

# Endovascular management of highly calcific carotid lesions: A problem then less problem now?

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in Interventional Medicine

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**John Paul II Hospital, Krakow, Poland**



**Mesh-covered, high radial force, stent system**  
**in endovascular management**  
**of highly calcific lesions:**  
**a new paradigm in carotid revascularization?**

# Potential conflicts of interest

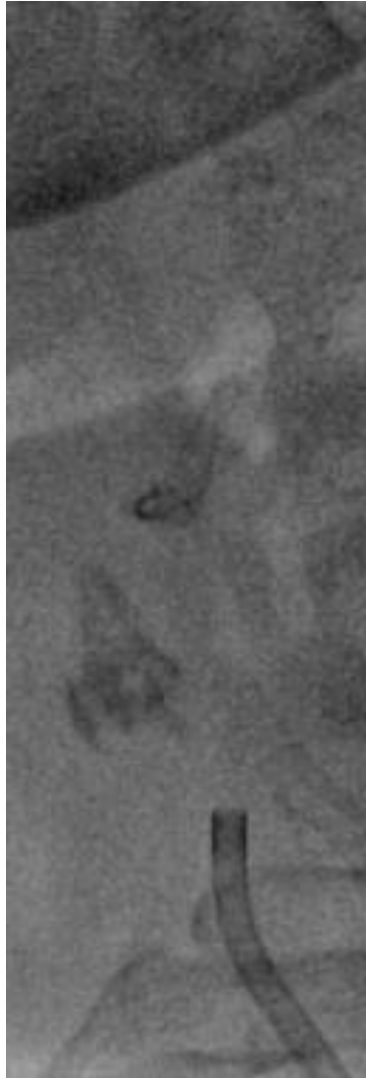
**Speaker's name: Adam Mazurek**

**I do not have any potential conflict of interest**

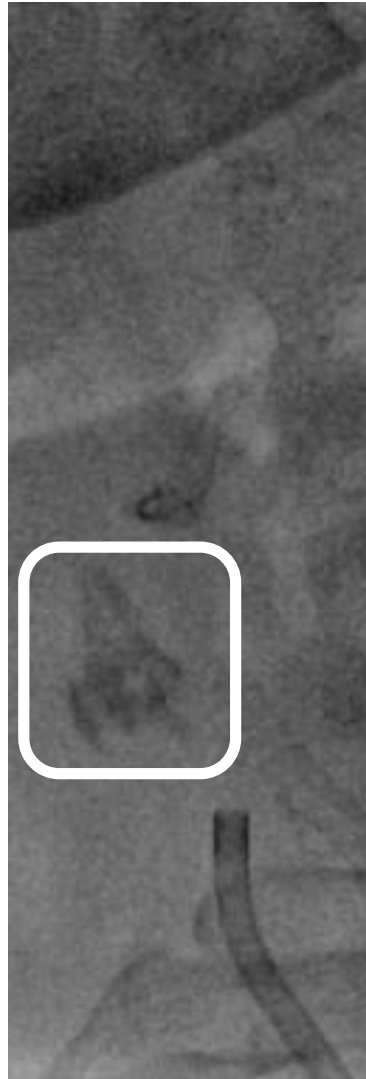
## Endovascular management of **highly-calcific** carotid artery lesions poses specific challenges that make it an increased-risk procedure...

⇒ thus some believe that, with the limitations of conventional endovascular techniques, high-calcium lesions should be reserved for surgical management (endarterectomy)

