

PCI in Post Renal Transplant Patient

Issues Relevant in this Situation

- Post renal transplant patient
- Heavily calcific lesion
- Stent not used

Discussion points

- What should be the best strategy for this patient – PCI , CABG, medical management
- If it is PCI what should do to protect the kidney or is it safe
- How do we prepare the bed for the stent in this patient –IVUS with rota and or cutting balloon
- What do you would be the long term effect of the procedure

Risk for post renal transplant patient

- 44 % of transplant patients die of a cardiac cause
- 1 yr mortality after MI is 30% , higher than others but lower than those with ESRD and dialysis
- Most patients get excluded from ACS and stent trials
- Anticoagulants and antithrombotics have to be adjusted since GFR is already low

Long-Term Outcome of Renal Transplant Recipients in the United States After Coronary Revascularization Procedures

Charles A. Herzog, MD; Jennie Z. Ma, PhD; Allan J. Collins, MD

Background—Retrospective studies in dialysis patients have reported increased survival after coronary artery bypass (CAB) compared with coronary artery stenting and PTCA. The purpose of this study was to compare the long-term outcome of renal transplant recipients after stent, PTCA, or CAB with or without internal mammary grafting (CAB [IMG+] or CAB [IMG-]).

Methods and Results—Renal transplant recipients hospitalized from 1995 to 1999 for first coronary revascularization procedure were retrospectively identified from the United States Renal Data System database. Event-free survival for the end points of all-cause death, cardiac death, acute myocardial infarction (AMI), and the combined end point of cardiac death or AMI was estimated by the life-table method. The impact of independent predictors on survival was examined in a comorbidity-adjusted Cox model. In-hospital mortality rate was 2.3% for 909 stent patients, 4.3% for 652 PTCA patients, 9.4% for 288 CAB (IMG-) patients, and 5.0% for 812 CAB (IMG+) patients. Two-year all-cause survival (\pm SE) was: stent, $82.5\pm 2.8\%$; PTCA, $81.6\pm 3.1\%$; CAB (IMG-), $74.4\pm 5.4\%$; and CAB (IMG+), $82.7\pm 2.8\%$. The relative risks of all-cause and cardiac death were not significantly different among revascularization groups. The relative risk of cardiac death or AMI (versus PTCA) was 0.90 (95% CI, 0.69 to 1.17) for stent, 0.80 (95% CI, 0.55 to 1.17) for CAB (IMG-), and 0.57 (95% CI, 0.42 to 0.76) for CAB (IMG+).

Conclusions—Renal transplant recipients in the United States have comparable long-term survival after percutaneous and surgical coronary revascularization procedures. The most favorable long-term outcome occurs after surgical coronary revascularization. (*Circulation*. 2004;109:2866-2871.)

Key Words: angioplasty ■ bypass ■ kidney ■ stents ■ survival

TABLE 2. Event-Free Survival (%) After Coronary Revascularization

Year	Type of Revascularization	Event			
		All-Cause Death	Cardiac Death	AMI	Cardiac Death or AMI
1	Stent	89.4±2.1	96.8±1.2	93.1±1.7	90.2±2.0
	PTCA	87.1±2.6	96.4±1.5	90.6±2.3	87.6±2.7
	CAB (IMG-)	79.6±4.9	96.0±2.4	95.2±2.8	91.3±3.5
	CAB (IMG+)	87.3±2.3	97.6±1.2	95.9±1.5	94.1±1.7
2	Stent	82.5±2.8	97.6±1.8	90.8±2.1	86.3±2.5
	PTCA	81.6±3.1	94.9±1.8	87.0±2.8	83.4±3.0
	CAB (IMG-)	74.4±5.4	94.7±3.0	89.5±4.4	85.3±4.9
	CAB (IMG+)	82.7±2.8	96.9±1.3	93.1±2.0	90.9±2.3
4	Stent	72.6±5.2	90.8±3.8	88.3±3.1	81.9±4.0
	PTCA	68.7±4.3	92.9±2.3	82.7±3.5	78.2±3.6
	CAB (IMG-)	68.4±6.9	93.9±3.4	85.6±5.8	80.8±6.1
	CAB (IMG+)	67.2±4.7	92.8±3.0	87.5±3.5	82.6±4.0

All data are mean±SE.

Renal protection during PCI

- Hydration
- Contrast media –
- Volume of contrast
- N-acetylcysteine or other agents

Calcification and PCI

- Severe calcification is associated with lower success rates , higher complications and poor stent expansion
- Concentric calcification on IVUS is the hallmark of an undilatable lesion needing debulking or cutting balloon

Objective of the study

- ◆ **To evaluate the safety and efficacy of rotational atherectomy and/or cutting balloon prior to TAXUS stent implantation in patients with lesions presumably unfavorable to adequate stent expansion.**

ROCCO (6 mo Results)

254 (67%)

Death

4(1.6%)

Revasc. 7 (2.7%)

MI

4 (1.6%)

MACE 11 (4.5%)

ROCCO (Device used & Results)

Rotablator 44(10%) Success → 43 (98%)

Cutting balloon 392 (91%) Success → 384 (98%)

RESULTS

DEVICE SUCCES	600 (94%)
PROCEDURAL SUCCESS	632 (99%)
DEATH	4 (1%)
MI	10 (1.7%)

