STENT FRACTURES IN SFA

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Stenting the SFA

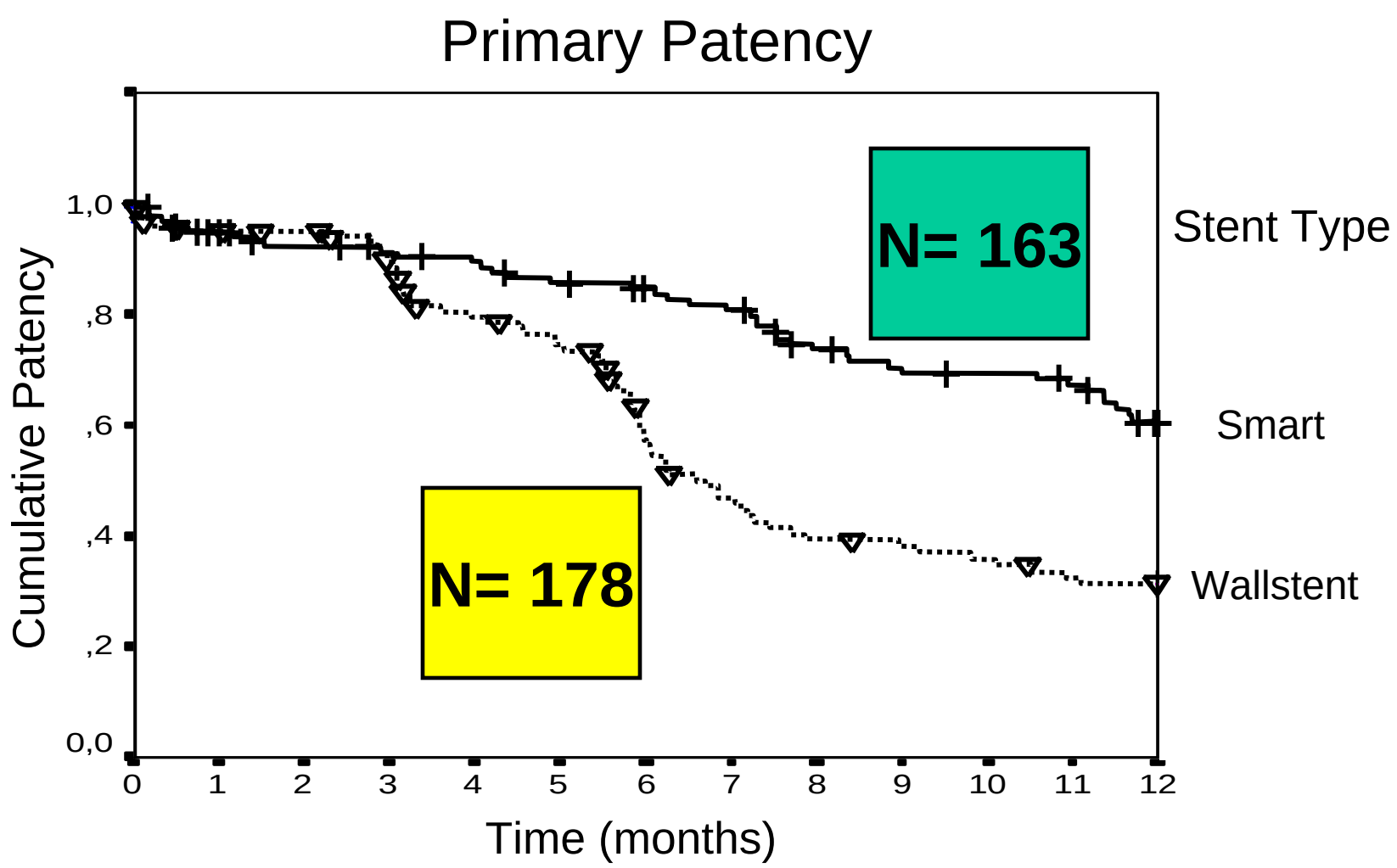
NITINOL STENTS :

THE BREAKTHROUGH ?

Self-expanding Nitinol Stent

- According to some recent non randomized studies, the results using Nitinol stents are generally superior to the results reported in the past using ballon-expandable and self-expandable stainless-steel stents.

SMART vs. Wallstent in the SFA



Stenting Long SFA Lesions

- The high incidence of restenoses has been generally considered a consequence of intimal hyperplasia following
  - the incresed vessel wall stress induced by the stent
  - and/or the uncontrolled progression of the sclerotic disease.

- **Triggered by the SIROCCO I observation and by the unclear clinical impact of the phenomenon of stent fractures a systematic x-ray evaluation of all patients after SFA stent implantation was initiated**

- **121 treated legs with a total of 261 implanted stents could be investigated.**

- **Mean length of stented segment 15.7 cm**

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- **Stenting only on indication:**
  - **Persistent diameter reduction > 50 % after prolonged ballon inflation.**
  - **Flow limiting dissection after PTA**

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Results X-Ray Screening
10.7mo follow-up

- Fractures in 45 of 121 treated legs:

37.2%

- Fractures in 64 of 261 implanted stents:

24.5%

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Results of X-Ray Screening

- Fracture classification
  - –**Minor** (single strut fracture)

    in 31 cases **48.4%**
  - –**Moderate** (fracture of > 1 strut)

    in 17 cases **26.6%**
  - –**Severe** (separation of segments)

    in 16 cases **25.0%**

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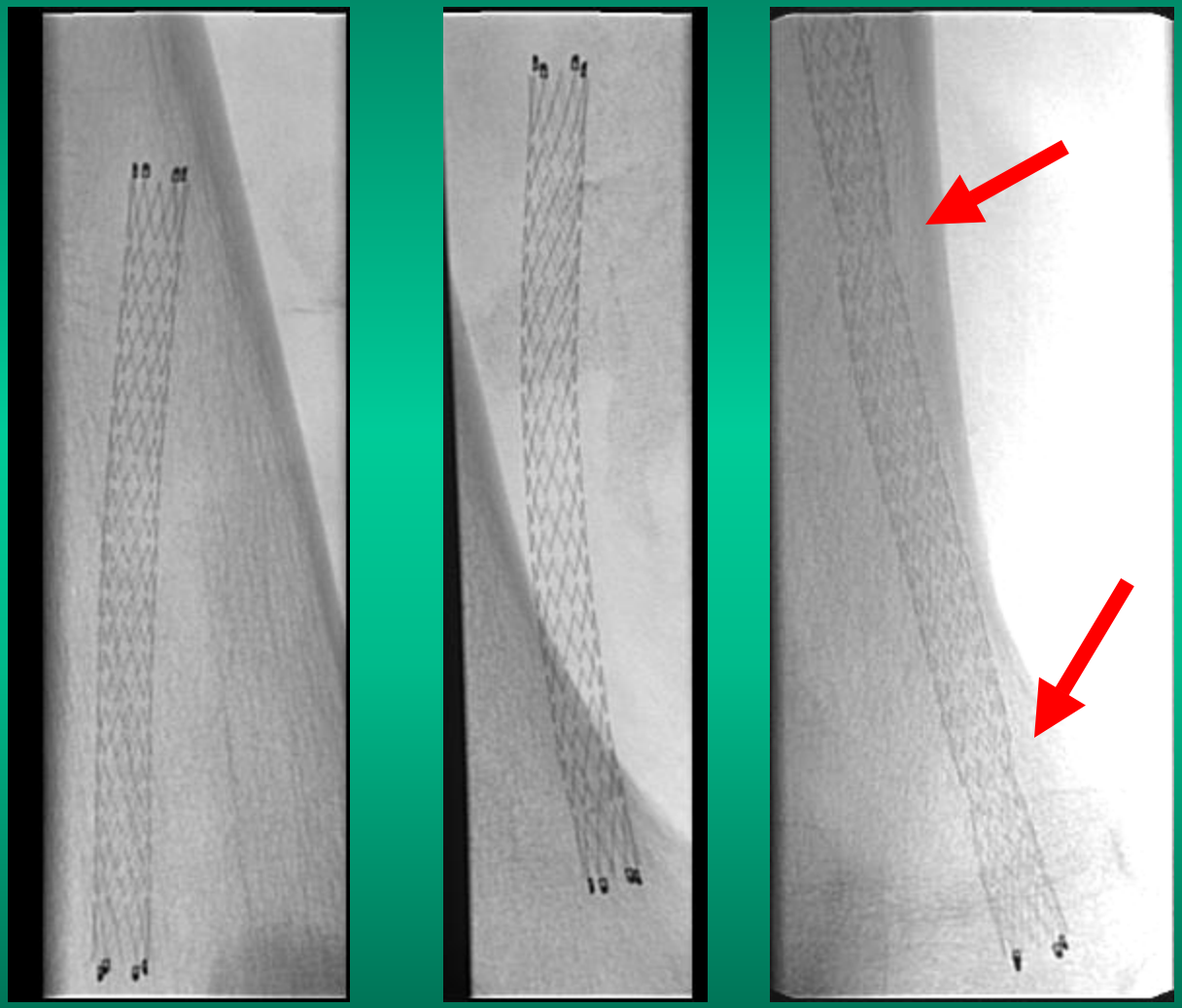
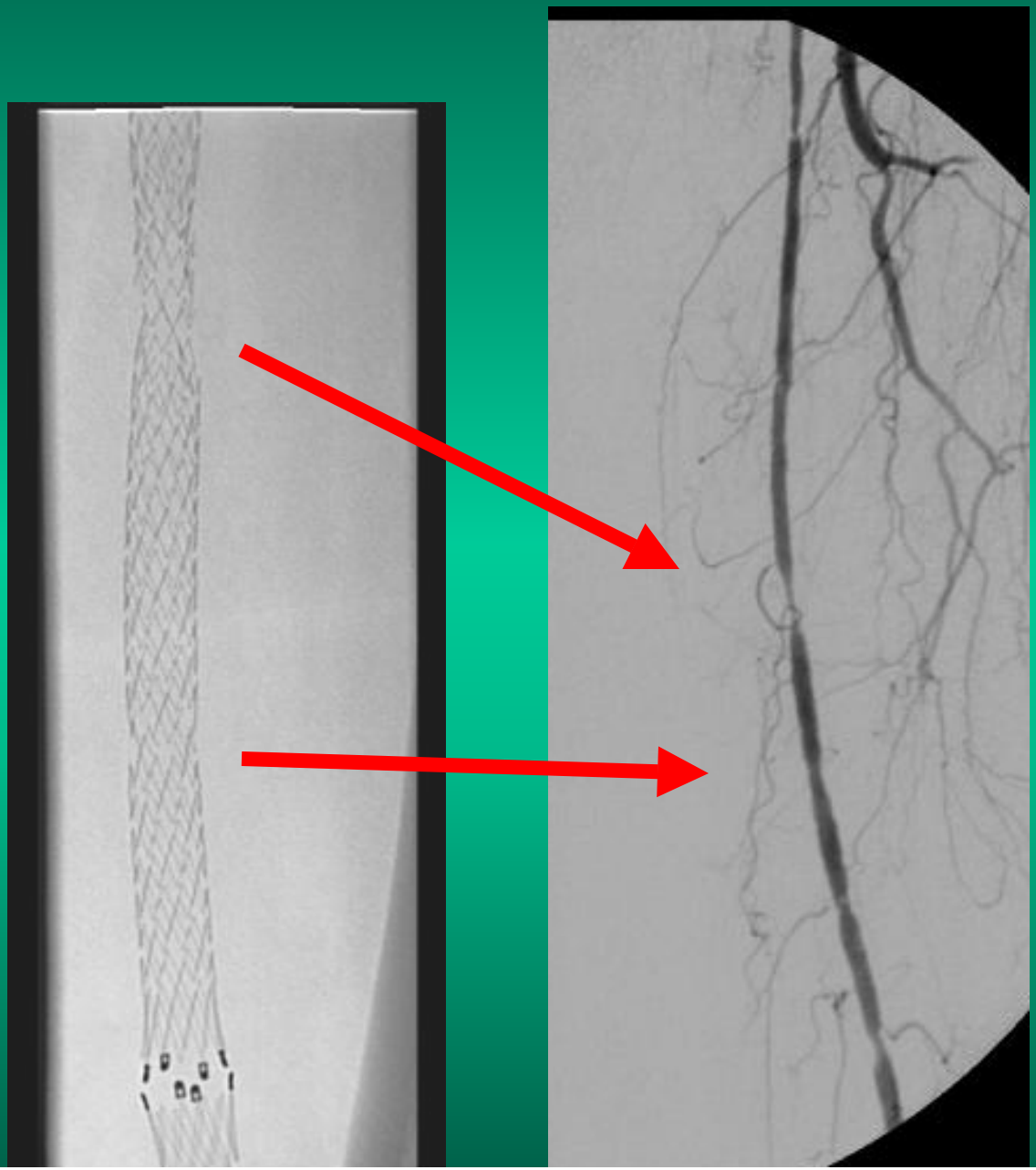
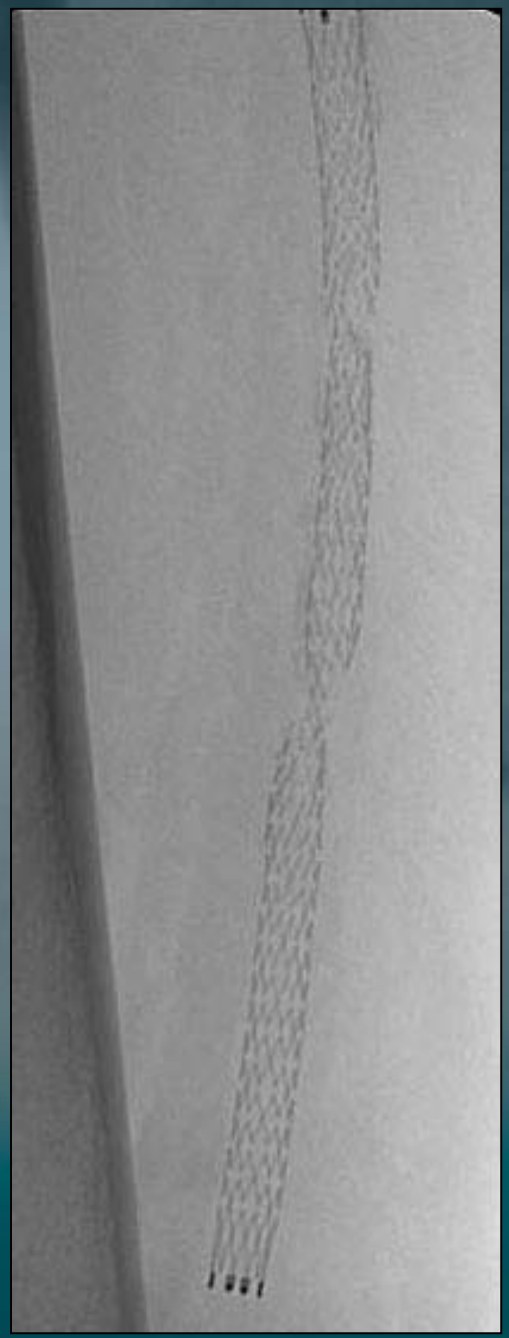
Minor Fracture