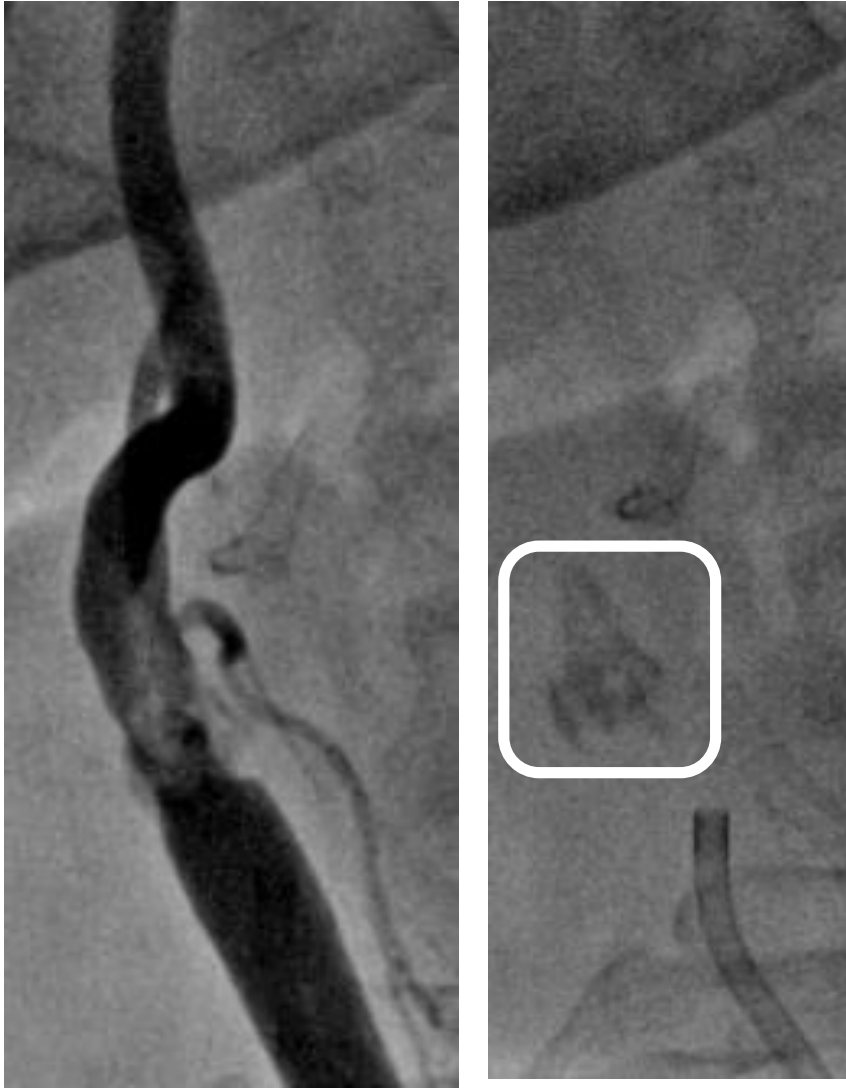
# Highly-calcific



# Highly-calcific



# Highly-calcific



- *Find the 'right' channel?*
- *Able to predilate enough?*
- *Once stent implanted, able to remove the stent delivery system (cone)?*
- *Able to postdilate enough?*
- *Enough stent radial force to keep the lumen wide?*
- *Long term outcome?*

# CAROTID PARADIGM REVASCULARIZATION



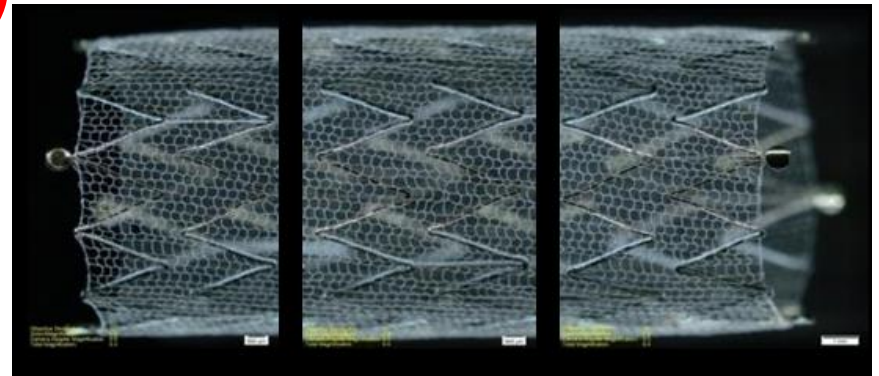


# CGuard™ – Carotid Embolic Prevention System

System specifications	
Stent type	Nitinol – self expanding
Micronet aperture size	150-180 $\mu\text{m}$
Guidewire	0.014"
Sizes	
- Diameter	6-10mm
- Length	20-60mm



