NCT03349996 Unique Protocol ID: ID3-20170704

PROTOCOL SYNOPSIS: BELSTREAM study

Title	Belgian Physician-Initiated Trial Investigating the Lifestream Peripheral Stent Graft System for the treatment of complex TASC C and D iliac lesions	
Objective	The objective of this clinical investigation is to evaluate, in a controlled setting, the long-term (up to 60 months) safety and efficacy of the Lifestream Peripheral Stent Graft System (Bard) in clinical settings post CE-certification when used according to the indications of the IFU.	
Methodology	Prospective, multi-center, physician-sponsored clinical study	
Enrollment	70 subjects	
Primary Endpoint	**Efficacy endpoint**	The primary endpoint of the study is primary patency at 12 months , defined as a target lesion without a hemodynamically significant stenosis on duplex ultrasound (>50%, systolic velocity ratio greater than 2.5) and with freedom from Target Lesion Revascularization (TLR) within 12 months. TLR is defined as a repeated intervention to maintain or re-establish patency within the region of the treated arterial vessel plus 5mm proximal and distal to the treated lesion edge.
	Safety endpoint	The primary safety endpoint of the study is the freedom of periprocedural Serious Adverse Events (SAEs), defined according to ISO 14155:2011 as any clinical event that is fatal, life-threatening, or judged to be severe by the investigator; resulted in persistent or significant disability; necessitated surgical or percutaneous intervention; or required prolonged hospitalization.
Secondary Endpoint	1.	Primary patency rate at 1-, 6-, 24-, 36-, 48- and 60 month follow-up. Patients that present without a hemodynamically significant stenosis at the target area on duplex ultrasound (>50%, systolic velocity ratio greater than 2.5) and without prior TLR are defined as being primary patent at the given follow-up.
	2.	Stent graft occlusion rate at pre-discharge, 1-, 6-, 12-, 24-, 36-, 48-, and 60-month follow-up.
	3.	Ankle Brachial Index (ABI) at 1-, 6-, 12-, 24-, 36-, 48- and 60 month follow-up compared with the baseline ABI.
	4.	Amputation rate at 1-, 6-, 12-, 24-, 36-, 48- and 60 month follow-up, defined as any amputation above the knee.
	5.	Technical success, defined as the ability to achieve final residual angiographic stenosis no greater than 30%.
	6.	Clinical success at follow-up is defined as an improvement of Rutherford classification at 1-, 6-, 12-, 24-, 36-, 48- and 60 -month follow-up of one class or more as compared to the pre-procedure Rutherford classification.
Inclusion Criteria	*General inclusion criteria*	
	1.	Corresponding to the CE-mark indications/contra-indications and according to the current medical guidelines for minimally invasive peripheral interventions.
	2.	Patient presenting with a stenotic or occlusive lesion at the iliac arteries suitable for stenting (on indication for primary stenting, based on the discretion of the investigator)
	3.	Patient presenting a score from 2 to 4 following Rutherford classification
	4.	Patient is willing to comply with specified follow-up evaluations at the specified times for the duration of the study
	5.	Patient is >18 years old

	6.	Patient (or their legal representative) understands the nature of the procedure and provides written informed consent, prior to enrolment in the study
	7.	Patient is eligible for treatment with the Lifestream Peripheral Stent Graft System (Bard)
	Angiographic inclusion criteria	
	1.	The target lesion is either a modified TASC-II class C or D lesion with one of the listed specifications: ○ Type C lesions • Bilateral Common Iliac Artery occlusions • Bilateral External Iliac Artery stenoses 3–10 cm long not extending into the Common Femoral Artery ○ Type D lesions • Unilateral occlusions of both Common Iliac and External Iliac Artery • Diffuse disease involving the aorta bifurcation • Bilateral occlusions of External Iliac Artery
	2.	The target lesion has angiographic evidence of stenosis or restenosis post PTA >50% or occlusion which can be passed with standard guidewire manipulation
	3.	There is angiographic evidence of a patent Common and Deep Femoral Artery
Exclusion criteria	1.	PTA is technically not possible (not feasible to access the lesion or a defect with the guidewire or balloon catheter)
	2.	Presence of an aneurysm immediately adjacent to the site of stent graft implantation
	3.	Lesions in or adjacent to essential collaterals(s)
	4.	Lesions in locations subject to external compression
	5.	Heavily calcified lesions resistant to PTA
	6.	Patients with diffuse distal disease resulting in poor stent graft outflow
	7.	Patients with a history of coagulation disorders
	8.	Patients with aspirin allergy or bleeding complications and patients unable or unwilling to tolerate anticoagulant/antiplatelet therapy and/or non-responders to anticoagulant/antiplatelet therapy
	9.	Fresh thrombus formation
	10.	Patients with known hypersensitivity to the stent material (L605) and/or PTFE
	11.	The target lesion is either a modified TASC-II class C or D lesion with aortic or common femoral lesion involvement: ○ Type C lesions • Unilateral External Iliac Artery stenosis extending into the Common Femoral Artery • Unilateral External Iliac Artery occlusion that involves the origins of the Internal Iliac and/or Common Femoral Artery • Heavily calcified unilateral External Iliac Artery occlusion with the involvement of the Common Femoral Artery ○ Type D lesions • Infra-renal aortoiliac occlusion • Iliac stenoses in patients with an Abdominal Aortic Aneurysm (AAA) requiring treatment and not amenable to endograft placement or

