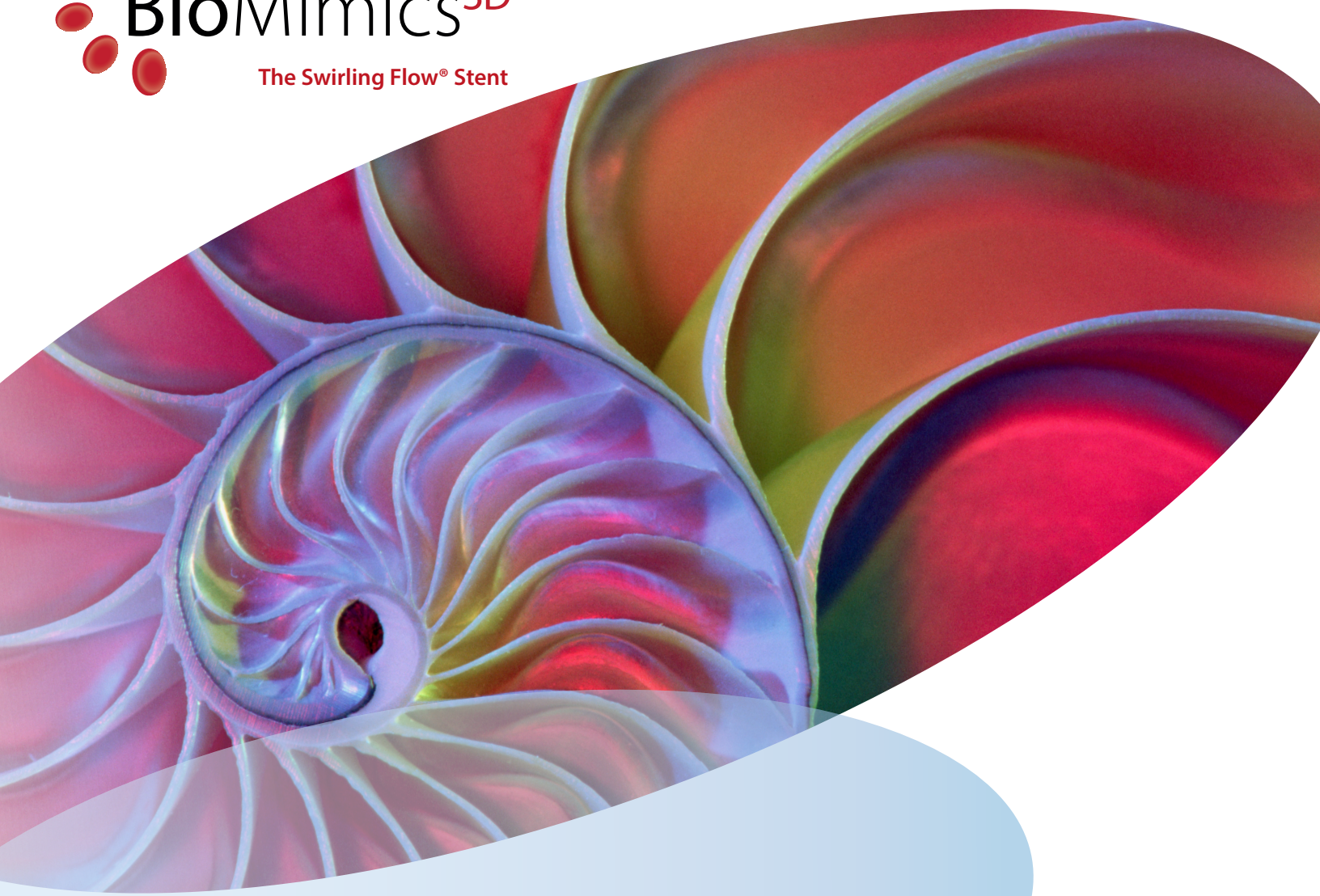
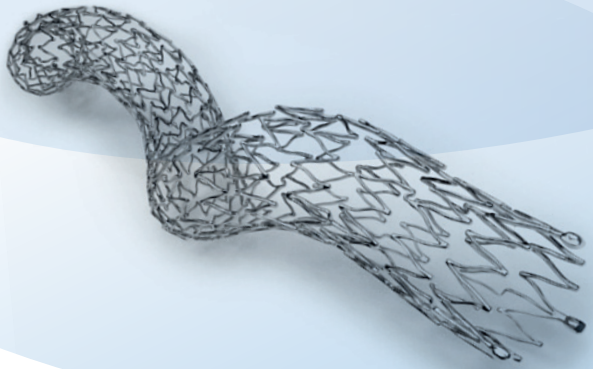
BioMimics 3D

