

The logo for LINC (Limb Vascular Interventional Network Center) features the letters 'LINC' in a white, sans-serif font. To the left of the text is a stylized graphic consisting of two overlapping, curved shapes in red and orange, resembling a flame or a stylized 'L' and 'I' combined.

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Fate of Classic Bare Metal Stents Placed in Popliteal Arterial P2 & P3 Segments in Asian Patients

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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
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest

Introduction

- Classic nitinol bare metal stent (CN-BMS) has been widely applied in femoropopliteal stenocclusive lesions despite emerging new techniques such as DCB, DES, Atherectomy etc...
- Stent fracture after deployment of CN-BMS has been recognized as an adverse events in the femoropopliteal artery and this can be considered a risk factor for in-stent restenosis and reocclusion in FP arterial stenting
- Although the factors influencing FP arterial stent fracture have not been fully elucidated, it is believed to occur by external compression by muscle activity, by overlapping long stents, or by mechanical stress at articulation sites.

Introduction

- In some operators, popliteal arterial P2 and P3 segments used to be avoided for CN-BMS placement due to the articulation sites where it could easily be bent. However, it is inevitable that a stent was placed in the popliteal arterial P2 and P3 segments in the case of critical limb ischemia or for bail-out after balloon angioplasty.
- Unfortunately, there has been little data regarding the status of stents placed in the P2 and P3 segments and especially in Asian patients in which full flexion of the knee joints is often necessary in order to perform routine activities such as kneeling, squatting and sitting with both legs crossed.

Purpose

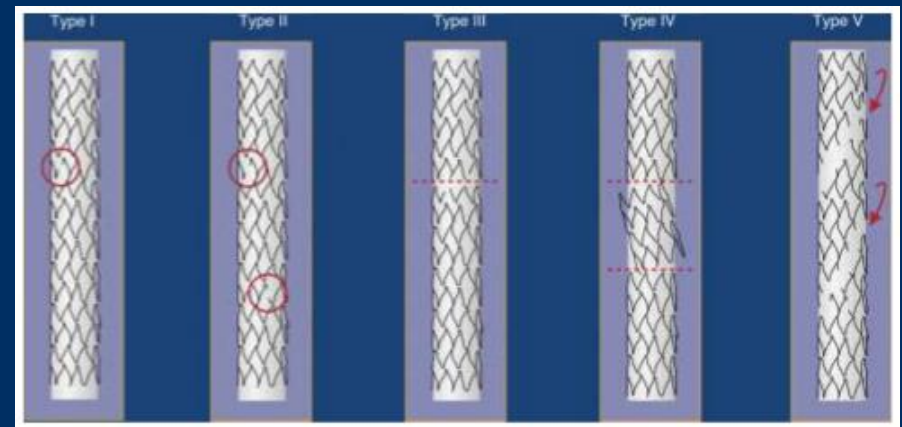
- The purpose of this study is to evaluate the primary patency and morphological status of classic nitinol self-expandable stents in the popliteal arteries, especially the P2 and P3 segments in Asian patients.

Materials and Methods

- From July 2006 to March 2012
- CT angiography and ABI → Rutherford category 2~6
- Retrospective review the medical and radiological records
- Total 189 patients who underwent endovascular treatment for popliteal stenooclusive lesions, including popliteal arterial P2 and P3 segments
- CN-BMS placement was performed in popliteal arterial P2 and P3 segments primarily or bail-out in patients with unsuccessful primary balloon angioplasty

Materials and Methods

- CN self-expandable BMS (SMART: Cordis)
- Stent fractures was defined as clear interruption of stent struts identified by X-ray from at least 2 projections, with resulting kink or misalignment along axial length of the stent



Rocha-Singh KJ et al. Catheter Cardiovasc Interv 2007; 69:910-919

- Restenosis was defined as more than 50% of the vessel diameter at treated segments in CT angiography or absence of flow or a focal increase in peak systolic velocity ration of > 2.5 in duplex ultrasound.

Results

- Technical success – 100%
- Total 18 limbs were included,
 - : Bail-out stenting (n=7) - P2 (n=2), P3 over P2 (n=5)
 - : Primary stenting (n=11) – P2 (n=8), P3 over P2 (n=3)
- Total fracture rate : 9/18 (50%)
- One Stent fracture (Type 2) @ 1M FU (1/18; 5.6%) : P3 over P2
- 7 fractures @ 3M FU (Type 1; n=1, Type 2; n=4, Type 3; n=1, Combined; n=1)
 - : P2 (1/10; 10%), P3 over P2 (6/8, 75%)
- One fracture @ 6M FU (Type 2) : P3 over P2

