Selective Stent Placement Versus Balloon Angioplasty for Renovascular Hypertension Caused by Takayasu's Arteritis: Two-year Results

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

☐ Consulting

☐ Employment in industry

☐ Shareholder in a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

■ I do not have any potential conflict of interest

Background and Objective

- **Takayasu's arteritis (TA) is a non-specific vasculitis affecting mainly aorta and its major branches. It is a rare disease with a relatively high prevalence in China and Asia . Renal artery stenosis commonly occurs in the TA patients.**
- **PTA is usually recommended as a first-line therapy for renovascular hypertension caused by TA.**
- **Selective stent placement is considered as an alternative therapy for suboptimal outcomes or failure after PTA.**
- **The purpose of the present study was to investigate the long-term clinical outcomes of selective stenting versus PTA in patients with RASTA.**

Methods

- We retrospectively analyzed the data of 152 consecutive patients with RASTA undergoing endovascular treatment at our institute between 2005 and 2012.
- The data at baseline and follow-up was collected.
- Patients were followed up at 1, 6, 12, 18 and 24 months after the procedure. ESR, CRP, SCr, blood pressures and renal artery color duplex scanning were measured at each visit. The types and dose of drugs and the primary composite clinical events were also recorded.
- The median follow-up time was 22.9 ± 4.2 months; 12 patients (7.9%) were lost to follow-up (8 in the PTA group and 4 in the stent group, p= 0.77)

Inclusion criteria :

- **(a) SBP≥ 160 mmHg, and or DBP ≥ 100 mmHg for patients without drug therapy or resistant hypertension for patients taking standard triple-drug combination treatment;**
- **(b) angiographic evidence of renal artery stenosis ≥ 70% ;**
- **(c) disease was inactive or controlled with immunosuppressive drugs for at least 2 months.**

Exclusion criteria :

- **(a) ESR > 20 mm/h or CRP> 10 mg/L after full dose usage of glucocorticose and/or immunosuppressive agents;**
- **(b) serum creatinine level ≥ 176.8 umol/L;**
- **(c) allergy to contrast medium ;**
- **(d) longitudinal kidney length < 7 cm supplied by target artery ;**
- **(e) severe stenosis of ascending aorta or proximal abdominal aorta, which caused ankle-brachial index < 0.9 ;**
- **(f) patients with potentially confounding diseases**

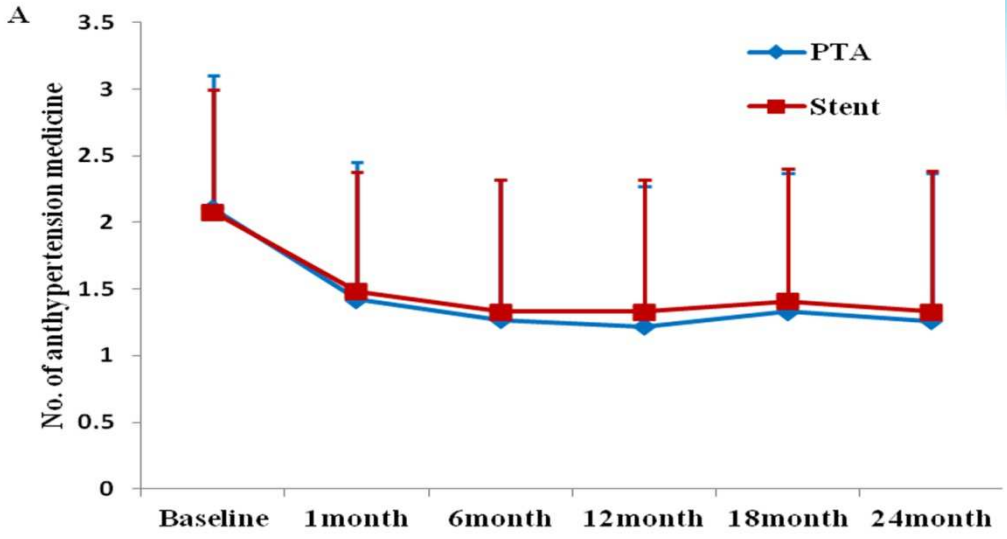
- **The procedural success of PTA was defined as residual stenosis< 50% . When there was flow-limiting intimal dissection and/or residual stenosis more than 50% on angiogram after angioplasty, high-radial strength stents was implanted**