Moderate Fracture





Severe
Stent fractures
and
In-stent restenoses

Results of X-Ray Screening

- **Prevalence of stent fractures and length of the stented segments**:
  - **< 8 cm segment length** **13.2%** (5/38 legs)
  - **>8 <16 cm segment length** **42.4%** (14/33)
  - >16cm (3 or more stents) **52.0%** (26/50)

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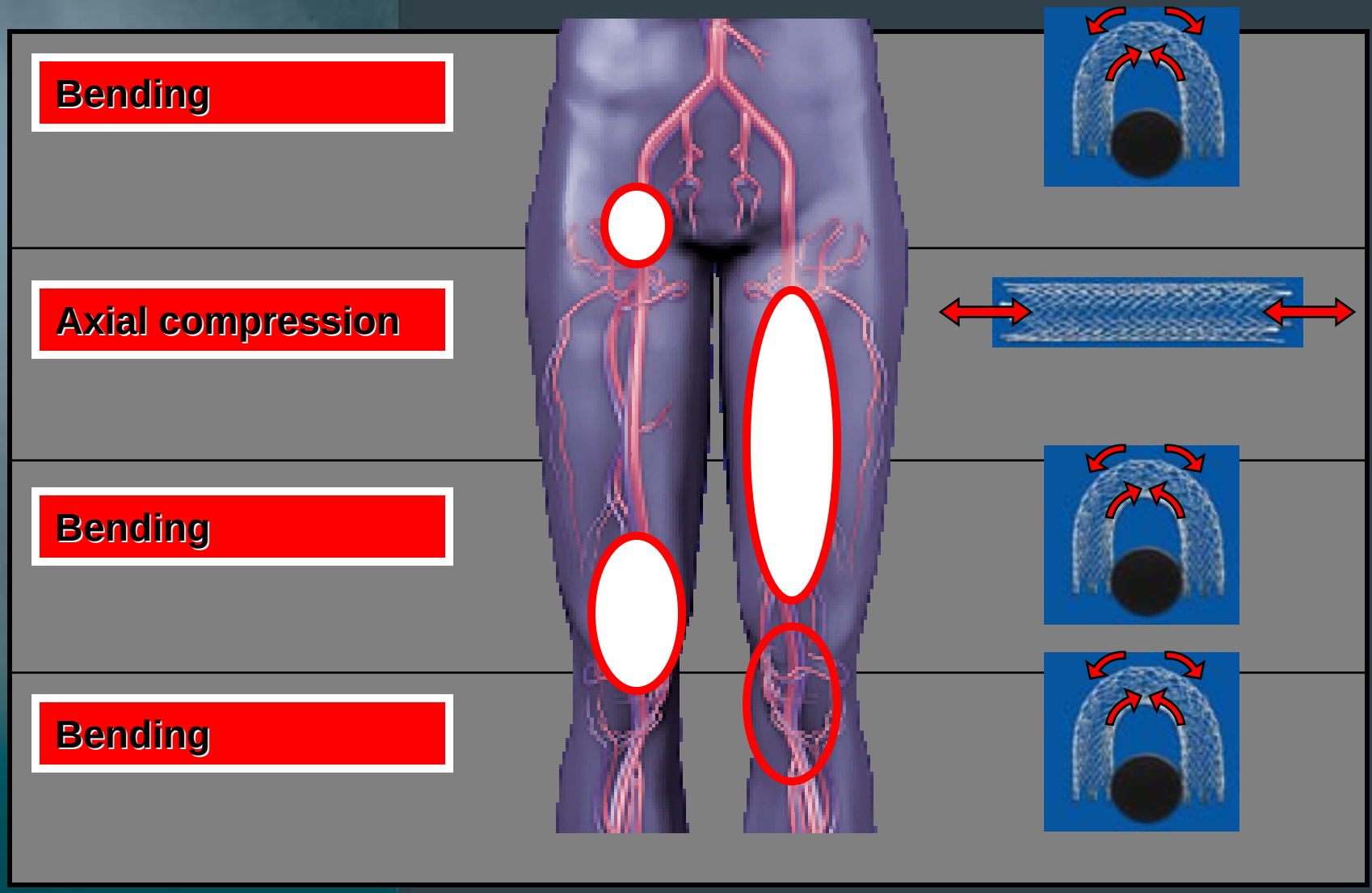
Level Dependent Stress of the Superficial Femoral Artery



Results of X-Ray Screening

- Distribution of fractures along the SFA
  - –Proximal segment 19.4%
  - –Middle segment 28.4%
  - –Distal segment 23.7%

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Results of X-Ray Screening

- Clinical Impact of Stent Fractures:
  - Restenosis >50% at 32 fracture sites 32.8%
  - Stent occlusion at 22 fracture sites 34.4%
  - **No** reobstruction at 21 fracture sites 32.8%