Results

No	Sex	Age	Stenting	Cause of Stenting	Location of Stenting	Clinical status	Lesion characteristics	Stent Diameter	Fracture type	Fracture Detection	Patency (6M)
1	M	67	secondary	Recoil	(until) P2	Rutherford category 2	TASC II D	6mm			Patent
2	M	66	secondary	Dissection	P2	3	TASC II D	6mm	1	3-month	Patent
3	F	74	secondary	Dissection	P3	4	TASC II D	6mm	2	3-month	Occlusion
4	M	79	secondary	Dissection	P3	2	TASC II D	6mm	2	3-month	Occlusion
5	F	77	secondary	Dissection	P3	3	TASC II D	6mm	3	3-month	Occlusion
6	M	69	secondary	Dissection	P3	3	TASC II D	6mm	2	3-month	Occlusion
7	F	68	secondary	Dissection	P3	5	TASC II D	6mm	2	6-month	Occlusion
8	M	87	primary	Calcification	P3	4	TASC II D	6mm	Multiple	3-month	Occlusion
9	M	84	primary	Calcification	P3	3	TASC II D	6mm	2	1-month	Occlusion
10	F	88	primary	Critical limb	P3	6	TASC II D	6mm	2	3-month	Occlusion
11	M	68	primary	Critical limb	P2	6	TASC II D	6mm			Patent
12	F	66	primary	Critical limb	P2	4	TASC II D	6mm			Patent
13	M	71	primary	Critical limb	P2	4	TASC II D	6mm			Patent
14	M	68	primary	Critical limb	P2	4	TASC II D	6mm			Patent
15	F	69	primary	Critical limb	P2	4	TASC II D	6mm			Occlusion
16	M	63	primary	Critical limb	P2	4	TASC II D	6mm			Occlusion
17	F	64	primary	Critical limb	P2	5	TASC II D	6mm			Patent
18	M	71	primary	Critical limb	P2	5	TASC II D	6mm			Patent

Results

- There was no more fractures @ 1y FU
- All cases that underwent stent placement until popliteal P3 segment over P2 demonstrated stent fractures, with occlusion
- Blood flow through the stent was completely occluded at the time of detection of stent fracture in all cases of type 2, 3, and 4 fractures
- In the case of type 1 fracture, stent patency was well preserved
- The group with stent implantation until P3 had higher fracture rate than the group until P2 ($p < 0.05$)
- Overall primary patency rate – 94%, 61%, and 44% @ 1, 3, and 6 months

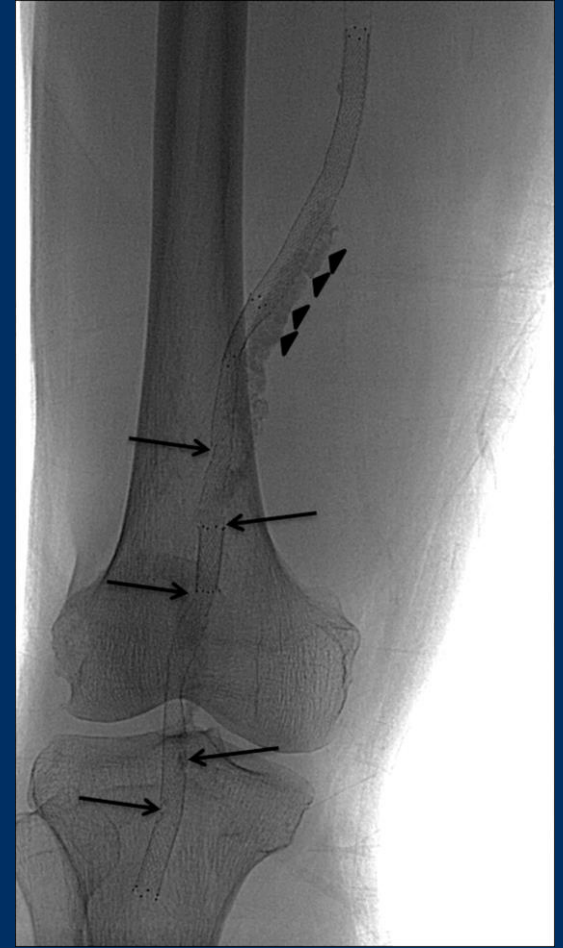
Results



M/66
@ 3M



M/74
@ 3M



M/87
@ 3M

Conclusion

- We suggest that self-expandable classic nitinol bare metal stent placement until popliteal arterial P3 segment over P2 segment can worsen the preservation of stent patency with high incidence of stent fracture, especially in the Asian population
- It is hard to say that self-expandable classic nitinol bare metal stent for popliteal recanalization can be considered in the person in which full flexion of the knee joints is often necessary in order to perform routine activities such as kneeling, squatting and sitting with both legs crossed.

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