

# HANDBOOK *of* CORONARY STENTS

*Third Edition*

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MARTIN DUNITZ

# 19. THE MSM-BMS CORONARY STENT

*Micro Science Medical AG, Pforzheim, Germany*

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Sigmund Silber

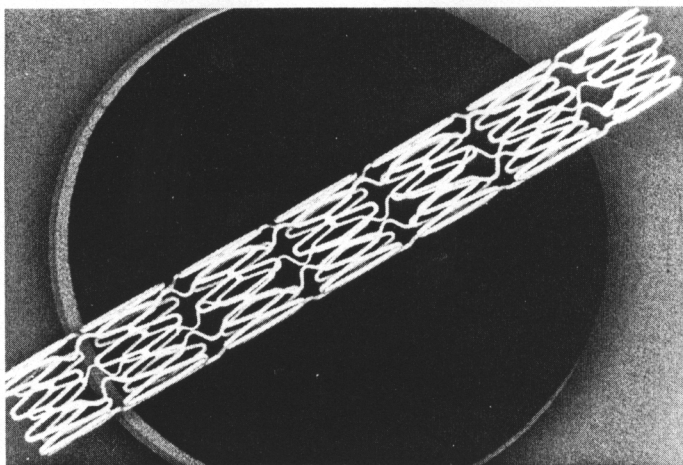
## **Description**

The MSM-stent is made of surgical stainless steel. A high-precision laser system carves uniform structures out of the raw material. Edges, ends and struts are rounded using a special finishing procedure to protect the vascular wall and balloon from damage.

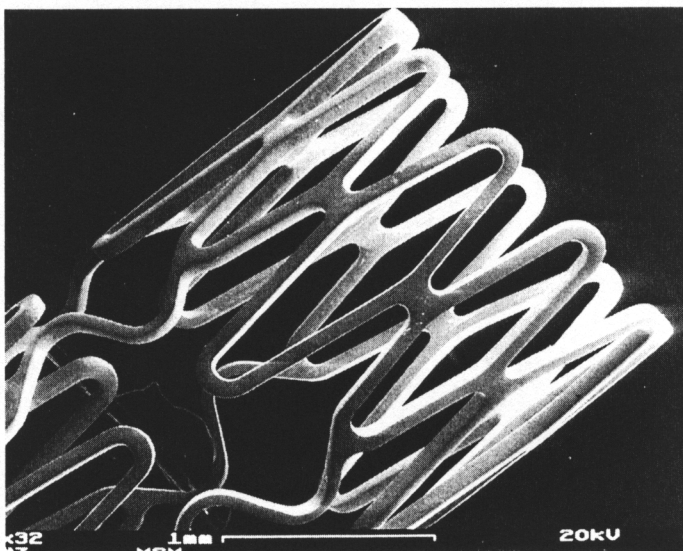
The additional product name 'BMS' (= Bio Metal Surface) designates the implantation of biometallic atoms (tantalum) into the surface under conditions of high-level vacuum. This surface treatment effects the best possible biological metallic surface. No ions are released into the blood and corrosive currents are lower than with conventional 316L-stents. The product MSM-CIS (Coronar Implant System) consists of a PTCA catheter with a premounted MSM-Stent. All stents without additional designation consist of surgical steel 316L material, stents with the additional designation HV are high vacuum refined, stents with the additional designation BMS (Bio Metal Surface) are tantalum refined.

## **History**

- October 1997 first clinical experience
- March 1998 CE-mark for MSM-Stent
- August 1998 CE for MSM-CIS (Coronar Implant System)



**Figure 19.1:** The bare MSM-BMS stent consists of 10 support and extension elements in a slotted tube design.



**Figure 19.2:** The crown of the MSM-BMS stent.

### Tips and tricks for delivery

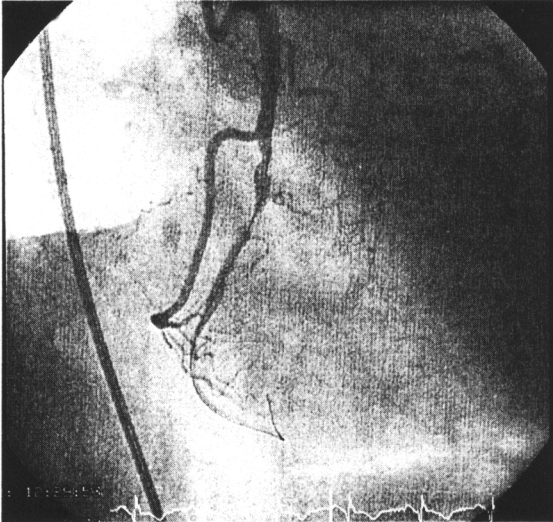
The MSM-BMS Stent is premounted on a rapid exchange system, no stent-specific tips and tricks are required. The low balloon profile with its conical, atraumatic and flexible tip makes it easy to position the fairly visible stent which is positioned centred between two X-ray markers. The MSM-BMS stent is compatible with all commercially available 6 F guiding catheters.