**CE Mark**  
**March 2014**





- **97 patients referred to Dept. of Cardiac and Vascular Diseases, John Paul II Hospital, Poland, Krakow**
- **68 CAS (71 lesions), 1 patient with CEA + CAS**

# Paradigm study

## Index lesion qualitative characteristics (n=71 lesions)

	All (n=71)	Symptomatic (n=37)	Asymptomatic (n=34)	p
thrombus, % (n)	15% (11)	24% (9)	6% (2)	0.025
near occl./string, % (n)	21% (15)	30% (11)	12% (4)	0.084
progressive*, % (n)	27% (19)	11% (4)	44% (15)	0.003
ulcerated, % (n)	41% (29)	46% (17)	35% (12)	0.470
irregular, % (n)	72% (51)	65% (24)	79% (27)	0.197
contralateral occl., % (n)	17% (12)	22% (8)	35% (12)	0.291
<b>highly calcific, % (n)</b>	<b>24% (17)</b>	<b>14% (5)</b>	<b>35% (12)</b>	<b>0.050</b>
asymptomatic ipsilat. brain embolization/infarct	N/A	N/A	32% (11)	N/A

\* evidence of smaller lesion severity in the past

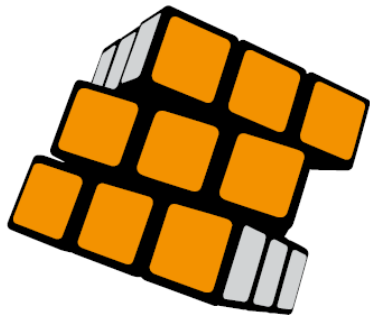


## 11:45-12:45 ■ Evolutions in carotid angioplasty

ROOM 242A

*Chairperson: S. Kedev*

*Panellist: B. Reimers*



- › Euro15A-OP253 – Novel PARADIGM in carotid revascularisation: prospective evaluation of all-comer percutaneous carotid revascularisation in symptomatic and increased-risk asymptomatic carotid artery stenosis using CGuard mesh-covered embolic prevention stent system - *P. Musialek*

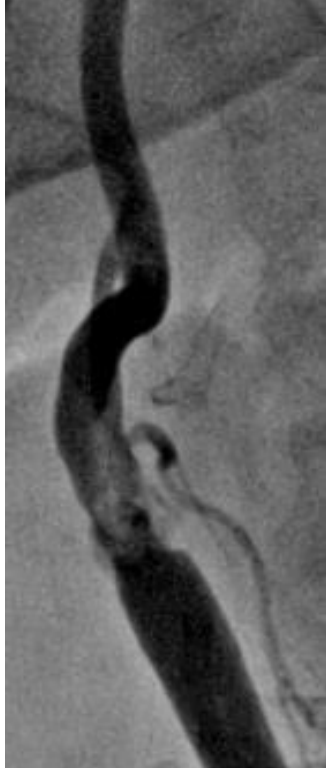
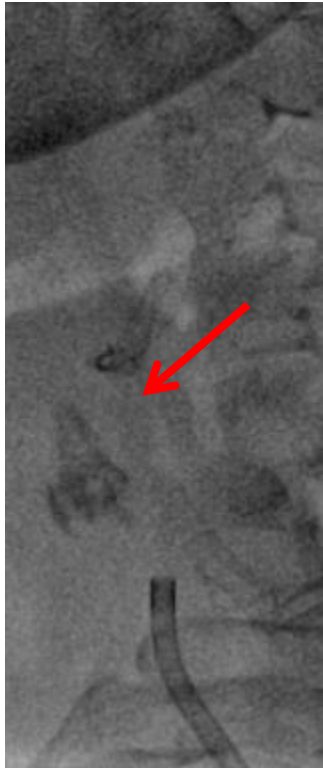
# Highly calcific I – pt #10

- Z.W., 69 year old female
- Fallot heart surgery 1970,
- IFG, HA, hyperthyroidism,
- Asymptomatic, progressive, RICA stenosis.