The Swirling Flow® Stent



Swirling Flow®

Inspired by Nature, shaped by Veryan



CREATED WITH DESIGN INTELLIGENCE

Veryan

AN OTSUKA MEDICAL DEVICES COMPANY

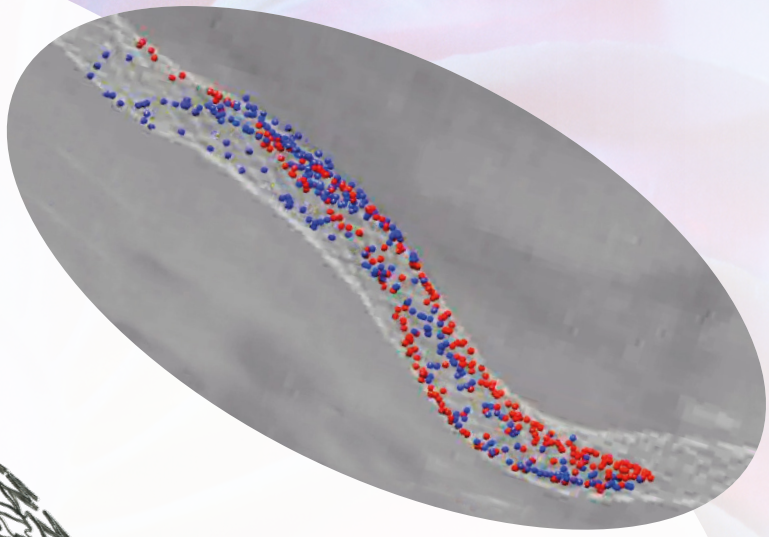
BioMimics 3D

The Swirling Flow® Stent

Swirling flow

Nature's way of protecting patency, engineered by Veryan to improve stenting outcomes as demonstrated in the MIMICS clinical program.[1]

The **BioMimics 3D stent** has a unique 3D helical geometry which imparts a gentle helical shape to the stented artery[2], provoking swirling flow-mediated increase in wall shear stress that has been shown to reduce intimal hyperplasia.[3]



Computational fluid dynamics representation.*



*Computational fluid dynamics representation of in-stent swirling flow in an X-ray image.[4]

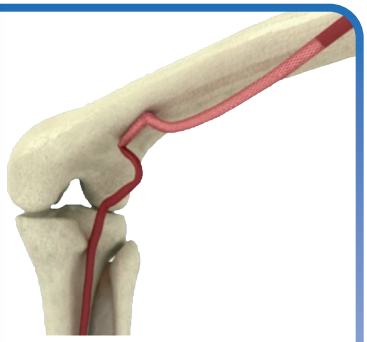
Improved biomechanical performance[5]
and excellent fracture resistance[6]

Unstented vessel
As the leg bends, the native femoropopliteal artery shortens under axial compression.[7]

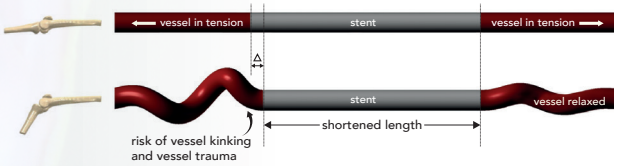


0% Fracture in the **MIMICS *RCT*** and **MIMICS *2*** Studies[8,9]