### Indications for use

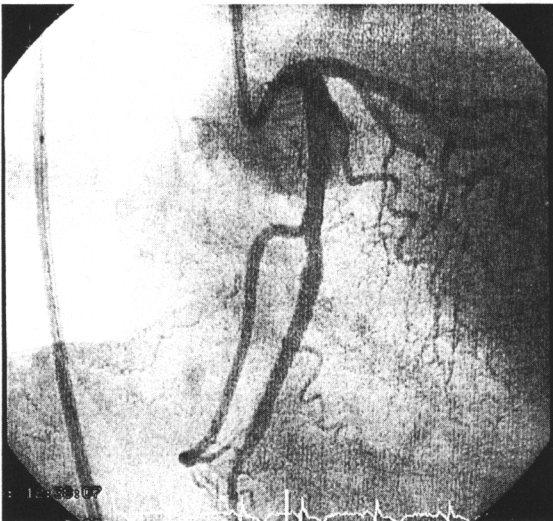
The indications for the MSM-BMS stent follow the general rules for stent implantation according to vessel size and stent length.

### Range of products

- MSM-Stent in lengths 9, 16 and 26 mm; expandable diameters 2.5–5.0 mm.
- MSM-Stent SV (small vessel) in lengths 6, 9 and 16 mm expandable diameters 2.0–2.5 mm.
- MSM-CIS (coronar implant system) with premounted MSM-Stent in lengths of 9, 16 and 26 mm on balloons of 2.5, 3.0, 3.5, 4.0 and 5.0 mm in diameter.
- MS-CIS SV with premounted MSM-Stent SV 9 and 16 mm in length on balloons of 2.0, 2.5, 3.0 and 3.5 mm in diameter.



*Figure 19.3: Severe lesion of the circumflex artery before intervention.*



*Figure 19.4: Excellent result after PTCA and deployment of the MSM-BMS 3.0/20 mm stent.*

### **Why I like my stent**

- Surface reduces thrombin formation, platelet adhesion and activation
- High long-term bio- and hemocompatibility due to a bio metal surface
- Smooth surface with no internal flaring of the greater curvature
- No release of chromium and nickel ions
- High radial strength and very low recoil
- Moderate degree of radio-opacity
- Excellent conformity to the vessel shape after deployment
- No significant shortening
- Easy tracking through tortuous vessels
- Multiple lengths and diameters
- Easy and secure crimping on balloon
- Customized lengths in steps of 2.5 mm on request

### **On-going and planned trials**

The stent is currently under clinical investigation in a non-randomized observational study. A randomized clinical multicentre study to compare the MSM-stent versus the MSM-BMS-stent is planned.

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### **MSM-BMS stent delivery system**

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Mechanism of deployment:	Balloon expandable
Protective sheath:	No
Monorail system:	Yes
Minimal internal diameter of guiding catheter:	0.064 inch (1.6 mm), 6F
Longitudinal flexibility:	High
Position of radio-opaque markers:	Proximal and distal to stent
Rated burst pressure of balloon:	15 atm
Balloon material:	PAMAX™
Balloon compliance:	Nominal at 6 atm

**MSM-BMS stent technical specifications**

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Material composition:	316 LVM stainless steel, biometal surface (BMS) with tantalum
Degree of radio-opacity (grade):	Moderate
Ferromagnetism:	Non-ferromagnetic (MRI safe)
Metallic surface area (metal: artery, expanded):	21% at 2.5 mm diameter 18% at 3.0 mm diameter 11% at 5.0 mm diameter
Stent design:	Slotted tube, 10 support and extension elements, 5 flexible length contraction compensation elements (LCCE) at the stent's circumference
Strut dimensions:	ca. 0.0032 inch (0.08 mm) thick
Profile on the balloons:	ca. 0.9–1.1 mm
Longitudinal flexibility:	High
Percentage shortening on expansion:	<3%
Expansion range (SV):	2.5–5.0 mm (2.0–3.5)
Degree of recoil (shape memory):	<3.3%
Currently available diameters:	2.0, 2.5, 3.0, 3.5, 4.0 and 5.0 mm
Currently available lengths:	
mounted:	16 and 26 mm
unmounted:	6, 9, 16 and 26 mm
Recrossability of implanted stent:	Good
Other non-coronary types available:	None