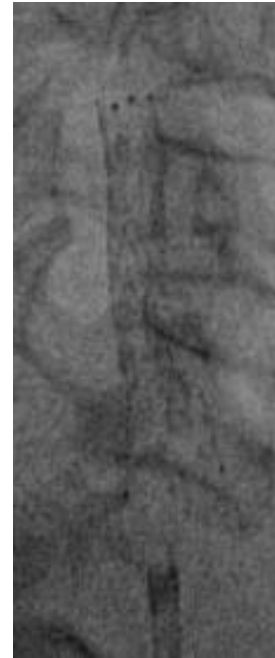
## Treatment strategy

- significant RICA (88% QCA), critical RCA (95% QCA) stenosis.
- RCA PCI (DES) as a bridge to CAS – I stage
- RICA CAS – II stage

# Highly-calcific I



**RICA** 6.2/1.5 m/s



**Predilatation 3.0x20mm followed by NC 4.5x15/20atm  
CGuard™ 9.0x30mm, postdilated ø5.5x20mm/16atm**



# Highly-calcific II – pt #27



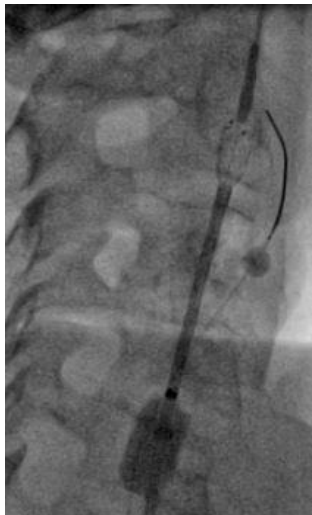
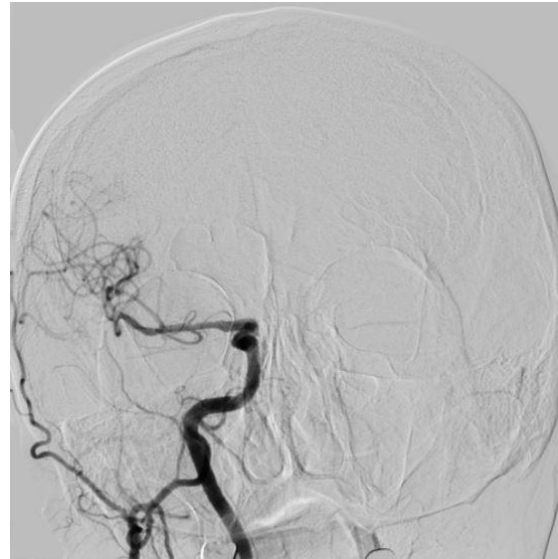
- K.J., 74 year old, male
- History of CAD (CAD/CABG)
- PAD, h/o PM implantation
- DM t.2, HA
- COPD

## Treatment strategy

- Asymptomatic, progressive bilateral ICA stenosis, no new stenosis in coronary angiography
- LICA CAS with CGuard 29.09.2014 – I stage
- RICA 99% stenosis (QCA), irregular, 'string sign' – II stage