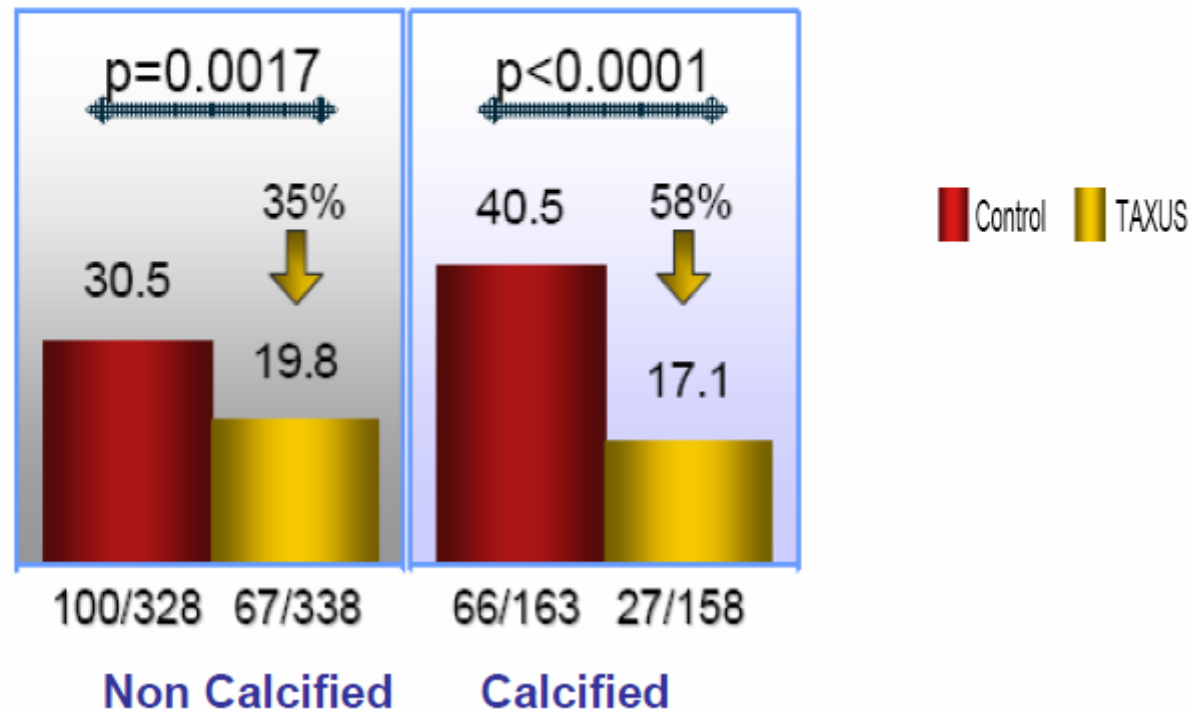
DES in calcified lesions

Restenosis in Calcified Lesions. Taxus V.

Braden et al. AHA 2005

376 lesions with moderate or severe calcification

In Segment Restenosis



Rotational Atherectomy with Sirolimus-Eluting Stents in Calcific Lesions : Acute Results and Long-Term Outcome

Large percutaneous-coronary intervention (PCI) trials on drug-eluting stents (DES) have excluded vessels with significant calcification, diffuse disease and those requiring rotational atherectomy (RA). To the best of our knowledge, there is no data on rotablation and sirolimus-eluting stents (SES) in moderate or severely calcific lesions. This study aimed to look at acute results and long-term follow-up in this subset of patients. We prospectively studied 110 patients with moderate to severely calcific lesions, who underwent rotablation followed by a Cypher (J&J, Cordis) using standard procedures. All patients received aspirin and clopidogrel for 1 year. Patients with acute myocardial infarction (MI) <1 week, ongoing angina or ischemic thrombus-containing lesions were excluded. A majority (52%) of patients included had recent acute coronary syndrome (ACS), 41% unstable angina (UA), 11% recent acute MI. 14% had prior coronary artery bypass surgery (CABG); 45% were diabetic. Mean left ventricular ejection fraction (LVEF) was $49.7 \pm 10.5\%$. 142 sirolimus-eluting Cypher (J&J, Cordis) were deployed in 110 patients (14% in 1 vessel, 32% in 2 vessels and 54% in 3 vessels) with 99% procedural success. Final TIMI 3 flow was achieved in 98%. Mean stent length was 22.4 ± 9.3 mm (45% >20 mm). Mean stent diameter was 2.9 mm \pm 0.2 mm (90% <3 mm). Glycoprotein (Gp) IIb/IIIa inhibitor was used in 86%. Follow-up of 14.3 ± 7.2 months was available in 97%. Major adverse cardiac events (MACE) occurred in 8%. Target vessel revascularization (TVR) was required in-hospital in 0.9% and on follow-up in 3% (CABG in 1 patient, PCI in 2). Non-Q MI occurred in 11.8%. Death occurred in 3.9% ($n=4$). Of these 1 each were non-cardiac and heart failure related; 2 were sudden deaths (11 and 14 months post-PCI). Rota-stenting with SES of calcific vessels with rotational atherectomy and SES was associated with a high procedural success and low MACE in this largely diabetic population. Rota-stenting with SES in diffuse calcific lesions needs to be studied further in a larger population.