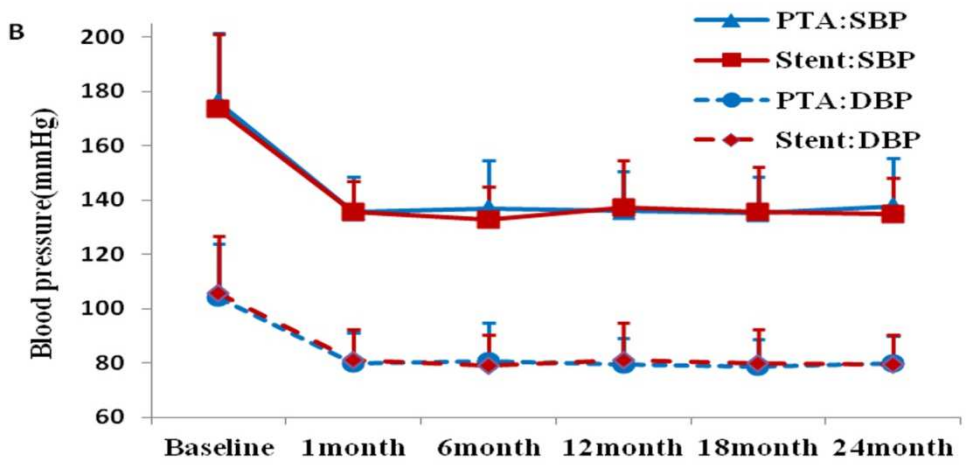
- **The patients were divided into two groups, the PTA group (n=93) and the stent group (n=59) for analysis.**

Results(characteristics of two groups at baseline)

Variable	PTA group(n=93)	Stent group (n=59)	p Value
Age , yrs	30.1±11.4	33.3±14.4	0.12
Female, n (%)	70(75.3)	44(74.6)	0.92
Body-mass index, kg/m^2	22.2±3.3	23.6±2.7	0.007
Smoking in past year, n (%)	9(9.7)	5(8.2)	0.76
Systolic blood pressure, mm Hg	175.9±25.5	173.6±27.4	0.59
Diastolic blood pressure, mm Hg	104.2±19.9	105.7±20.9	0.93
No. of antihypertensive drugs	2.04±0.91	2.08±0.93	0.79
Active disease in need of steroid and/or immunosuppressant agents, n (%)	53(57)	32(54.3)	0.74
Serum creatinine, mg/dl	0.83±0.19	0.89±0.3	0.11
eGFR,ml/min/	101.1±28.5	95.4±28.8	0.23
ESR,mm/h	8.9±6.22	9.15±5.77	0.82
CRP,mg/L	3.58±3.24	3.18±2.61	0.43
Hyperlipidemia, n (%)	4(4.5)	3(5.1)	0.82
Diabetes, n (%)	1(1.1)	2(3.4)	0.56
Stroke, n (%)	5(5.4)	2(3.4)	0.71
Flash pulmonary edema, n (%)	8(8.6)	5(8.5)	0.97