# Highly-calcific II

**NO brain lesions with CAS**



**Predilatation 2.0x20 followed by NC 4.0x15, CGuard™ 7.0x40mm, postdilated ø 5.0mm/16 atm**



# Highly-calcific III – pt #62



- P.E, 77 yo, male
- CAD history (PCI)
- symptomatic-minor stroke history

## Treatment strategy

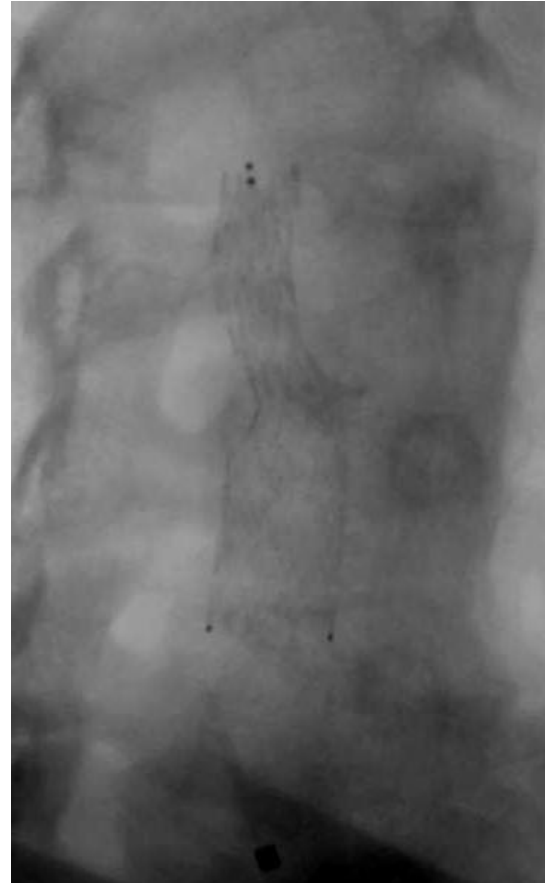
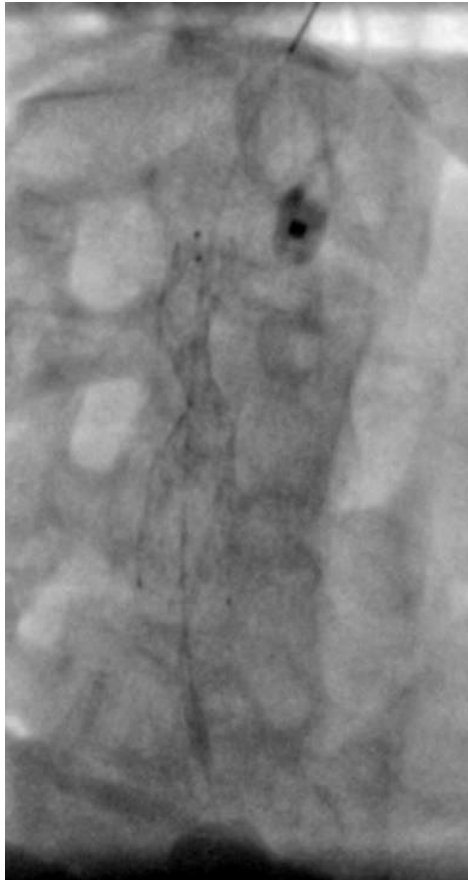
- No new lesions in coronary angiography, bilateral ICA stenosis
- LICA CEA – symptomatic lesion - I stage
- RICA 97% (QCA) CAS – II stage

