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Endovascular Treatment of Atherosclerotic Lesions in the Superficial Femoral Artery and Proximal Popliteal Artery using the Sinus-Superflex-635 Stent: Twelve-Month results from the HERO Registry

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ABSTRACT

BACKGROUND: The aim of the present article was to evaluate the safety and performance of the sinus-Superflex-635 self-expandable nitinol stent (Optimed GmbH) for the treatment of steno-occlusive lesions in the superficial femoral artery (SFA) and proximal popliteal artery (PPA).

METHODS: The prospective, multicenter, observational HERO study recruited 117 eligible patients (83 men; mean age 69.4±9.7y) from 7 centers in Belgium. The patients presented with symptomatic ≥ 50% stenosis or chronic total occlusion (CTO) (30.6%). Mean length of the 121 lesions was 71±56.3 mm. Moderate to severe calcification was present in 83% of the lesions.

RESULTS: A total of 129 stents were successfully deployed in 121 lesions in 117 patients (100%). Acute lesion success (<30% residual stenosis) was achieved in 96%. There were no in-hospital serious adverse events. Duplex ultrasound-driven primary patency at 12 months was recorded in 84 of 107 (79%) lesions. The overall TLR rate was 8.4% at 12 months; the TER rate was 4.7%. Clinical assessment at 12 months demonstrated improvement by at least 1 Rutherford class, without the need for TLR (i.e. primary sustained clinical improvement) in 84% of patients and with the need for TLR in 91% of patients (i.e. secondary sustained clinical improvement).

CONCLUSIONS: Based on the high primary patency, low stent fracture rate and significant clinical improvement, combined with refined stent design and long stent availability, the sinus-Superflex-635 self-expandable nitinol stent proves its value in bail-out stenting after suboptimal drug-coated balloon (DCB) results for the treatment of long and complex femoropopliteal artery (FPA) lesions.

Key words: Peripheral artery disease, self expandable metallic stent, femoral artery, popliteal artery, vascular patency, multicenter study

TEXT

Introduction

The femoropopliteal artery (FPA) is a very common site of involvement in patients with atherosclerotic peripheral artery disease (PAD) leading to intermittent claudication and/or critical limb ischemia (1). The FPA lesions are typically long and complex due to the presence of calcification and fibrosis. In addition, dynamic forces (bending, lengthening, shortening, compression, torsion) found within the FPA pose a challenge in the treatment of FPA lesions. Endovascular therapy has been recognized as a safe and efficient therapy for FPA disease and is recommended by current guidelines as the first-line approach when walking therapy fails. The movement in endovascular therapy from percutaneous transluminal angioplasty (PTA) to bare-metal stents (BMS) to new-generation, self-expanding nitinol stents to drug-coated technologies has resulted in significant revisions of the treatment guidelines over the past decade. The latest drug-coated technologies have been developed to prevent neointimal hyperplasia, which represents a relevant clinical problem of bare metal stents. Initial studies with drug-eluting stents (DES), however, have yielded disappointing results, hampering their routine use (2-5). On the other hand, the use of drug-coated balloons (DCB) in the treatment of FPA lesions is established and widespread. However, suboptimal DCB results, due to residual stenosis and dissection, may occur with long, calcified and/or fibrotic lesions, requiring bail-out stenting.

We present here the 12 month efficacy and safety data of the sinus-Superflex-635 self-expanding nitinol stent (Optimed GmbH) in the primary treatment of superficial femoral artery (SFA) and proximal popliteal artery (PPA) PAD disease.

Materials and methods

STUDY DEVICE: The study stent was the sinus-Superflex-635 stent (Optimed GmbH). The following sizes were used in this registry: 6 and 7 mm diameter and 40, 60, 80, 100, 120, 150, 200 mm length. All sizes have a 6F compatible delivery system which is 0.035” guide-wire compatible. The stent is delivered by a pull-back-technique in a controlled manner by an anti-jump-technique. The stent is electro-polished for improved vessel compatibility. At proximal and distal ends of the stent a closed-cell design is incorporated for definitive and reliable vessel wall fixation during deployment.

STUDY DESIGN, ENDPOINTS AND DEFINITIONS: The HERO registry was a multicenter, prospective, single-arm, investigational device registry of symptomatic patients with de novo lesions in the SFA and the PPA. Patients were scheduled to receive the sinus-Superflex-635 stent (Optimed GmbH) and undergo evaluation at 1 and 12 months after the implant procedure. The trial protocol was approved by the Ethics Committees associated with each participating center. All patients provided written informed consent. This trial was registered with clinicaltrials.gov (NCT01816854).