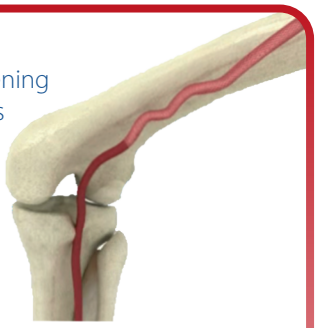
Straight stent
resists compression, risking damage to stent and vessel.[10]



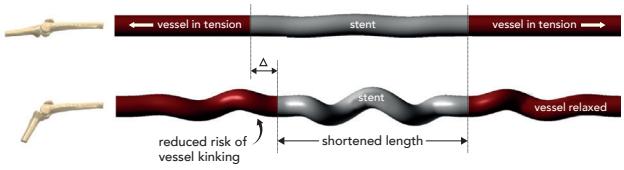
Impact of **straight stent** on femoropopliteal artery



Unique BioMimics 3D stent
design accommodates shortening and stress is distributed across entire stent, reducing risk of stent fracture and associated vascular injury.

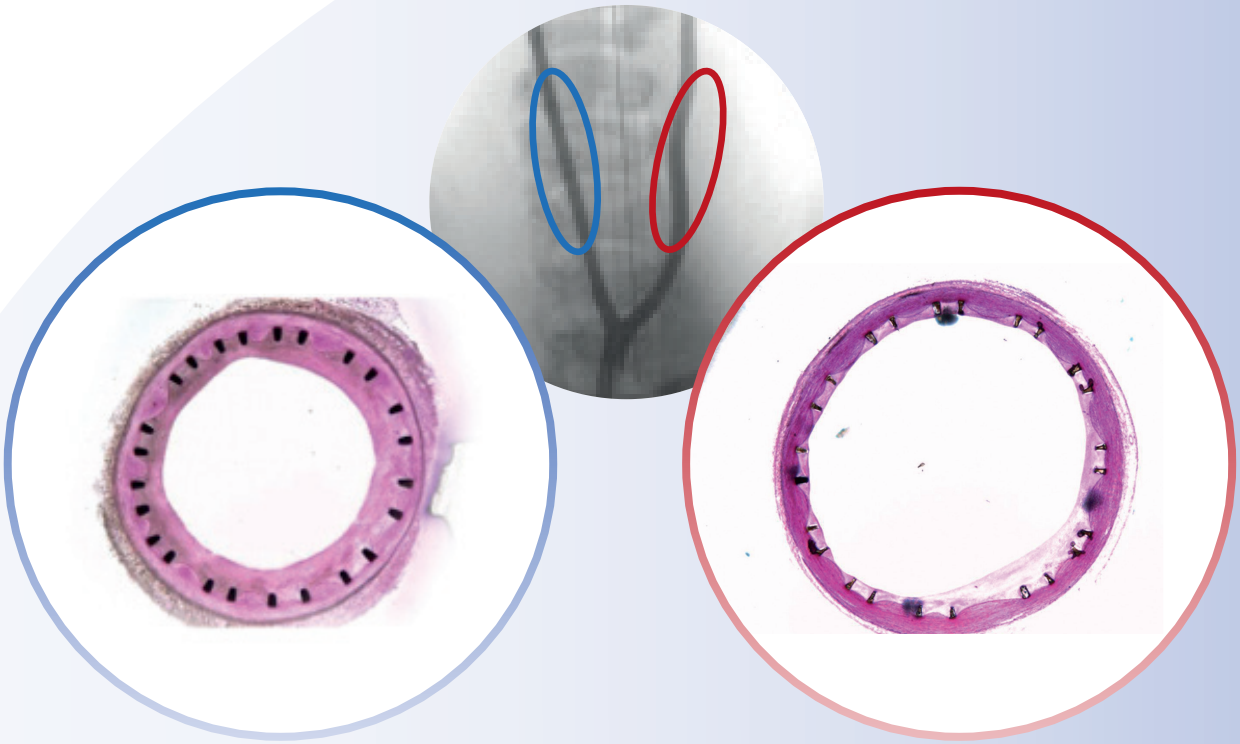


Impact of **BioMimics 3D stent** on femoropopliteal artery



Improved patency

45% reduction in neointimal thickness at 30 days (P<0.001)[3]