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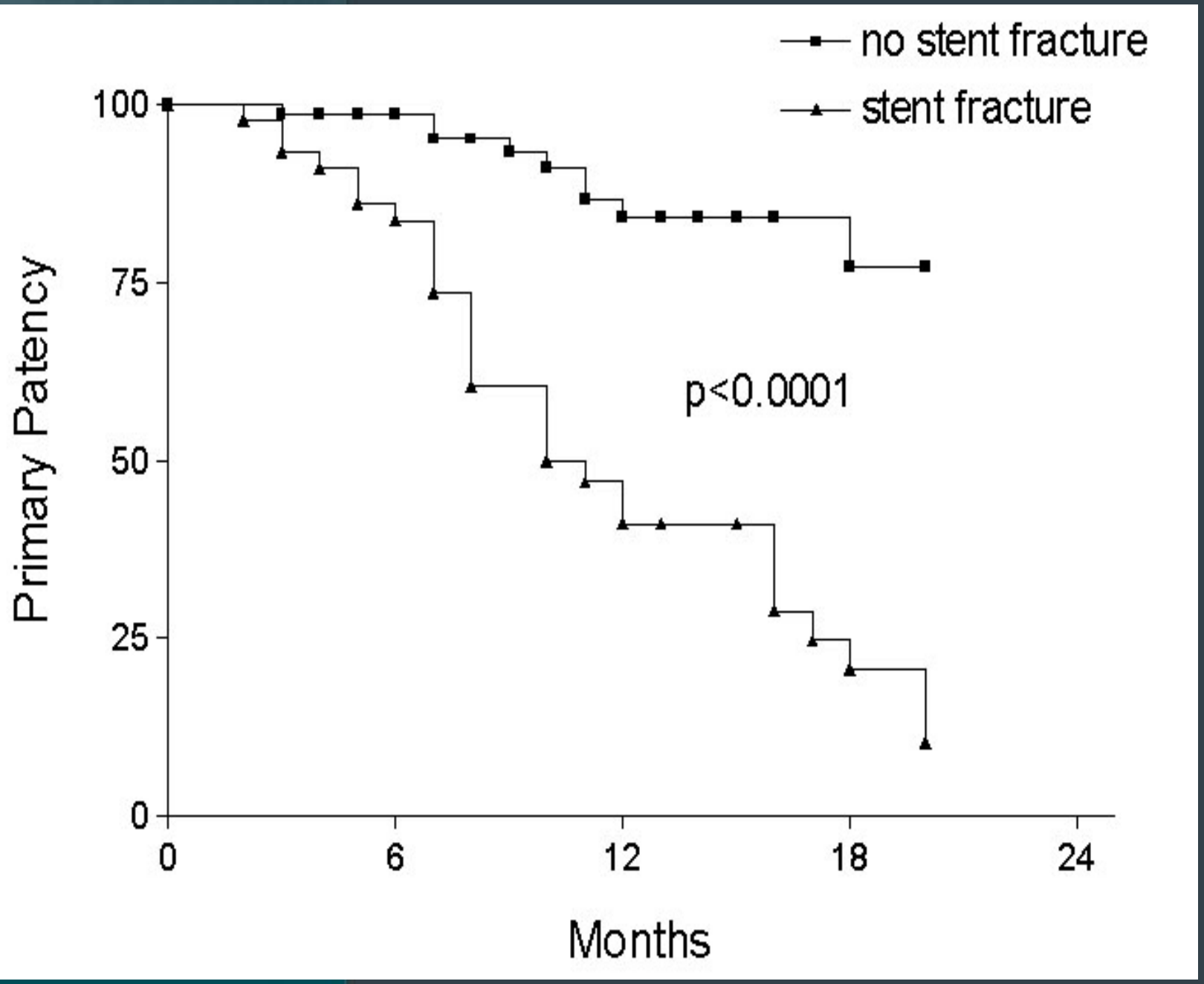