The primary endpoint of this study was primary patency at 12 months. Primary patency was defined as uninterrupted patency with no clinically-driven TLR and no re-obstruction of ≥ 50% of the target lesion detected by duplex ultrasound (peak systolic velocity ratio (PVR) > 2.4).

Secondary endpoints included immediate procedural outcomes, as follows: technical success, achieving successful vascular access and completion of the endovascular procedure and immediate morphological success with less than 30% residual diameter reduction of the treated lesion on completion angiography; device success, achieving exact deployment of the device according to the instructions for use as documented with suitable imaging modalities and in case of digital subtraction angiography, in at least two different imaging projections; and absence of procedural complications. Additional secondary endpoints were TLR and TER rates at 12 months. TLR was defined as a repeated procedure (endovascular or surgery) due to a problem arising from the target lesion (+1 cm proximally and distally to include edge phenomena), while TER was a procedure (endovascular or surgical) due to a problem arising in the ipsilateral trajectory remote from the lesion initially treated. The distribution of Rutherford stages during follow-up as compared to baseline were examined and primary and secondary clinical improvement at 12 months were determined, which were defined as a sustained upward shift of at least one category on the Rutherford classification without or including the need for repeated TLR in surviving patients, respectively. Procedure-related mortality, i.e. mortality within 30 days post-procedure or mortality during a hospitalization > 30 days due to the procedure, and overall mortality were recorded. Other secondary endpoints are: minor (i.e. below the ankle) and major (i.e. above the ankle) amputation rates at 12 months. If duplex investigation at 12 months showed >50% stenosis (PVR > 2.4), an Rx investigation (fluoroscopy) was performed to determine the presence of a stent fracture. Stent fracture was classified according to the following classification: Type 0: No strut fractures; Type I: Single strut fracture only; Type II: Multiple single strut fractures that occur

at different sites; Type III: Multiple strut fractures resulting in complete transection of the stent, without displacement of the stent segments; and Type IV: Multiple stent fractures resulting in displacement of segments of the stent, or spiral fractures that could result in stent displacement without complete transection.

PATIENT COHORT: The study population were patients who suffered from intermittent claudication and critical limb ischemia (Rutherford 2-5). Target lesion was a de novo lesion and was located in the SFA and the PPA (i.e. minimal 1 cm from origin of SFA and minimal 1 cm above the edge of the patella). A patient could be enrolled for a lesion in the left and the right leg. Both legs could be treated during the same procedure or separately during two procedures. It was allowed to enroll a patient whose target vessel had been stented previously. Other key inclusion criteria included TransAtlantic Intersociety Consensus (TASC) A, B or C lesions; reference vessel diameter of ≥4.5 and ≤6.5 mm (visual estimate); diameter stenosis of target lesion of >50% or total chronic occlusions (CTOs); inflow arteries and the popliteal artery (PA) (outflow) free of hemodynamically significant obstruction (i.e. ≥50%); at least 1 patent below-the-knee vessel (anterior tibial artery, posterior tibial artery or peroneal artery) up to the ankle, confirmed by baseline angiography. Major exclusion criteria were intake of esomeprazole or omeprazole; pregnancy; acute limb ischemia defined as any sudden decrease in limb perfusion causing a potential threat to limb viability; a target lesion, which could not be crossed with a guidewire, or was located in the PA; nickel-titanium allergy; aneurysm in the SFA and PA; life expectancy of <1 year; patients with scheduled elective non-vascular procedures within 3 months after index-procedure (vascular procedures were allowed within 3 months after index-procedure if it was guaranteed that acetylic salicylic acid and clopidogrel intake was not interrupted); previous bypass surgery in the SFA; and intolerance to antithrombotic medication (acetylic salicylic acid, clopidogrel, ticlopidine, glycoprotein IIb/IIIa inhibitors, direct thrombin inhibitors, etc.).

A total of 117 eligible patients (83 men; mean age 69±9,7 years) were recruited by 7 Belgian vascular investigational sites. Baseline demographic and clinical characteristics are summarized in Table I. Risk factors for atherosclerosis were prevalent, including diabetes mellitus (26.5%), hyperlipidemia (65.8%) and hypertension (70.1%). 28.2% of patients were current cigarette smokers. 26.5% and 11.1% of patients had a history of coronary artery

disease and cerebrovascular accident, respectively. Baseline angiographic and interventional data are summarized in Table II. Target lesions were most often located in the distal SFA (61.2%) and in 7.4% of the population in the PPA. The mean reference vessel diameter was 5.5±0.6 mm, and the mean lesion length was 71.4±56.3 mm. The mean diameter stenosis was 89.1%±10.9 and 30.6% of the lesions were CTOs. The majority of lesions (82.6%) were considered to be moderately to severely calcified.

