A Better Angioplasty Balloon

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Conflict of Interest

- Patents licensed to West Coast Catheter

The Problem

- Angioplasty causes arterial trauma
- The response to trauma narrows the artery

The Solution

- Minimize the trauma
- Minimize the response
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Arterial Trauma

- Rapid expansion
- High pressure inflation
- Rotational shear
- Forced straightening

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High-Pressure Balloons Do Not Expand: They Unfurl

- Shear-induced dissection
- Insecure stent attachment

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Torsional Shear

XC-area of a 9 mm balloon is 0.64 cm²
10 Atm pressure generates 64 N traction
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**Focal Expansion**

- Localized pressure
  - Reduced stenosis resolution pressure (SRP)
  - Reduced rate of stress increase
- Localized injury

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**Longitudinal Shear**

- Buddy wire
- FX miniRAIL

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**Focused Force Angioplasty**

- Localized pressure
  - Reduced stenosis resolution pressure (SRP)
  - Reduced rate of stress increase
- Localized injury

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**External Wire**

- Buddy wire
- FX miniRAIL
**Multiple Wires**

- Angiosculpt balloon

**Angiosculpt Failure Mode**

**Cutting Balloon**

**Cutting Balloon Failure Modes**
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Chocolate

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Fantasy

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“Valve” designed to allow stress relief
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External Braid

Pig Subclavian Artery

Regular Balloon
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Open and Closed Cell Stent Designs

Crossing Profiles

Without Stent

With Stent

6 mm

3 mm

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Sheath Size Comparison

Advance Cook Medical

West Coast Catheter

Chocolate TriReme Medical

Renal Angioplasty

3 mm: 3-4

3 mm: 4-5

4

5

6 mm: 4-5

5

6
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Coronary Angioplasty

Intracranial Angioplasty

Dialysis Access Inflow

Dialysis Access Outflow
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Porto-systemic Shunt

Balloon Sinuplasty

Kyphoplasty
Kyphoplasty

Bright Ideas Anyone?

• New applications for new technology
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