Tawfik A.R (M.D)
Department of Vascular Surgery
Kasr Ani hospital. Cairo University. Egypt
Overcoming Difficult CTOs
increasing the applicability of
Endovascular Intervention to
patients with challenging Re-entry
• Endovascular interventions for femoro-popliteal CTO lesions are
  • Most technically challenging.
  • Time consuming.
  • More prone to be complicated.
• Successful Endovascular Revascularization of CTO lesions depend primary on how these lesions crossed and get reentry in the distal patent artery.

• The failure rate reaches up to 25% of cases.
Recanalization of long SFA occlusion

- Antegrade ipsilateral or contralateral cross over is standard.
- Failure rate up to 25%.
- Mainly due to inability to re-enter patent artery distal to occlusion.
Initial passage of SFA occlusion

intraluminal versus subintimal
Tools used for (intraluminal) Recanalization of CTO

Excimer-Laser

Frontrunner (Cordis)
Outback Catheter
All are too expensive and unavailable in developing countries where medical insurance dose not cover all citizen and almost of patients present with CLI.
Double Balloon approach
Retrograde approach:

- Popliteal; in supine position: 21G needle, 11cm 6 F sheath
Pedal access: In Occluded Distal SFA
Obese Patient
Failed Retrograde Access In Supine Position

21 G needle
5F sheath
Double balloon technique:

Failed all previous standard techniques in patients with CLI and had poor general condition.
• When both antegrade and retrograde subintimal space were seems to oppose and get separated from each other by a thin plaque

• a low profile four French vertebral catheter or short tibial balloon over distal wire which its tip was not protruded through the tip of either the catheter or the balloon pushed gently while it was rolled until the tip of the catheter or the balloon crush this atherosclerotic plaque and it get in the antegrade sheath or catheter.
Snaring of the retrograde guide-wire
350 Patients with CTO lesions in the SFA
from June 2011 to Dec. 2014

250 males
100 females

Age: 45ys to 72ys (58±10.26)
Pre-existing risk factors

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>DM</td>
<td>86.1%</td>
</tr>
<tr>
<td>HTN</td>
<td>58.3%</td>
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<tr>
<td>CHD</td>
<td>17.1%</td>
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<tr>
<td>Stroke</td>
<td>5.6%</td>
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<tr>
<td>Renal</td>
<td>5.6%</td>
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</tbody>
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Morphological description of lesions:
Clinical Presentation of patients

- Major tissue loss
- Minor tissue loss
- Rest pain
Results:

350 CTO Lesions

- 80 lesions (22.86%) complex CTO lesions
- 50 (14.29%) lesions Referred to Surgery
- 28 lesions (8.6%) High risk for surgery
  - Double Balloon technique done
- 270 lesions (77.14%) managed with conventional
  - 2 (0.57%) lesions thin atherosclerotic plaque; low profile balloon over distal wire pushed through proximal sheath
Double Balloon Technique

• First described by Muller and colleagues in a German abstracts 1991.

• In our experience; all lesions were successfully vascularized with no complications related to the technique.

• It should be considered as a step ladder and it should be up stairs before jumping to other new devices used for re-entry.
Conclusion

• Antegrade approach is standard in long SFA-CTOs, including reentry-devices if necessary.
• Retrograde approach only if the above techniques fail.
• Antegrade and retrograde allows more bailout-techniques than trans-popliteal only.
• Double balloon technique is a safe and cost effective than reentry devices in complex CTOs.
Thank you