PROCEDURE: After successful lesion passage, diagnostic angiography of the lesion area and distal runoff were performed to control the inclusion and exclusion criteria. Stent implantation was performed according to the instructions for use. A maximum of 2 stents was allowed to treat the target lesion. If the investigator decided to treat 2 target lesions which were divided by a healthy segment, the minimal distance between both stents was 3 cm. If not, stents overlapped. Pre-dilatation was at the discretion of the investigator. Post-dilatation was mandatory to achieve proper wall apposition of the stent. If the investigator decided to pre-dilate the target lesion, the whole dilated segment was covered by a stent, meaning that the length of the balloon did not exceed the length of the stent. Femoral puncture-site hemostasis was achieved by manual compression or by using of a closure device. It was mandatory to prescribe acetylic salicylic acid to the patient for the duration of the study in a dose of at least 80 mg/day, and clopidogrel for at least 3 months after the index-procedure in a dose of at least 75 mg/day.

ULTRASOUND EXAMINATION: Duplex ultrasound was performed at 1 month and 12 months after the index-procedure. During these visits, the entire stent + 1 cm proximally and distally was scanned. Each examination included measurements of the maximum peak systolic velocity (PSV) 2 cm proximal to the stent, within the stent (proximal, mid, distal), and 2 cm distal to the stent. The ratio of the maximum PSV within the stent and the maximum PSV proximal to the stent (i.e. PVR) determined the degree of percent stenosis.

STATISTICAL ANALYSIS: Continuous variables are presented as mean ± standard deviation (SD) and range. Categorical variables are presented as counts and percentages. Primary patency was calculated as a proportionate measure and a Kaplan-Meier (KM) point estimate.

Results

Of the 117 eligible patients recruited for treatment of 121 lesions in total, 1 patient was lost to follow-up and 1 patient died before the 1 month visit, resulting in 115 patients and 119 lesions available for assessment (98% eligible patients). At the 12-month visit, 6 patients had died, and 8 were lost to follow-up, leaving 103 patients and 106 lesions available for evaluation (88.0% eligible patients).

The vast majority of lesions were treated with 1 stent (93.4%); 8 lesions were treated with 2 stents, 6 of which were overlapping. Pre-dilatation was always done with a non-DCB and performed in 91 out of 121 lesions (75.2%) (Table II).
Concerning the immediate procedural outcome, technical success and device success were 96% and 100%, respectively. One minor intra-operative complication occurred; perforation of the PA during recanalization of the CTO, which resolved spontaneously.

Nine patients underwent a TLR within 12 months of follow-up (8.4%), of which 1 TLR resulted from the 1 month follow-up duplex ultrasound examination showing no flow in stent (Table III). Duplex ultrasound showed no flow or >50% restenosis in 14 of 106 lesions at 12 months follow-up, resulting in revascularization of 6 lesions. The primary patency, a combination of ultrasound-confirmed patency and absence of TLR, was achieved in 117 of 120 (97.5%) lesions at 1 month follow-up and in 84 of 107 (78.5%) lesions at 12 month follow-up. Loss of primary patency and TLR rate were most prevalent in the TASC C group (Table III). Primary patency was also evaluated using KM point estimate, which showed a primary patency of 97.5% at 1 month and 79.1% at 12 months (Figure 1). Only 1 stent fracture was identified (Type I), resulting in an overall stent fracture rate of 0.9%. The stent fracture occurred in one of the 6 lesions treated with overlapping stents, resulting in stent occlusion. In total, 3 of these lesions showed restenosis at 12 months, one patient was lost to follow-up. The TER rate was 4.7% (Table III). During follow-up, one minor amputation occurred within the 1 month follow-up (Table III). This was a planned amputation of toe 1 of the left foot after embolism. Of the 117 patients included in this study, 1 patient (0.9%) died near the time of the first follow-up visit, but after 30 days post-operatively (Table III). This number increased to 6 patients (5.5%) during the course of the study, excluding lost to follow-up patients at 12 months. There were no deaths related to the intervention. Two patients died of cardiac arrest. One patient was diagnosed with stomach carcinoma and acute

respiratory distress syndrome and eventually died from cardiac arrest. One patient died from end-stage renal failure and one patient experienced progressive deterioration of general health due to advanced dementia with anorexia. Another patient died from cardiac failure due to lung carcinoma and ischemic colitis.