Change of Blood pressure during follow-up

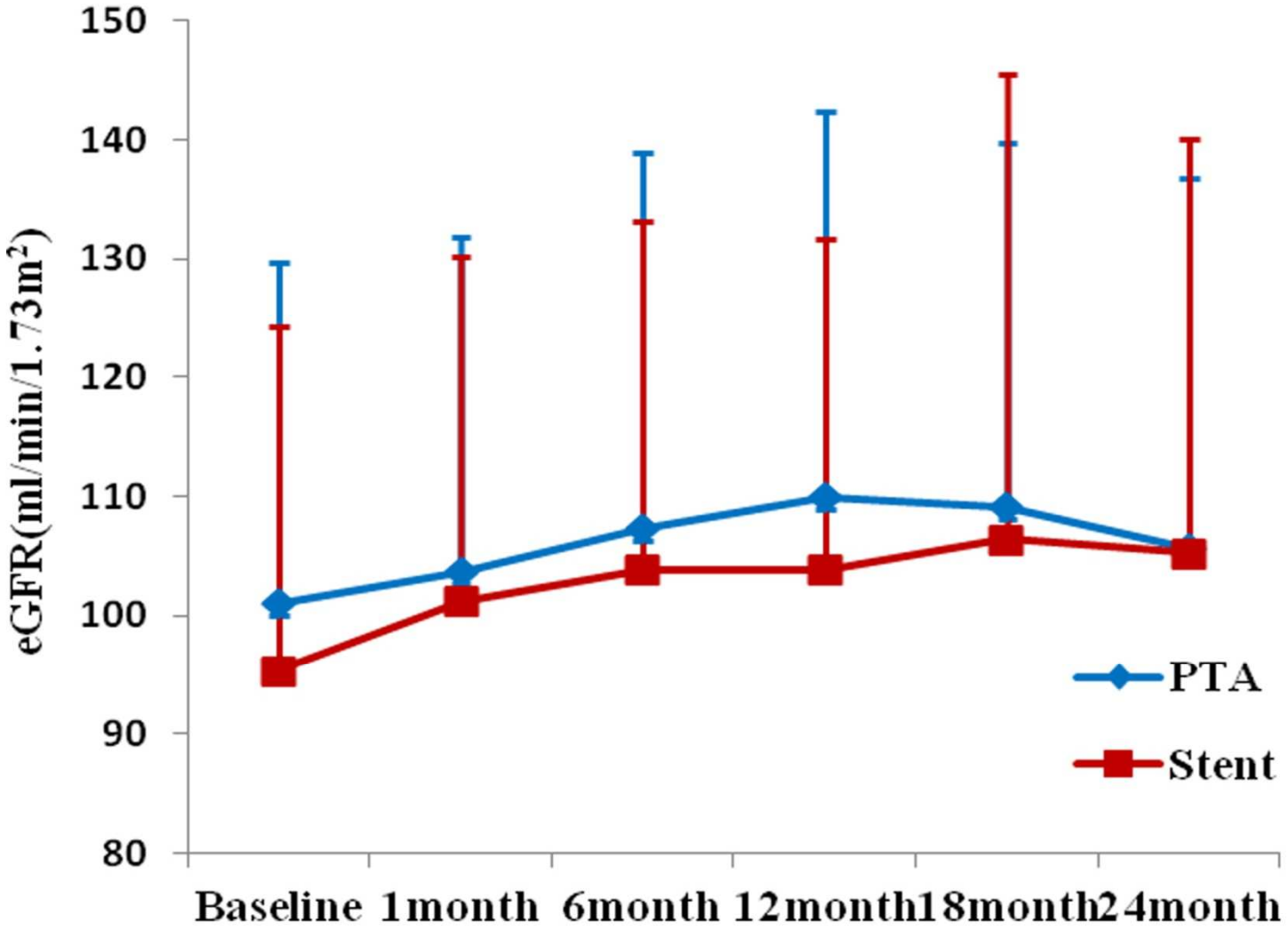




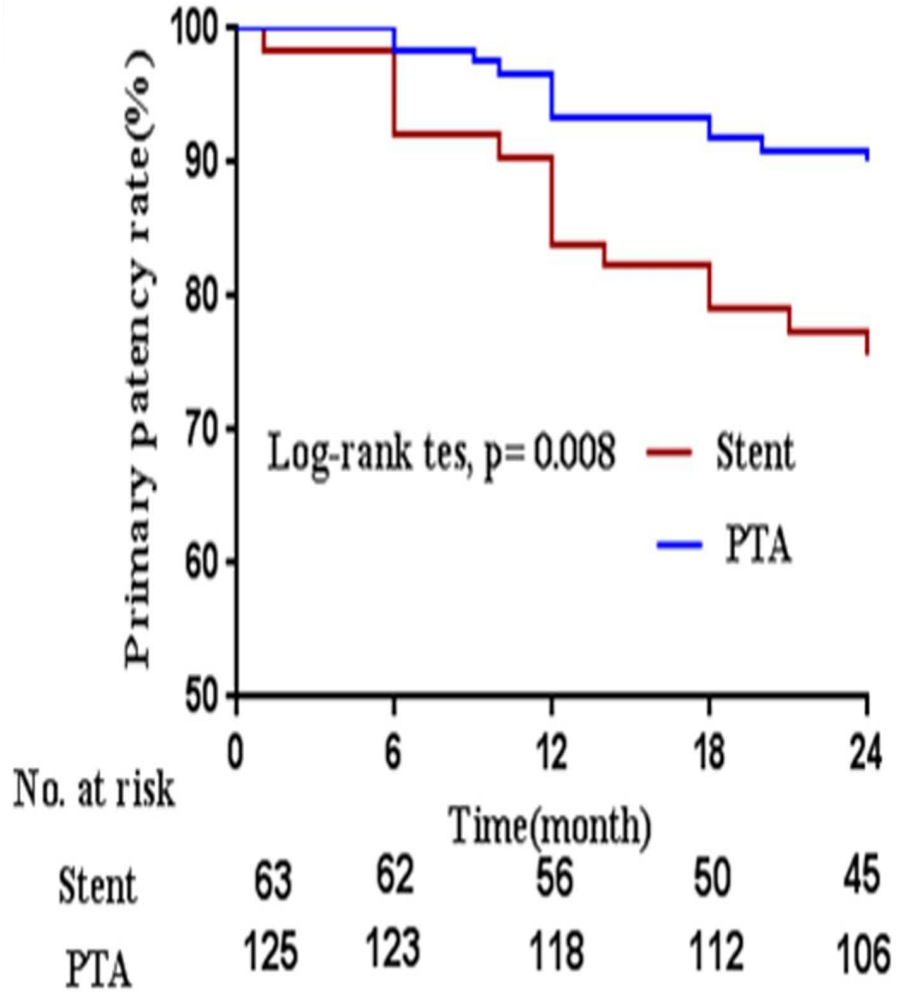
Blood pressure outcomes at the last follow-up, n(%)

