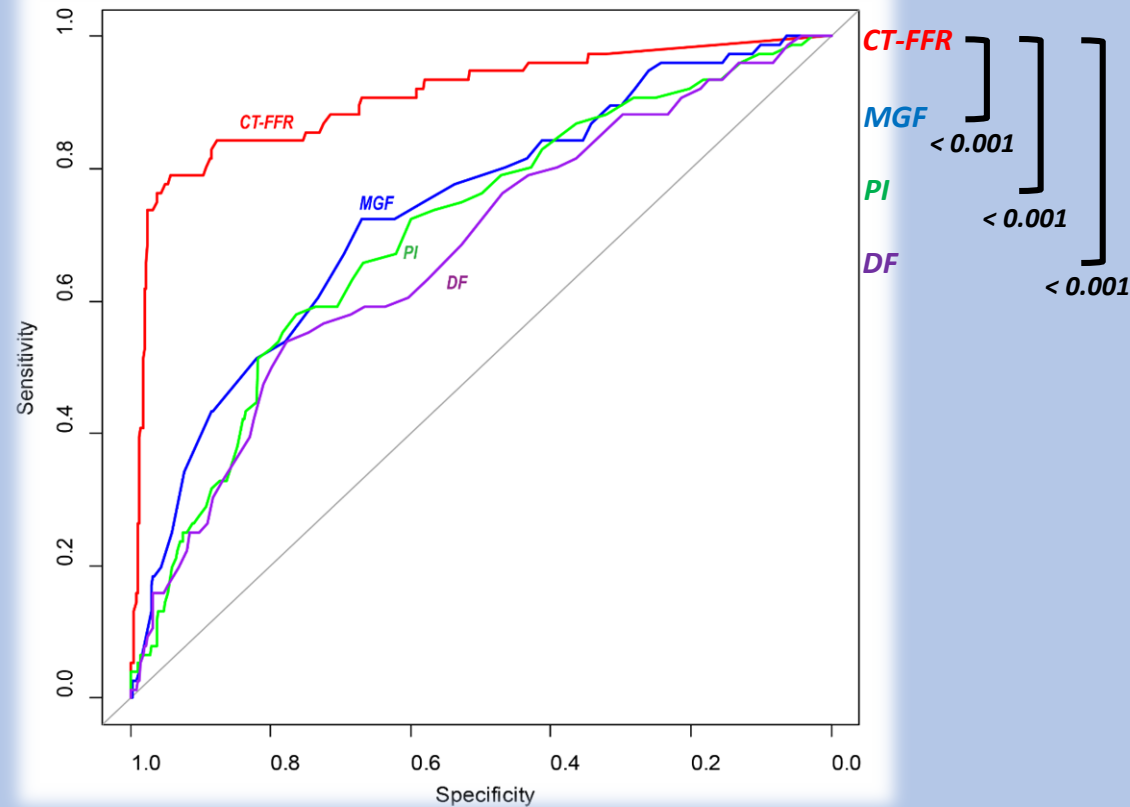
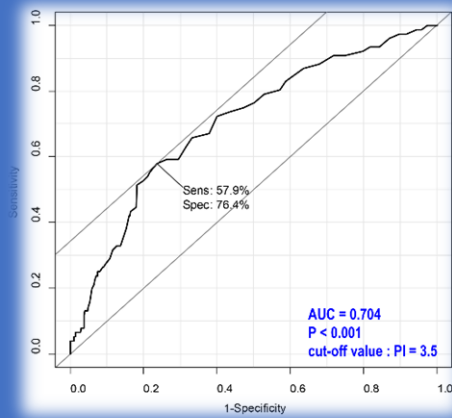
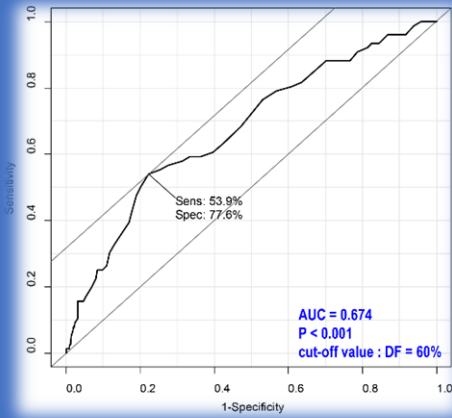
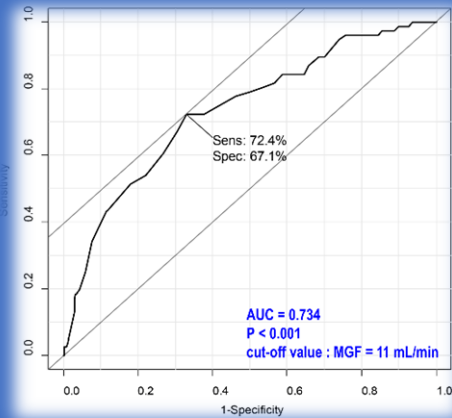
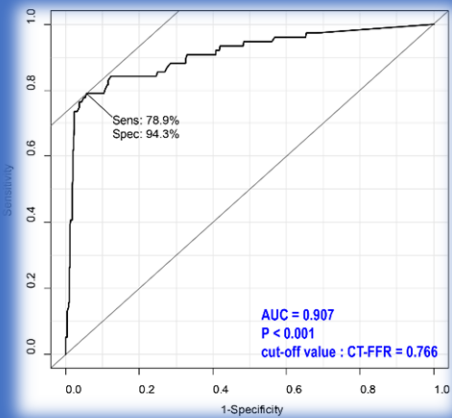
Variables	N (%)
Female	28 (19.2%)
Age (y)	67.0 [60.0, 75.0]
BMI (kg/m ²)	24.4 [22.6, 27.2]
Smoking status	
Never-smoker	36 (24.7%)
Former-smoker	62 (42.5%)
Current smoker	48 (32.9%)
Hypertension	110 (75.3%)
DM	87 (59.6%)
Dyslipidemia	115 (78.8%)
h/o Stroke	32 (21.9%)
CRF	23 (15.8%)
COPD	12 (8.2%)
Af	14 (9.6%)
POAD	45 (30.8%)
h/o PCI	37 (25.3%)
LV dysfunction (EF ≤35%)	28 (19.2%)
Preop Diagnosis	
Stable angina	34 (23.3%)
Unstable angina	50 (34.2%)
Postinfarct angina	60 (41.1%)
Acute myocardial infarction	2 (1.4%)
# diseased vessels	
3-VD	102 (69.9%)
2-VD	36 (24.7%)
1-VD	8 (5.5%)
LMD	32 (21.9%)
EuroSCORE II	1.5 [0.9, 3.6]
STS PROM	1.3 [0.7, 2.8]

- 489 anastomoses/ 146 patients



Results

	# grafts	CT-FFR	MGF (mL/min)	PI	DF (%)
Perfectly patent	409 (83.6%)	0.629 [0.500, 0.715]	14 [8, 25]	2.6 [1.9, 3.5]	68 [60,74]
Bidirectionally competitive	44 (9.0%)	0.799 [0.776, 0.854]	9 [4, 17]	3.4 [2.3, 4.6]	66 [55, 71]
Unidirectionally competitive	32 (6.5%)	0.814 [0.773, 0.848]	5 [2, 8]	4.5 [3.2, 6.3]	56 [48, 61]
Occluded	4 (0.8%)				



- Diagnostic accuracy of preoperative CT-FFR for predicting early postoperative competitive flow after CABG was excellent and was superior to that of intraoperative TTFM values.