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Fractures And Restenosis Of Nitinol Stents In The Superficial Femoral Artery: Is There An Association?

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Background: Maintenance of long-term patency after implantation of Nitinol stent in the superficial femoral artery (SFA) remains to be one of the most challenging aspects of endovascular therapy. Studies have made conflicting observations regarding a possible association between Nitinol stent fractures (SF) in the SFA and development of in-stent restenosis (ISR).

Methods: We studied 63 consecutive patients (66 limbs) with angiographically confirmed obstructive Nitinol self-expandable stent ISR in the SFA. Mean age of the group was 72.4 ± 7.5 years, 42.4% females, 25.8% smokers, 56% with diabetes. We excluded patients with Viabhan stents. Stents were evaluated by fluoroscopy/CINE using at least 2 orthogonal views for SF presence. We analyzed SF rates, severity, and angiographic relationship to ISR pattern and location. Procedural and demographic characteristics such as: time to ISR, number of stents, stented length, stent diameter and type, run off score, smoking, age, sex, and presence of comorbidities were analyzed as well.

Results: Mean time from stent implantation to presentation with ISR was 14.5 ± 7.2 months. Out of the 66 limbs with ISR, SF was present in 25 (37.8%) and among those only 3 (12%) limbs had SF angiographically associated with ISR. SF occurred more frequently in males (p<0.018). Mean stented length was numerically but not statistically longer in patients with SF than in those without, 221 ± 112 mm vs. 176 ± 98.6 mm (p=0.09) respectively. There were no differences in other procedural and demographic characteristics between groups with and without SF.

Conclusions: Stent fractures in the SFA play a modest role in the development of ISR. In our study the association was seen in only 12% of patients with SF. Majority of the patients with ISR did not have SF. SF occurred more frequently in males.

Baseline characteristics

Characteristic	All ISR limbs (n=66)	Stent fracture present (n=25)	Stent fracture absent (n=41)	p Value
Mean age (years)	72.42±7.5	72.6±6.1	72.3±8.3	0.884
Men	38 (57.6%)	19 (76%)	19 (46.3%)	0.018
Diabetes	37 (56.1%)	15 (60%)	22 (53.7%)	0.615
Smoking	17 (25.8%)	9 (36%)	8 (19.5%)	0.317
Mean stented length (mm)	193.1±105	220.8±112.2	176.24±98.6	0.096
Mean time to ISR (months)	14.5±7.2	15.2±7.3	14.1±7.1	0.548
Mean stent width	6.2±0.6	6.4±0.5	6.2±0.7	0.089
Mean number of stents implanted	1.9±0.9	2.1±1.2	1.8±0.8	0.256
Median run-off score	5	3	5.5	0.678

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ABSTRACT WITHDRAWN

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Registry For Immediate And Long Term Follow-up After Endovascular Arterial Revascularization Of Lower Limbs

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Objective: The aim of this registry was to prospectively assess the immediate and long term outcome of endovascular revascularization for the treatment of lower limb ischemia. **Methods:** The outcomes of 87 consecutive procedures in 113 lesions were recorded in two centers over two years .60 % of patients presented with chronic critical limb ischemia (CCLI), 40 % of patients with claudication. 35 % of lesions were supra inguinal, 27 % were infra inguinal lesions and 34 % were infra-genicular lesions. The type of lesions according to TASC classification were: 40% type A, 30% type B,18% type C and 12% type D .Data of this registry were analyzed for immediate angiographic success, in-hospital morbidities and mortality, limb salvage and one year morbidities and mortality as well as restenosis by duplex.

Results: The angiographic success rate was 87.4%. 3% of patients had in-hospital mortality related mainly to the co-morbidities of the peripheral arterial disease; 1% cardiac related, 1% due to septicemia and 1% due to bleeding following gastric stress ulcer; the immediate in-hospital morbidity occurred in 7% mainly related to access site complications, 7% minor hematoma, 7% dissection, the need for urgent surgical intervention was 1%. 1 year follow up in 50 patients was as follows: 86 % were alive, 14 % died, septicemia was a cause of death in 2 % .Recurrence of LL ischemia due to target lesions restenosis were in 10 % of which only 2 % were CCLI, the need for repeated endovascular intervention occurred in 4% of patients and surgical revascularization was needed in 2% only. Limb salvage was 100% .Age and elevated serum creatinine level were independent predictors for in-hospital mortality.

Conclusion: According to this registry endovascular revascularization of the lower limb is a good palliative treatment for CCLI, with high success rate, high percentage of limb salvage and acceptable morbidities including restenosis.

Renal Intervention

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Histopathological Characterization Of Renal Arteries After Radiofrequency Catheter-based Sympathetic Denervation In A Healthy Porcine Model

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Background: Catheter-based renal artery denervation has successfully been introduced as alternative treatment for patients suffering drug resistant essential hypertension. however, the precise mechanisms underlying this technique remain elusive.

Methods and Results: Seven pigs underwent renal artery denervation utilizing the Simplicity® radiofrequency catheter. both renal arteries were treated in 5 animals, while 2 were treated unilaterally. in bilaterally treated animals, one renal artery was treated at the index procedure, while the contra-lateral artery was treated 10 days later. renal arteries were assigned to either the acute (n=6), sub-acute (10-day follow-up, n=6) or control (untreated, n=2) group. at follow-up blood analysis, final angiography and oct-imaging of the treated arteries was performed. renal arteries and kidneys were processed for histopathology and immunohistochemistry.

Radiofrequency derived energy application to the vessel wall induced transmural tissue coagulation and loss of endothelium resulting in local thrombus formation also detectable by OCT. At 10 days, the luminal surface was almost completely re-endothelialized. Mural wall damage was replaced by fibrotic tissue and the adventitial layer showed strong inflammatory infiltration including vasculogenesis. Remnant nerve fascicles within the lesion segments of the sub-acute group displayed enhanced vacuolic degeneration, thickening of the perineurium and an altered neurofilament protein immunostaining pattern. Examination of the kidneys revealed no abnormalities and blood parameters remained within the physiological range.

Conclusions: Catheter-based application of radiofrequency energy resulted in circumscribed transmural injury within the arterial wall also affecting nerve fascicles in a deferred manner. acute loss of endothelialization resulted in thrombus formation leaving kidney perfusion apparently unimpaired.