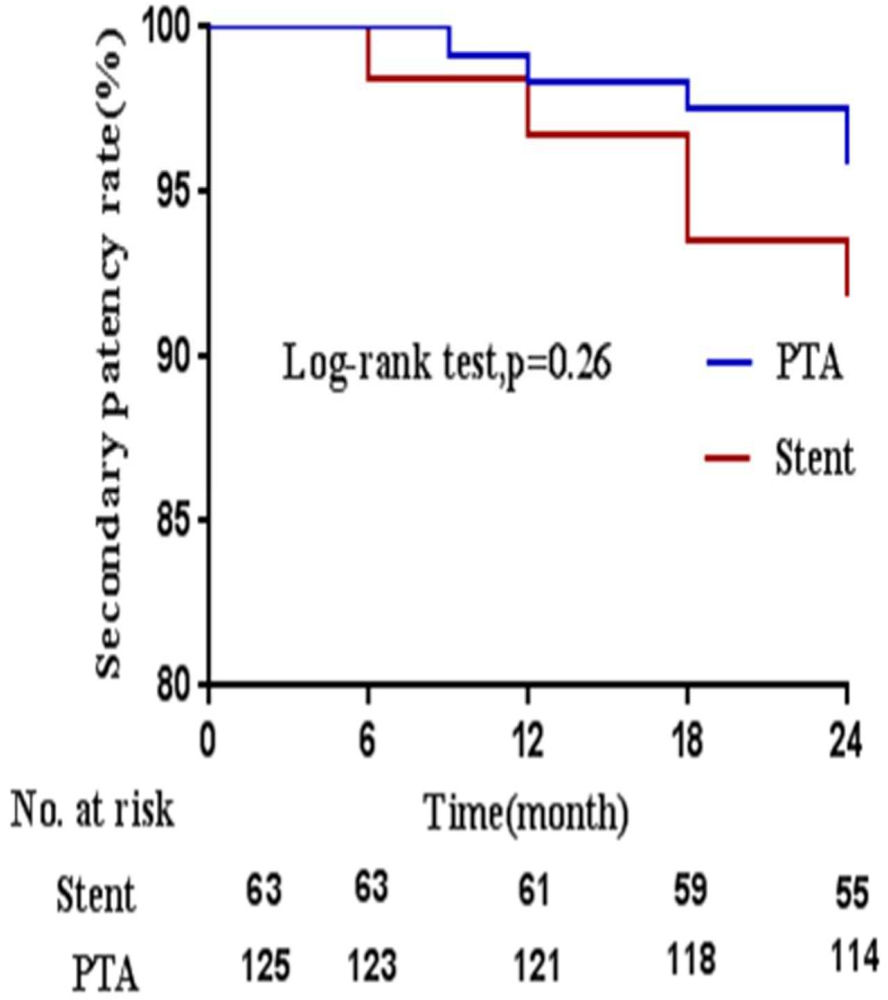
	Cure	Improvement	Failure
PTA group	23 (27.4)	59 (63.4)	11 (12.3)
Stenting group	13 (22.4)	36 (62.1)	9 (15.5)