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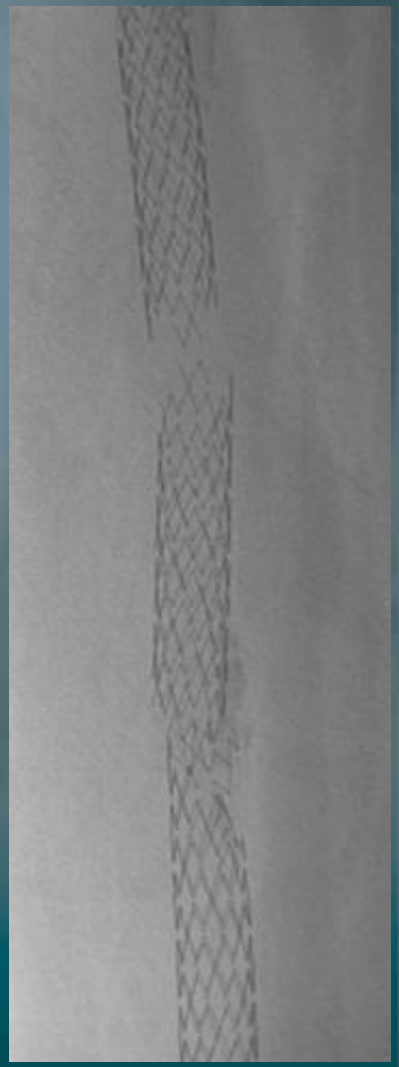
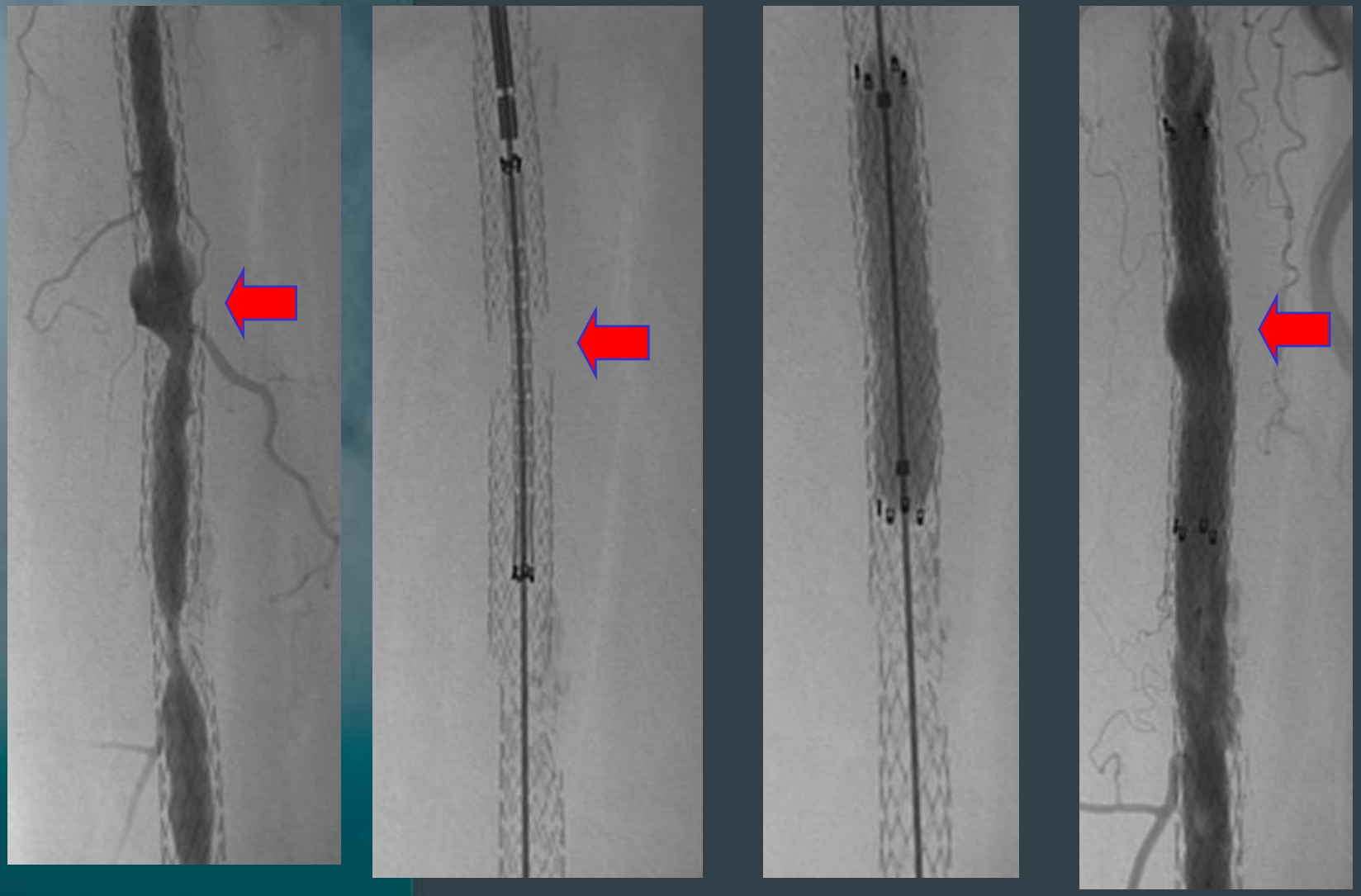
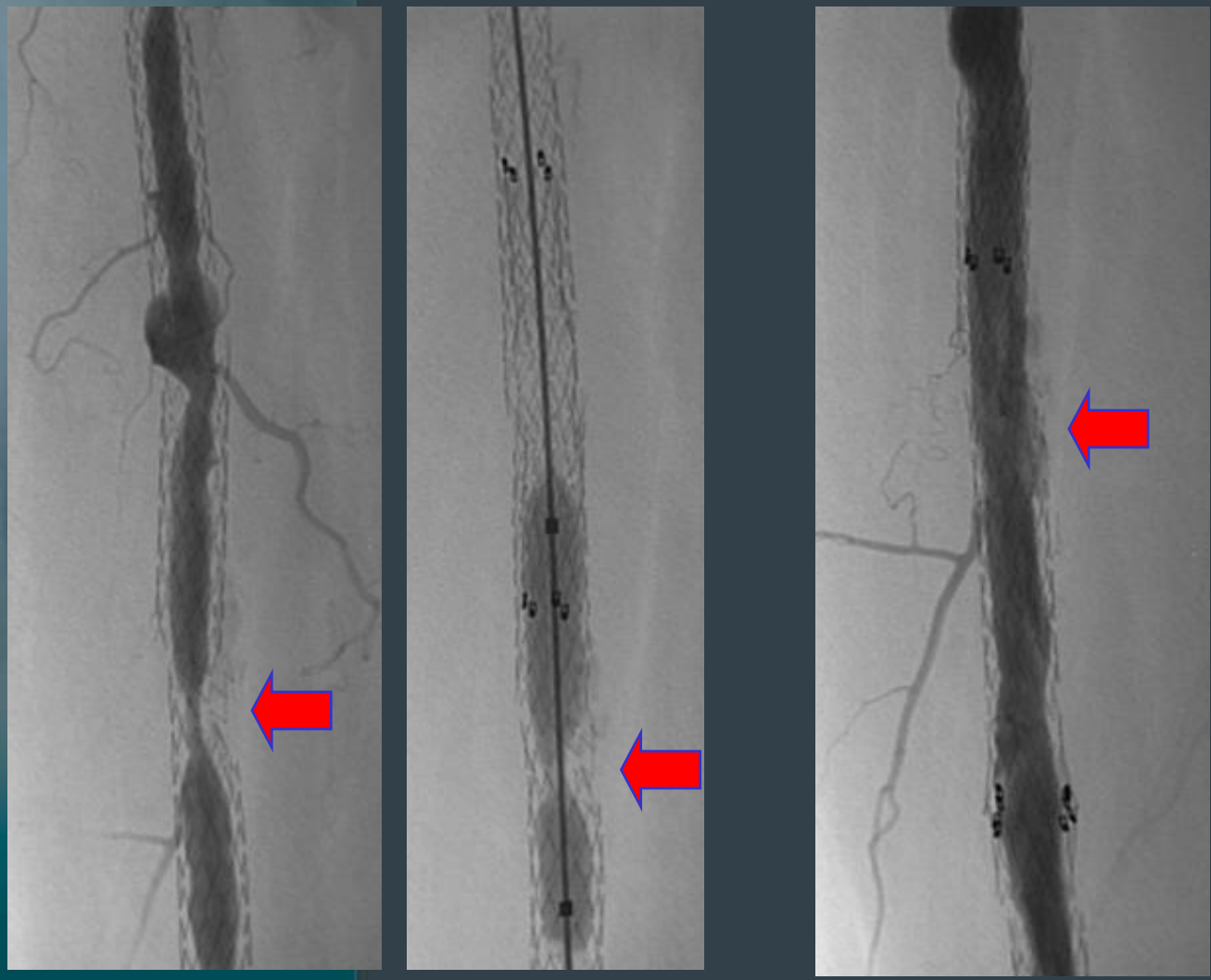
Femoropopliteal Stent-Fracture