# Highly-calcific III

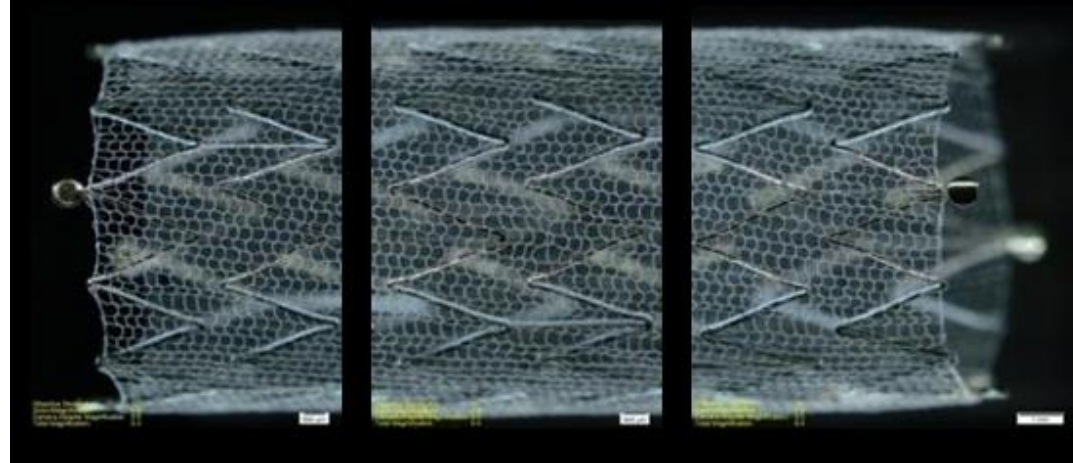
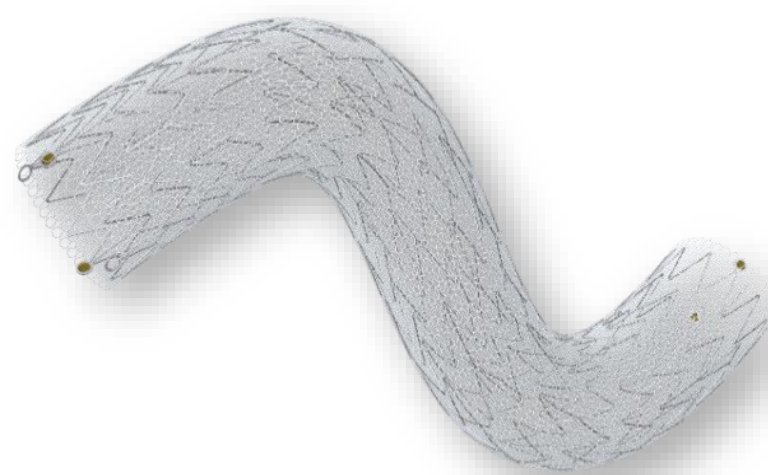


**Predilatation 2.5x15mm followed by 4.0x15,  
CGuard™ 9.0x30mm, postdilated  $\phi$ 5.0mmx20/24atm**

# Highly-calcific



Radial force depend on the vascular lumen/stent diameter (11.3-21.4N)



**CONFORMABILITY**

**RADIAL FORCE**

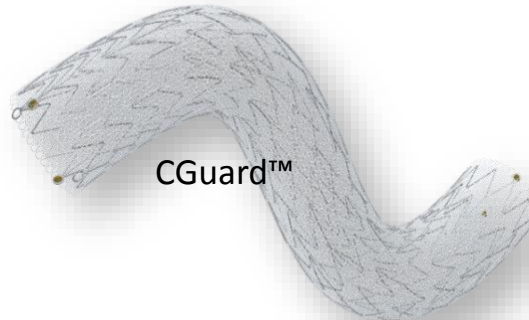
**MESH PROTECTION**

- Full respect of the carotid bifurcation anatomy  
-> 'endovascular anatomic reconstruction' ✓
- Optimal performance across lesion subsets  
(including **high radial force in v. high calcium**) ✓
- Safe 'high pressure' postdilatation (MESH) ✓

**READY FOR PARADIGM SHIFT ?**

■ euro  
**PCR 2015**

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**Novel PARADIGM  
in carotid  
revascularization**

11:45-12:45 ■ Evolutions in carotid angioplasty

Friday 22<sup>nd</sup>

ROOM 242A

Prospective evaluation of **A**ll-comer  
pe**R**cutaneous c**A**roti**D** revascularization  
*In symptomatic and increased-risk*  
as**y**mmptomatic carotid artery stenosis using  
C**G**uard™ **M**esh-covered embolic  
prevention stent system