Straight Stent
Pre-clinical model: 30-day histology[3]

3D Helical Stent
Pre-clinical model: 30-day histology [3]

Veryan's pre-clinical programme provides confirmatory evidence of the potential benefit of **swirling flow** generated by a stent with 3D helical geometry.

Arterial straightening and reduced wall shear stress may be important contributors to adverse clinical outcomes with straight stents in the femoropopliteal arteries.

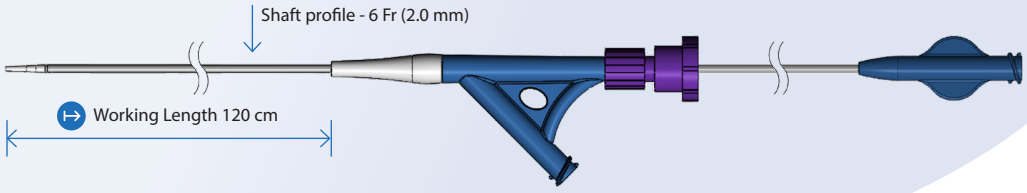
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Ordering information

BioMimics 3D
The Swirling Flow® Stent

Quick order reference	Catalog number	Stent diameter (mm)	Reference vessel diameter (mm)	Stent length (mm)
5x60	BM3D-05-060-120-UN	5	4.0	60
5x80	BM3D-05-080-120-UN	5	4.0	80
5x100	BM3D-05-100-120-UN	5	4.0	100
5x125	BM3D-05-125-120-UN	5	4.0	125
5x150	BM3D-05-150-120-UN	5	4.0	150
6x60	BM3D-06-060-120-UN	6	4.0-5.0	60
6x80	BM3D-06-080-120-UN	6	4.0-5.0	80
6x100	BM3D-06-100-120-UN	6	4.0-5.0	100
6x125	BM3D-06-125-120-UN	6	4.0-5.0	125
6x150	BM3D-06-150-120-UN	6	4.0-5.0	150
7x60	BM3D-07-060-120-UN	7	5.0-6.0	60
7x80	BM3D-07-080-120-UN	7	5.0-6.0	80
7x100	BM3D-07-100-120-UN	7	5.0-6.0	100
7x125	BM3D-07-125-120-UN	7	5.0-6.0	125
7x150	BM3D-07-150-120-UN	7	5.0-6.0	150



BioMimics 3D Delivery System

Recommended guidewire	0.035"
6F introducer compatible/Minimum ID	2.2 mm
Delivery catheter working length	120 cm

Evaluated with 6Fr Terumo Destination Guiding Sheath
1,4,5,6,9- Data on file at Veryan Medical
2- Zeller T. Oral Presentation VIVA 2014
3- Caro et al. 2013 J R Soc Interface 10: 20130578b
7,10- BH Smouse et al, Endovasc. Today, vol 4, no. 6, pp. 60-66, 200
8- Zeller T. et al; Circ Cardiovasc Interv. 2016;9

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Contraindications, warnings and precautions

CONTRAINDICATIONS

All customary contraindications for angioplasty must be considered when using the BioMimics 3D® Vascular Stent System.
There are additional contraindications:

- Patients whose lesions cannot be crossed with a wire and/or balloon catheter and cannot be dilated sufficiently to allow passage of the delivery system.
- Patients with known intolerance to antiplatelet and/or anticoagulation therapies.
- Patients who are judged to have a lesion that prevents proper placement or deployment of the stent.
- A lesion that is within an aneurysm or an aneurysm with a proximal or distal segment to the lesion.
- Patients with a known hypersensitivity to nickel, titanium or tantalum.

