

Unfavorable Balloon (Candy) Wrap Can Cause Dissections With Angioplasty: What Is The Mechanism: How Can It Be Recognized And Dissection Avoided: When Does Dissection Have To Be Treated And When Not

Jos C. van den Berg MD PhD
 Clinica Luganese Moncucco
 Lugano, Switzerland



Disclosures

- Nothing to disclose in relation to this presentation



Balloon 'candy' wrap

- Torsion of balloon along longitudinal axis
- When balloon is being inflated in a steno-occlusion untwisting occurs from the extremities, concentrating the 'twist' in one spot


Balloon 'candy' wrap

Cardiovascular Revascularization Medicine

The LEVANT I (Latanis Paclitaxel-Coated Balloon for the Prevention of Femoropopliteal Restenosis) Trial for Femoropopliteal Revascularization

Case Report:
 Twisting of peripheral balloon appearing as a non-dilating peroneal artery lesion

Nail Ilker Akkoc*, Fatih Bahadır, Jai Varma

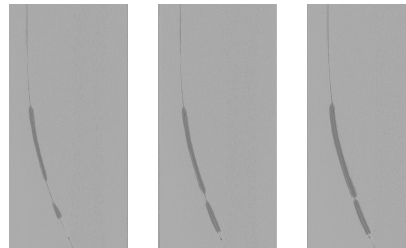


Device success as assessed by the core lab was lower in the DCB group because of 8 malfunctions resulting in failed deployments. The early failed deployments were obvious to the operator at the time; the devices were easily removed from the body, and adjunctive measures led to 100% procedural success without safety complications. Investigation showed that 8 of 8 deployment failures were because of a manufacturing defect with **twisted balloon folds** that prevented proper balloon inflation and expansion. Investigative sites were trained to visually inspect the balloons prior to insertion and to not use abnormally folded balloons.

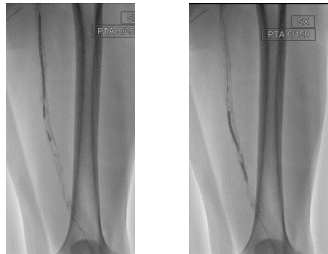
Case examples



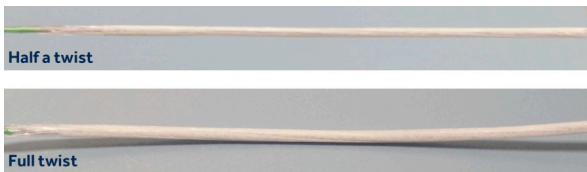
Balloon 'candy' wrap



Balloon 'candy' wrap



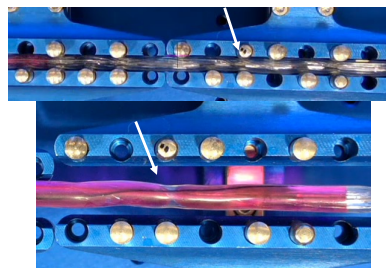
Balloon 'candy' wrap



Balloon 'candy' wrap



In-vitro simulation



In-vitro simulation



In-vitro simulation



Normal balloon inflation

1. Torsional (twisting)
Unfolding expansion → Torsional (sheer) stress

2. Radial (Expanding)
Uncontrolled expansion → Radial expansion

3. Longitudinal (elongating)
Uncontrolled expansion → longitudinal dilatation

Vessel trauma can manifest as **severe dissection and elastic recoil**

PTA and dissections

Severe dissections negatively impact PTA outcomes

Figliarini M et al JET 2017;34:367-375

Balloon 'candy' wrap

- Creates additional torsional forces on vessel wall and maybe one of the contributing factors to dissection during treatment of (long) SFA lesions
- May influence drug delivery when using drug coated balloons

Balloon 'candy' wrap

- More pronounced in long balloons
- Many balloon types (from various manufacturers) affected
- Causes
 - Placement protective sheath
 - Folding and pleating
 - Diameter of hoop
 - Manipulation (torsion during insertion)

Better to avoid than to treat but when to treat?

Scaffolding of a postangioplasty dissection is recommended in the presence of significant diameter reduction, spiral shape, flow impairment, or adverse morphology

Source: MT et al JACC Cardiovasc Interv 2022; 14:2393-2403

Conclusions

- 'Candy wrap' phenomenon can cause severe vessel wall injury
- Knowing of its existence will make you recognize it and see it more frequently
- When noticed stop inflating and exchange balloon in order to avoid dissections
- When dissections occur follow the DISFORM consensus

Unfavorable Balloon (Candy) Wrap Can Cause
Dissections With Angioplasty: What Is The
Mechanism: How Can It Be Recognized And Dissection
Avoided: When Does Dissection Have To Be Treated
And When Not

Jos C. van den Berg MD PhD
Clinica Luganese Moncucco
Lugano, Switzerland

