“How to make a nice longitudinal compression”

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Disclosures

I do NOT report any consulting, employment or stock ownership of a company developing nor any intellectual property rights related to a technology implementing nice longitudinal stent compression.
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Background

• 67-year-old man
• Smoking habit, hypertension on treatment with ramipril and furosemide
• Recent onset effort angina with positive exercise stress test
• Elective coronary angiography showing tandem lesions of the first diagonal branch
Coronary anatomy
What would you have done?
Interventional strategy

*Provisional stenting according to EBC recommendations in 2013*

- Two coronary guidewires
- MV predilation
- MV stenting
- Guidewires switch
- Final kissing balloon

*Evidence supporting POT was not yet available*
Interventional strategy

Provisional stenting according to EBC recommendations in 2013*

• Two coronary guidewires (BMW Universal)
• MV predilation (Ryujin Plus 2.0/15 mm)
• MV stenting (Promus PREMIER 2.5/38 mm)
• Guidewires switch
• Final kissing balloon

*Evidence supporting POT was not yet available
Stenting result
During guidewires exchange something went wrong...
What happened?
What happened?

Pulling the jailed guidewire seems to have forcefully dislocated the stent rings producing their separation and scattering distally and their squeezing and accumulation more proximally.
Some comments

- **Longitudinal stent deformation** has been reported to affect stent designs providing a **reduction of the number of connectors between stent crowns** which favours flexibility at the expense of longitudinal strength.

- Most of the described cases and engineering assessments have highlighted a **higher likelihood** of structural deformation with the **PROMUS Element stent** which implements a **two-connector design**.

- Boston Scientific has released an evolution of its PROMUS Element stent, called **Promus PREMIER**, which is characterised by a design modification implementing **four connectors at its proximal end**.

- In our case, the very **proximal part** of the stent remained **unchanged** supporting the **efficacy of the multiconnector design** to resist structural deformation due to longitudinal forces.
Who is guilty?

Excessive bending of the guidewire used for SB protection favoured a knot entangling a stent strut during pullback
What was done next?

- Deformed stent structure rewiring with a light core-to-tip polymer-covered guidewire (Whisper Extra Support)
- Sequential inflation of increasing diameter balloons (OTW Apex 1.5/15 mm, 2/20 mm and NC Quantum Apex 2.5/12 mm)
Final result

Patient is event- and symptom-free at 4 years follow-up
Take home message

• Percutaneous bifurcation intervention is a different animal
• Always pay a lot of attention to what you are doing and what is happening
• Select your device wisely
• More specifically, avoid guidewire bending in jailed SB
Take home message

KEEP CALM
AND
EXPECT THE UNEXPECTED