Treatment of the Aneurysm with a Covered Stent



Treatment of the Stenosis with PTA



Is it still reasonable to treat long SFA-lesions with stents?

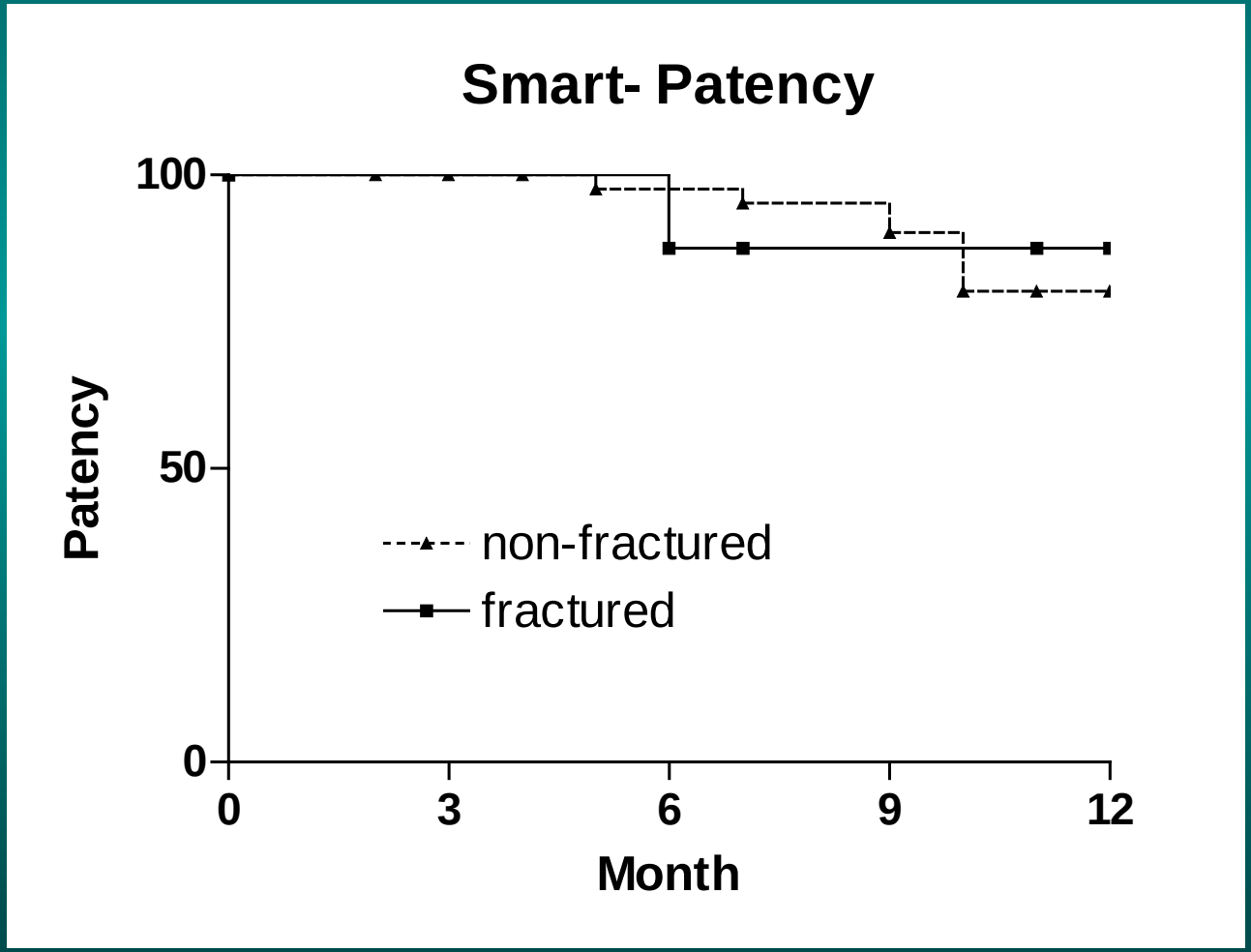
Results of Stenting
Long SFA-Lesions

- 64 patients treated with **SMART**-stents
  - Lesion length **154 +/- 63** mm
  - Total occlusions **59.4 %**
  - Diabetics **43.7 %**