Clinical improvement was significant after stent implantation, 96.6% had Rutherford class 0 or 1 at 1 month follow-up and improvement of the Rutherford class was achieved in 97.5% (Table IV). 2 patients remained stable (1.7%) and 1 patient (0.8%) experienced a worsening in the Rutherford class from 2 to 3. The latter patient underwent a TLR. Unfortunately, no Rutherford class was reported at 12 months for this patient, due to lost to follow-up. At 12 months, 88.7% had Rutherford class 0 or 1 (Table IV). 83.9% experienced improvement of the Rutherford class from the initial treatment with the sinus-Superflex-635 stent (Optimed GmbH), without the need to undergo TLR, e.g. the primary sustained clinical improvement (Table IV). The secondary sustained clinical improvement, allowing TLRs, is 90.6% (Table IV). Of the 8 patients that were revascularized and had a complete 12 month follow-up, 7 showed improvement of the Rutherford class compared to baseline, 1 remained stable. Only 1 patient deteriorated from Rutherford class 3 at baseline (0 at 1 month) to 5 at 12 months, afterwards treated with a femoral popliteal bypass procedure.

Discussion

Endovascular treatment options for FPA lesions are evolving constantly. Although PTA offered high immediate technical success, durable patency results were lacking. Particularly, in CTO and long lesions, patency rates at 6 months ranged from 30 to 80% (6). Stents have the ability to overcome acute limitations of PTA such as elastic recoil and intimal dissection. Old generation balloon-expandable BMS are no longer used in the femoropopliteal segment as they are susceptible to external compression and longitudinal axis deformation related to restenosis (7). New generation, self-expanding nitinol stents demonstrate elastic and thermal memory properties and show high resistance to deformation, to cope better with the dynamic forces within the FPA compared to the BMS. These nitinol stents have shown superior efficacy over plain old balloon angioplasty (POBA) in SFA stenosis (8-10), however, in-stent restenosis due to neointimal hyperplasia represents a relevant clinical problem. After barotrauma, an exuberant healing response causes formation of a neointima over the site of injury (11). Treatment of in-stent restenosis is particularly difficult and prompted

investigation into treatment modalities to inhibit neointima formation, including DESs and DCBs. DESs are self-expanding nitinol stents coated with anti-proliferating drugs. This combination of mechanical nitinol scaffolding with inhibition of neointima formation seemed appealing, but initial studies yielded less than optimal results. The SIRROCO (Sirolimus-Coated Cordis Self-Expandable Stent) trial (2) failed to show any difference in restenosis at 12 months between the sirolimus-coated S.M.A.R.T. stent (Cordis) and the non–drug-coated S.M.A.R.T. stent (Cordis). Similarly, the STRIDES (Superficial Femoral Artery Treatment with Drug-Eluting Stents) study (4), a single-arm study of the Dynalink-E everolimus stent (Abbott Vascular) with no comparative group in short lesions, demonstrated a disappointing 12 month restenosis rate of 32%. Several trials have been performed with the Zilver PTX drug eluting peripheral stent (Cook Medical) (3, 5, 12, 13). One demonstrated a freedom from TLR rate of 91.0% and a primary patency rate of 86.4% at 12 months for a total of 1,861 stents fitted, to treat 1,075 lesions (5). However, patients only had Rutherford class I or II claudication, which did not represent a real-world patient cohort. The ZEPHYR (Zilver PTX for the Femoral Artery and Proximal Popliteal Artery) study (13), on the other hand, included slightly more diabetics and critical limb ischemia patients, and showed a 12 months patency rate of 68%, and a major adverse limb event rate of 22% in 690 patents with 831 FPA lesions. Recently, the results of the Zilver DES (Cook Medical) for femoropopliteal PAD in patients with no continuous patent infrapopliteal runoff arteries compared with patients with at least 1 continuous patent runoff vessel showed primary patency rates of 76.8% and 86.3% at 12 months and 68.4% and 70.7% at 24 months in the no-runoff and runoff groups, respectively (12). Also recently, the first randomized, head-to-head comparison of two DESs in patients with FPA disease, the IMPERIAL trial (14), published data comparing the Eluvia paclitaxel-eluting stent (Boston Scientific) to Zilver DES (Cook Medical) in patients with symptomatic lower-limb ischemia manifesting as claudication (Rutherford category 2, 3, or 4) enrolled by 65 centers. The primary patency at 12 months assessed by duplex ultrasound was 86.8% with Eluvia and 81.5% with Zilver DES (Cook Medical), demonstrating non-inferiority. Occurrence of major adverse events and TLRs did not differ significantly. These inconsistent efficacy data, combined with the high cost and the limited sizes available for DESs, hamper their routine use in endovascular treatment of long and complex FPA lesions for the time being. In addition, metal implantable devices (DES, bare metal stents, nitinol stents) are associated with problems such as stent fractures, the need for long-term antiplatelet therapy, and stent occlusion.