Change of Renal function during follow-up



Patency and restenosis





Factors Predicting Restenosis on Cox Regression Analysis (188 lesions)

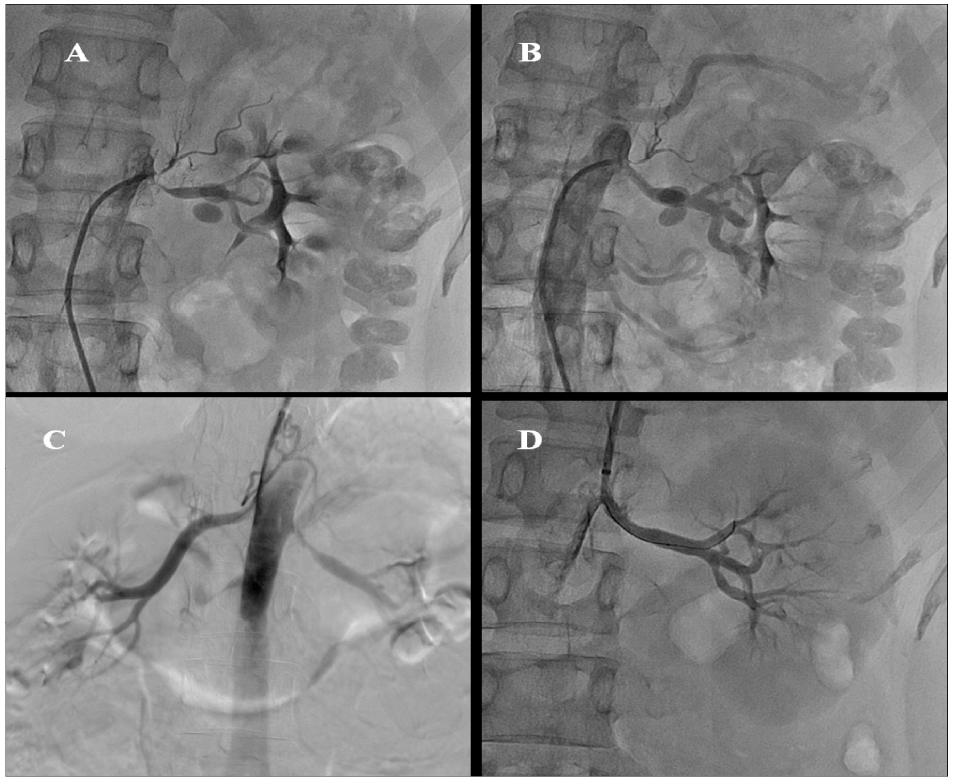
	Univariate Analysis			Multivariate Analysis		
	Odds ratio	95% CI	p value	Odds ratio	95% CI	p value
Female	2.16	1.003-4.660	0.049	2.84	1.283-6.286	0.010
Residual stenosis rate	1.04	0.999-1.074	0.056	1.04	1.013-1.077	0.006
Active disaese in need of steroid and/or immunosuppressant agents	3.44	1.452-8.126	0.005	3.32	1.388-7.928	0.007
Stent*	2.64	1.245-5.683	0.012	3.41	1.575-7.370	0.002

* Compared to PTA.