- Primary patency rate
  - 6 months **96.3 %**
  - 12 months **82.1 %**

- Fracture rate **15.1%**

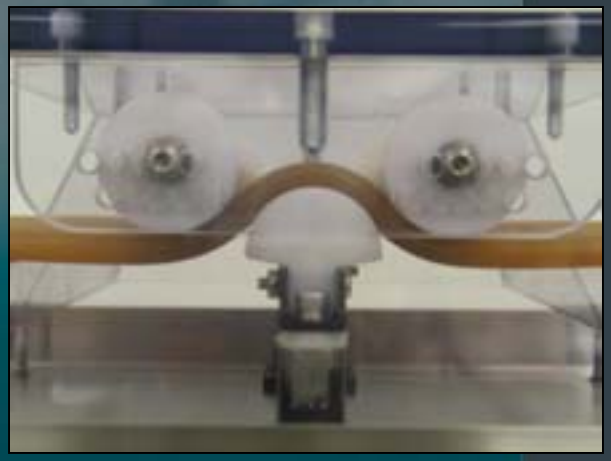
Results of X-Ray Screening



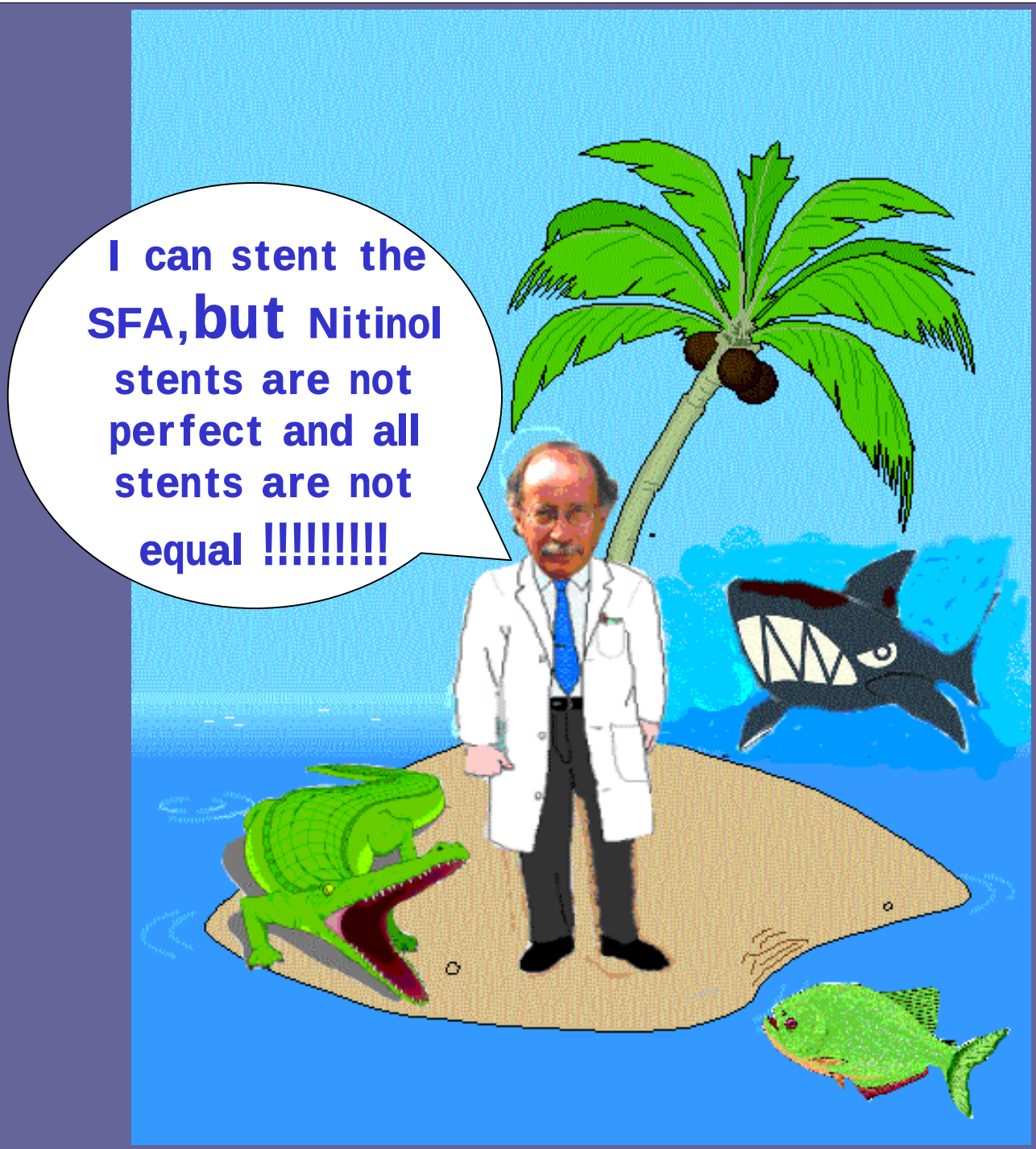
Test Capabilities for SFA Stents

Pulsative fatigue testing

Stretch and twist testing



Flexation testing


I can stent the SFA, but Nitinol stents are not perfect and all stents are not equal !!!!!!!!!

Before thinking about DES for the SFA, changes in the

mechanical performance

of the Nitinol stents are mandatory.