DCBs emerged as a stentless alternative strategy to avoid restenosis. To date, multiple randomized clinical trials have demonstrated superior patency rates with DCB compared to POBA (15-21). The use of DCB in the treatment of FPA lesions is established and widespread, proving high clinical and economic value. However, suboptimal DCB results (residual stenosis, flow-limiting dissection) may occur with long, calcified and/or fibrotic lesions, requiring bail-out stenting. A recent study, reporting on 225 DCB treated FPA lesions in 224 patients showed a need for bail-out stenting in 31% of DCB interventions. Lesions treated with stents were longer and less likely to be in-stent restenosis lesions. Stenting was significantly more frequent in complex FPA lesions, including CTO. For bail-out stenting, nitinol stents were used most frequently (50%) followed by DES (34%) and BMS (22%). Similar short and intermediate-term clinical outcomes were obtained compared to non-stented lesions (22). Moreover, several DCB studies show a need for bail-out stenting in 10.7 % to 35.7% of DCB procedures (20, 23-28).

In the current study, the sinus-Superflex-635 stent (Optimed GmbH) was found to be safe and effective for the treatment of lesions in the SFA and PPA in patients with intermittent claudication and ischemic rest pain. This registry demonstrates a primary patency rate of 78.5% (79.1% using KM point estimate), a TLR rate of 8.4% and a low stent fracture rate of 0.9% (1 Type I fracture) at 12 months. There was a sustained clinical benefit as demonstrated by an improvement in Rutherford category. This study does not allow for direct comparison with other stents, however, efficacy data are similar and often superior to those reported in other trails in which primary patency rates ranges from 60.6% to 87.6%, TLR rates from 7.7% to 23.4% and stent fractures from 0% to 32.7% (29-38). Furthermore, the new bioresorbable REMEDY stent (Endocor) yields disappointing efficacy results (39). In addition, the benefit of using bail-out DES after suboptimal DCB results is unclear. This registry promotes the sinus-Superflex-635 stent (Optimed GmbH) as a safe and reliable option for bail-out stenting after suboptimal DCB results. Long stent availability minimizes the need for stent overlap associated with an increased risk of fracture and site-specific restenosis (7). Due to the high visibility and easy deployment, the sinus-Superflex-635 stent (Optimed GmbH) also represents a practical option in the endovascular treatment of long and complex SFA lesions.

Conclusions

Favorable patency and safety results, combined with refined design and long stent availability of the sinus-Superflex-635 self-expandable nitinol stent (Optimed GmbH), prove its value for bail-out stenting after suboptimal DCB results.

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NOTES

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TABLES

Table I.— Baseline demographic and clinical characteristics of the 117 enrolled patients

# Patients	117
# Patients, both legs treated	4
# Lesions (study legs)	121
# Stents	129
Age (y)	69.4 y ± 9.7 (45-89)
Weight (kg)	76.7 kg ± 13.6 (54-110)
Length	169.9 cm ± 8.9 (157-187)
BMI	26.5 ± 4.0 (19.1-38.1)
Male	83/117 (70.9%)
Diabetes mellitus	31/117 (26.5%)
Type I	10/117 (8.5%)
Type II	21/117 (17.9%)
Hypertension	82/117 (70.1%)
Hyperlipidaemia	77/117 (65.8%)
Current smoker	33/117 (28.2%)
History of coronary artery disease	31/117 (26.5%)
History of cerebrovascular accident	13/117 (11.1%)

Table note: Continuous variables are presented as mean ± standard deviation (range); categorical variables are presented as counts (percentages). BMI: Body Mass Index