WARNINGS

General Warnings

- DO NOT use after the "use by" date specified on the label.
- DO NOT use if the sterile package is opened or damaged or any information provided is obscured.
- DO NOT use if the device is damaged or if the stent is partially deployed.
- DO NOT reuse the BioMimics 3D® Stent Delivery System (SDS) – this may lead contamination, infection, and non-performance (limb loss or death). DO NOT re-sterilize the BioMimics 3D® Vascular Stent System.
- This delivery system contains stainless steel which contains a hazardous substance. Cobalt (CAS No. 7440-48- 4) is classified as a carcinogenic, mutagenic, or toxic for reproduction (CMR) substance of Category 1A or 1B, or as an endocrine disruptor (ED), and is present at a concentration >0.1% weight/weight.

Deployment Warnings

- DO NOT force passage if resistance is encountered at any time during delivery of the SDS. This may cause damage to the stent, the SDS, or vessel or may lead to partial deployment. If the stent cannot be deployed, remove the entire delivery system (a partially deployed stent may require surgical removal).
- DO NOT push or advance the SDS forward (distally) once stent deployment has commenced.
- DO NOT attempt to recapture a partially deployed stent using the stent delivery system.
- DO NOT force removal of the delivery system if resistance is encountered at any time during withdrawal (post stent deployment); instead hold the Bifurcated Luer
stationary and retract the Inner Shaft until the Distal Tip contacts the Outer Sheath Markerband and withdraw the system as one unit. Applying excessive force could result in loss of delivery system components or damage to the stent, delivery system, or vessel.

PRECAUTIONS

- The SDS is not designed for use with power injection systems.
- Always use an introducer or guide sheath for the implant procedure, to protect the access site.
- Never post-dilate the stent using a balloon that is larger in diameter than the nominal (labelled) diameter of the stent.
- The minimally acceptable introducer or guide sheath size is printed on the package label. Do not attempt to pass the stent delivery system through a smaller size introducer or guide sheath than indicated on the label.
- Prior to deployment, ensure adequate distance between the proximal end of stent and the introducer/guide sheath to prevent deployment within introducer/guide sheath.
- This device has not been tested in patients who are pregnant or patients who may be pregnant.
- Take caution when considering whether to use this device in a vessel in which there may be a residual stenosis of 50% diameter or larger in the target vessel after the planned intervention.
- In patients with poor kidney function, contrast agents may precipitate kidney failure.
- The stent is intended for use by physicians who have received appropriate training in endovascular intervention and placement of vascular stents.
- Failure to hold the Luer Hub in a fixed position during stent deployment may result in partial or inaccurate deployment, incorrect deployed stent length or increased deployment forces.
- The reference vessel diameter should be measured accurately to reduce the possibility of stent migration or vessel damage due to incorrect sizing.
- The SDS is not intended for repositioning or recapturing a partially or completely deployed stent.
- If a second BioMimics 3D® stent is required, deliver the most distal stent first to minimize the risk of stent dislodgement/damage or unsuccessful delivery of the second stent.
- If a second BioMimics 3D® stent is placed in sequence and overlapped, the overlap should be less than 10mm. Overlapping more than two stents has not been evaluated.
- If the procedure requires additional non-BioMimics 3D® stent placement, a Nitinol stent should be selected. The risk of corrosion increases if stents of differing metals contact one another.
- Caution should be used when crossing the deployed stent with any ancillary devices.
- The BioMimics 3D® SDS is not designed for guidewire exchanges. If a guidewire exchange is needed or desired, remove the delivery system first.
- Carefully inspect the sterile package and device prior to use to verify that neither has been damaged during shipment.
- The BioMimics 3D® SDS is provided sterile for single use only and should be used by the end of the month of the "Use By" date printed on the package.
- After use the BioMimics 3D® SDS is a potential biohazard. Handling and disposal should be in accordance with medical practice and local regulations.
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