The Retrograde Approach: Step-by-Step Instructions

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Disclosure Statement of Financial Interest

I, William Nicholson, DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.
## Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

<table>
<thead>
<tr>
<th>Affiliation/Financial Relationship</th>
<th>Company</th>
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<tr>
<td>Consulting Fees/Honoraria</td>
<td>Boston Scientific, Vascular Solutions, Abbot Vascular, Asahi Intecc</td>
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<td>Intellectual Property Rights</td>
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1. Planning
2. Collateral Analysis
3. Collateral Cannulation
4. Advancing Microcatheter
5. Collateral Wire Crossing
6. Collateral Microcatheter Crossing
7. Microcatheter to Distal CTO
8. CTO Crossing
9. Externalization

Illustration by Dr J C Spratt / VascularPerspectives
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Illustration by Dr J C Spratt / VascularPerspectives
Collateral Analysis
Collateral Analysis

Recipient Vessel

Collateral

Donor Exit

Illustration by Dr J C Spratt / VascularPerspectives
‘Ideal’ Collateral

Donor Exit

Collateral

Recipient Vessel

> 90°

Illustration by Dr J C Spratt / VascularPerspectives
‘Ideal’ Collateral

Donor Exit

Collateral

> 90°

Clear Connection

Recipient Vessel

Illustration by Dr J C Spratt / VascularPerspectives
‘Ideal’ Collateral

Collateral

> 90°

Donor Exit

Recipient Vessel

Clear Connection Side Branch Size

Illustration by Dr J C Spratt / VascularPerspectives
‘Ideal’ Collateral

Collateral

Recipient Vessel

Donor Exit

> 90°

Clear Connection
Side Branch Size
No Tortuosity

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‘Ideal’ Collateral

> 90°

Clear Connection
Side Branch Size
No Tortuosity
No Bifurcations

Illustration by Dr J C Spratt / VascularPerspectives
‘Ideal’ Collateral

- Donor Exit
- Collateral
- Recipient Vessel

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<td>&gt; 90°</td>
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<td>Clear Connection</td>
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Illustration by Dr J C Spratt / VascularPerspectives
The impact of angle of entry & distance from collateral entry to distal CTO cap: RCA

Illustration by Dr J C Spratt / VascularPerspectives
Acknowledgement to Prof Paul Hsien-Li Kao, MD, Taiwan
Connection / Size / Exit

1. Connection & Size
   - No continuously visible connection
   - Threadlike continuous connection
   - Side branch like connection
   - Total:

2. Exit from donor vessel
   - Acute angle and bifurcation within 3mm
   - Acute angle / bifurcation / implanted stent
   - Obtuse angle and no bifurcation within 3mm
   - Total:

Illustration by Dr J C Spratt / VascularPerspectives IC-185422-AA SEP2013
3. Collateral Tortuosity

- 3 or more acute bends or bifurcation within acute bends
  - 3.1

- One or more acute bends or recently occluded SVG
  - 3.2

- No acute bends
  - 3.3

Total:

4. Collateral to Recipient Artery

- Collateral inserts within CTO or acute angle <5mm from distal cap
  - 4.1

- Obtuse angle <5mm from distal cap or acute angle but >5mm from distal
  - 4.2

- Obtuse angle >5mm from distal cap
  - 4.3

Total:
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Bend used for septal access
Bend used for septal access

Bend used to facilitate septal crossing

Courtesy of Dr J C Spratt / VascularPerspectives
Septal Entry
1. Visible: SION – Fielder FC

2. Non visible: SION – Fielder FC (CHANGE QUICKLY)

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Septal Crossing
Septal Crossing – step by step

Courtesy of Dr J C Spratt / VascularPerspectives
Septal Surfing Examples:

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Septal Confirmation
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Corsair™ will not cross

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Micro-catheter to distal cap
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4 options to crossing CTOs

- Antegrade True Lumen
- Antegrade Dissection Re-entry
- Retrograde Dissection Re-entry
- Retrograde True Lumen
Wire antegrade guide
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Illustration by Dr J C Spratt / VascularPerspectives
Micro-catheter placed in distal vessel
PCI over externalized wire
Tip-in to reverse to antegrade
Convert to antegrade if necessary.
Post-crossing septal evaluation
If guide is not wired within 10 mins...

Move to snaring
Avoidable Retrograde Disasters

1. Donor vessel thrombosis
2. Unprotected wire movement in collateral
3. Donor vessel guide dissection
4. Gear entrapment on single wire
5. Snare stiff portion of the wire