Table II.— Baseline angiographic and interventional data for 121 treated lesions

Lesion length (mm)	71.4 mm ± 56.3 mm (7 – 350)
Reference vessel diameter (mm)	5.5 mm ± 0.6 (4.5 – 6.5)
Diameter stenosis (%)	89.1 % ± 10.9 (50 - 100)
Total occlusion	37/121 (30.6 %)
Calcification	
None	21/121 (17.4 %)
Moderate	68/121 (56.2 %)
Severe	32/121 (26.4 %)
Location	
Proximal segment SFA	15/121 (12.4 %)
Distal segment SFA	74/121 (61.2 %)
SFA	11/121 (9.1 %)
PA-P1 segment	9/121 (7.4 %)
Distal segment SFA + PA-P1 segment	9/121 (7.4 %)
FPA	3/121 (2.5 %)
TASC	
A	64/121 (52.9 %)
B	44/121 (36.4 %)
C	13/121 (10.7 %)
# Stents	129
1 stent	113/121 (93.4 %)
2 stents, no overlap	2/121 (1.7 %)
2 stents, overlap	6/121 (5.0 %)
Lesion pre-dilatation	91/121 (75.2 %)

Table note: Continuous variables are presented as mean ± standard deviation (range); categorical variables are presented as counts (percentages). FPA: femoropopliteal artery; PA: Popliteal artery; SFA: Superficial Femoral Artery; TASC: Trans-Atlantic inter-Society Consensus

Table III.— Efficacy and safety measures

Primary patency at 1 month	117/120 (97.5%)
Primary patency at 12 months	84/107 (78.5%)
TASC A	50/59 (84.7%)
TASC B	30/37 (81.0%)
TASC C	4/11 (36.4%)
TLR rate at 12 months	9/107 (8.4%)
TASC A	5/59 (8.4%)
TASC B	1/37 (2.7%)
TASC C	3/11 (27.3%)
Angioplasty	4/107 (3.7%)
Angioplasty with DCB	2/107 (1.9%)
Angioplasty with DCB and DES	1/107 (0.9%)
Stenting	1/107 (0.9%)
Unknown	1/107 (0.9%)
TER rate at 12 months	5/106 (4.7%)
Angioplasty with DCB	1/106 (0.9%)
Angioplasty and stenting	2/106 (1.9%)
Stenting	1/106 (0.9%)
Surgery (profundaplasty)	1/106 (0.9%)
Amputation rate at 12 months	
Minor	1/103 (1.0%)
Major: below-the-knee	0/103 (0%)
Major: above-the-knee	0/103 (0%)
Death	
30 days mortality	0/117 (0%)
Overall mortality	6/109 (5.5%)

Cardiovascular	2/109 (1.8%)
Non-Cardiovascular	4/109 (3.7%)

Table note: Categorical variables are presented as counts (percentages). DCB: Drug-coated balloon; DES: Drug-eluting stent; TASC: Trans-Atlantic inter-Society Consensus; TER: Target extremity revascularization; TLR: Target lesion revascularization

Table IV.— Clinical outcomes

	Baseline (n=121)	**1 Month (n=119)**	**12 Months (n=106)**
Rutherford Class			
0	0/121 (0%)	110/119 (92.4%)	82/106 (77.4%)
1	0/121 (0%)	5/119 (4.2%)	12/106 (11.3%)
2	50/121 (41.3 %)	1/119 (0.8%	3/106 (2.8%)
3	60/121 (49.6 %)	1/119 (0.8%)	6/106 (5.7%)
4	2/121 (1.7 %)	0/119 (0%)	0/106 (0%)
5	9/121 (7.4 %)	2/119 (1.7%)	3/106 (2.8%)
6	0/121 (0%)	0/119 (0.0%)	0/106 (0.0%)
Total group without need for TLR			
Compared to baseline:			
Improved		116/119 (97.5 %)	89/106 (83.9%)
(Primary sustained clinical improvement)			
Stable		2/119 (1.7 %)	8/106 (7.5%)
Deteriorated		1/119 (0.8 %)	1/106 (0.9%)
Total group with need for TLR			
Compared to baseline:			

Improved			96/106 (90.6%)
(Secondary sustained clinical improvement)			
Stable			9/106 (8.5%)
Deteriorated			1/106 (0.9%)
TLR group			
Compared to baseline:			
Improved		0/1 (0%)	7/8 (87.5%)
Stable		0/1 (0%)	1/8 (12.5%)
Deteriorated		1/1 (100%)	0/8 (0,0%)

Table note: Categorical variables are presented as counts (percentages). TLR: Target lesion revascularization

TITLES OF FIGURES

Figure 1.— Kaplan-Meier (KM) point estimate of freedom from loss of primary patency defined as peak systolic velocity ratio (PSR) ≤ 2.4 and no clinically-driven target lesion revascularization (TLR).