		other lesions requiring open aortic or iliac surgery • Diffuse multiple stenoses involving the unilateral Common Iliac, External Iliac and Common Femoral Artery
	12.	Previously implanted stent(s) at the same lesion site
	13.	Reference segment diameter is not suitable for the available stent graft design
	14.	Untreatable lesion located at the distal outflow arteries
	15.	Use of alternative therapy (e.g. atherectomy, cutting balloon, DCB, laser, radiation therapy) as part of the index procedure
	16.	Patients refusing treatment
	17.	Patients for whom antiplatelet therapy, anticoagulants or thrombolytic drugs are contraindicated
	18.	Patients who exhibit persistent acute intraluminal thrombus of the proposed lesion site
	19.	Perforation at the angioplasty site evidenced by extravasation of contrast medium
	20.	Patients with a history of prior life-threatening contrast medium reaction
	21.	Patients with uncorrected bleeding disorders
	22.	Female patient with child bearing potential not taking adequate contraceptives or currently breastfeeding
	23.	Life expectancy of less than twelve months
	24.	Any planned surgical intervention/procedure within 30 days of the study procedure
	25.	Any patient considered to be hemodynamically unstable at onset of procedure
P.I.	Dr. Peter Goverde, ZNA Campus Stuivenberg, Antwerp, Belgium	
Study conduct	The study will be conducted in accordance with the Declaration of Helsinki and ISO 14155:2011, and comply with requirements regarding Ethics Committees and any other applicable regulations	
Participating sites	• A.Z. Groeninge, Kortrijk, Belgium: Dr. Lerut • A.Z. Sint-Blasius, Dendermonde, Belgium: Dr. Deloose • Imelda Hospital, Bonheiden, Belgium: Dr. Verbist • O.L.V. Hospital, Aalst, Belgium: Dr. Maene • R.Z. H.H., Tienen, Belgium: Dr. Keirse • Z.O.L., Genk, Belgium: Dr. Lansink • Z.N.A. Stuivenberg, Antwerpen, Belgium: Dr. Goverde	

Table 1. Study Investigations

Time		Tests and Procedures
Pre-Procedure (up to 24 hours before procedure, unless otherwise noted.)	1. 2. 3. 4.	Medical History Medication Registration Physical Exam Rutherford Categorization and ABI
Procedure	1. 2. 3. 4.	Angiography, pre–procedure Study inclusion Intervention Rutherford Categorization and ABI
One day Post-Procedure	1. 2. 3.	Medication Registration Physical Examination Rutherford Categorization and ABI
One month Follow-up (± 7 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
Six month Follow-up (± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
One year Follow-up (± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
Two year Follow-up (730 ± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
Three year Follow-up (1095 ± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
Four year Follow-up (1460 ± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound
Five year Follow-up (1825 ± 30 days)	1. 2. 3. 4.	Medication Registration Physical Examination Rutherford Categorization and ABI Colour Flow Doppler Ultrasound

- Statistical Analysis Plan (SAP)

Descriptive data summaries will be used to present and summarize the collected data. For categorical variables (e.g. Gender) frequency distributions and cross tabulations will be given. For numeric variables (e.g. Patient age) minimum, maximum, mean, median and standard deviation will be calculated. For all variables a 95% confidence interval for the relevant parameters of the underlying distribution will be calculated. For all time-dependent events life-tables will be calculated using the Kaplan Meier estimate method, for a period starting on the date of the procedure up to and including the 60-month follow-up visit. Stratification to pre-procedural risk factors, Rutherford and lesion criteria will be performed and the log rank test will be used to compare between the different outcomes, associated p-values < 0.05 are defined as significant.