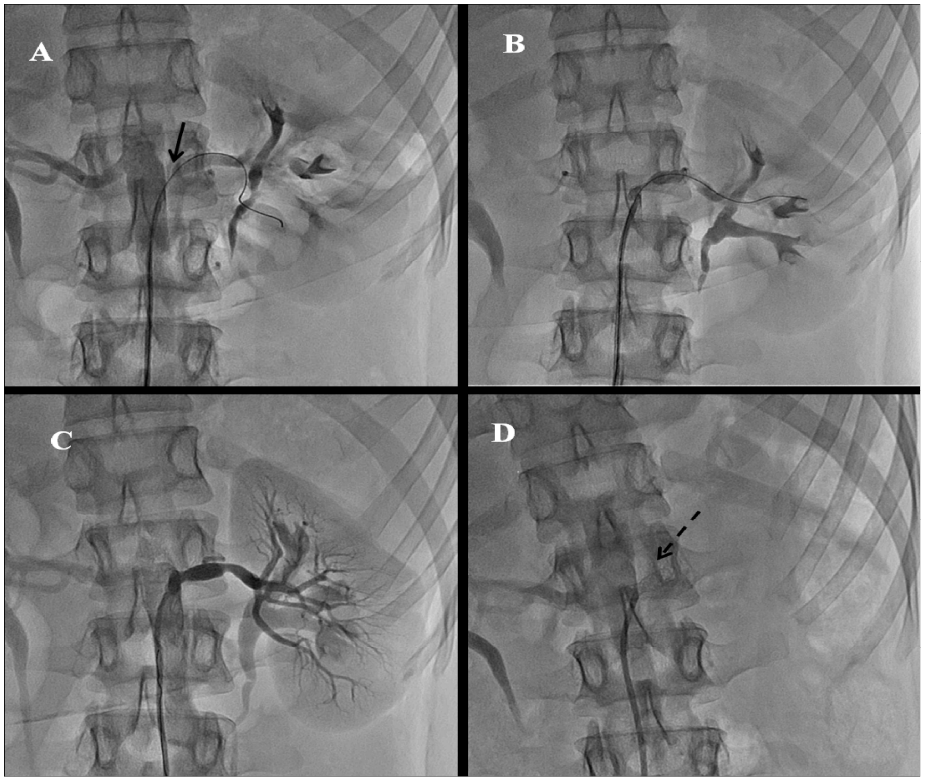
Reintervention was more common in the stenting group (13/63, 20.6%) than that in the PTA group (8/125, 6.4%) (p=0.003)

	Treatment in patients with restenosis		
	Balloon dilatation	Bypass surgery	Nephrectomy
PTA group	7 lesions	1 lesion	0
Stent group	8 lesions	2 lesions	3 lesions

Angiographic Images of Left Renal Artery Restenosis after PTA and Reintervention



Angiographic images of renal artery occlusion after stent placement.



Clinical events

- **All patients survived during the follow-up period.**
- **In stenting group, progressive renal insufficiency occurred in 2 patients (3.4%). One of them needed permanent renal-replacement therapy. In the another, renal function restored after bypass surgery.**
- **In the PTA group, hospitalization for congestive heart failure occurred in one patient (1.1%) and stroke in one patient (1.1%).**
- **The two groups did not significantly differ in the occurrence of the primary composite clinical events (3.4 % Vs 2.3%, respectively, RR, 1.59; 95%CI: 0.216 to 12.12; p = 0.61).**

Conclusions

- Though, PTA alone and selective stenting had no significant difference in terms of the effect on blood pressure and renal function, stenting resulted in inferior 2-year primary patency rate, higher occlusion rate and higher reintervention rate.

- It should be seriously considered before stenting was undergone in patients with RASTA, particularly in patients with high risk for restenosis.


THANKS!