# CAIR Case of the Week

Case Courtesy of Drs. A. Sidhu, S. Mafeld and G. Annamalai
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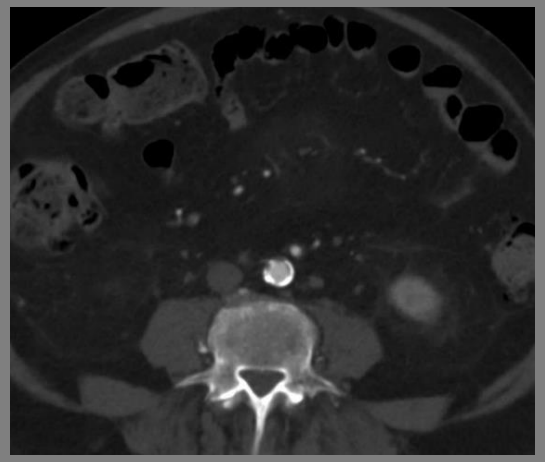
# Case presentation

- 85 year old male with T2DM
  - neuropathy, dyslipidemia, HTN
  - macular degeneration, CKD stage 3/4, ex-smoker
- Diabetic right foot infection
- MRSA osteomyelitis of right $5^{th}$ toe
- Intermittent claudication
- Referred from outside institution
- WBC 12.9, H/H 92 g/L & 29%, Plt 249, Cr 188, eGFR 27 mL/min
- Abx: piptazo, vancomycin

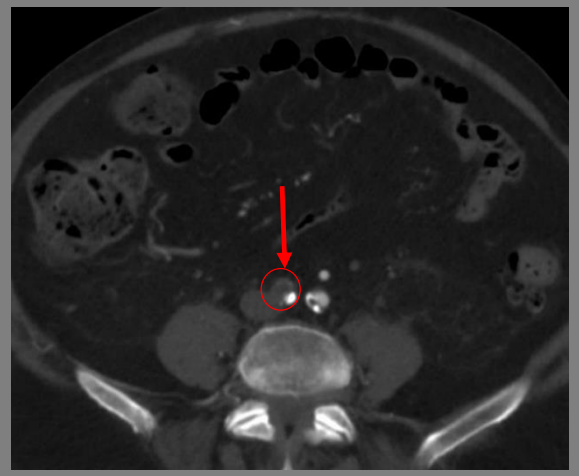
# Clinical History

- Meds: Plavix 75 mg OD, ECASA 81 mg OD, Perindopril 2 mg OD, Carvedilol 3.125 mg BID, Spironolactone 25 mg OD, Furosemide 40 mg OD, Rosuvastatin 10 mg OD, insulin
- Remote ABI: Rt 0.62, Lt 0.49
- Right leg CLI, CT showed multilevel disease with occlusion of right CIA and SFA
  - Multiple tibial artery occlusions

# Pre-procedural CTA with runoff

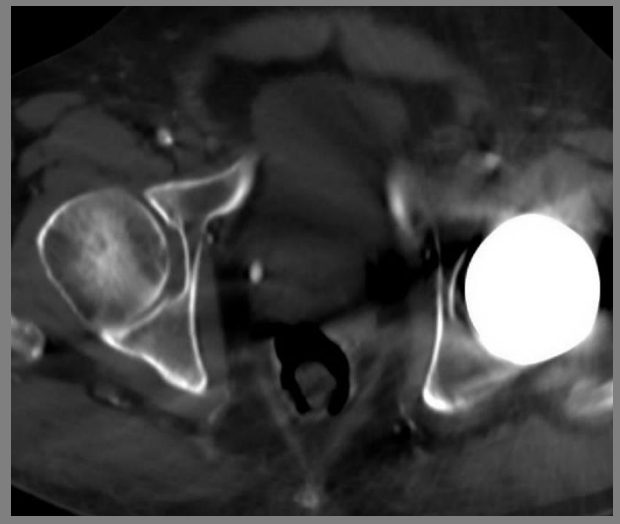


Patient distal aorta



Occluded right common iliac artery

Occluded right external & internal iliac artery



Small calibre CFA

# Procedure

Procedure details:

- Initial right CFA access (6 Fr sheath)
- Unable to cross CTO in retrograde fashion via ipsilateral access

- Retrograde ipsilateral access into small  right CFA
- Subintimal access using 5F Kumpe and Bentson wire

Unable to cross CTO

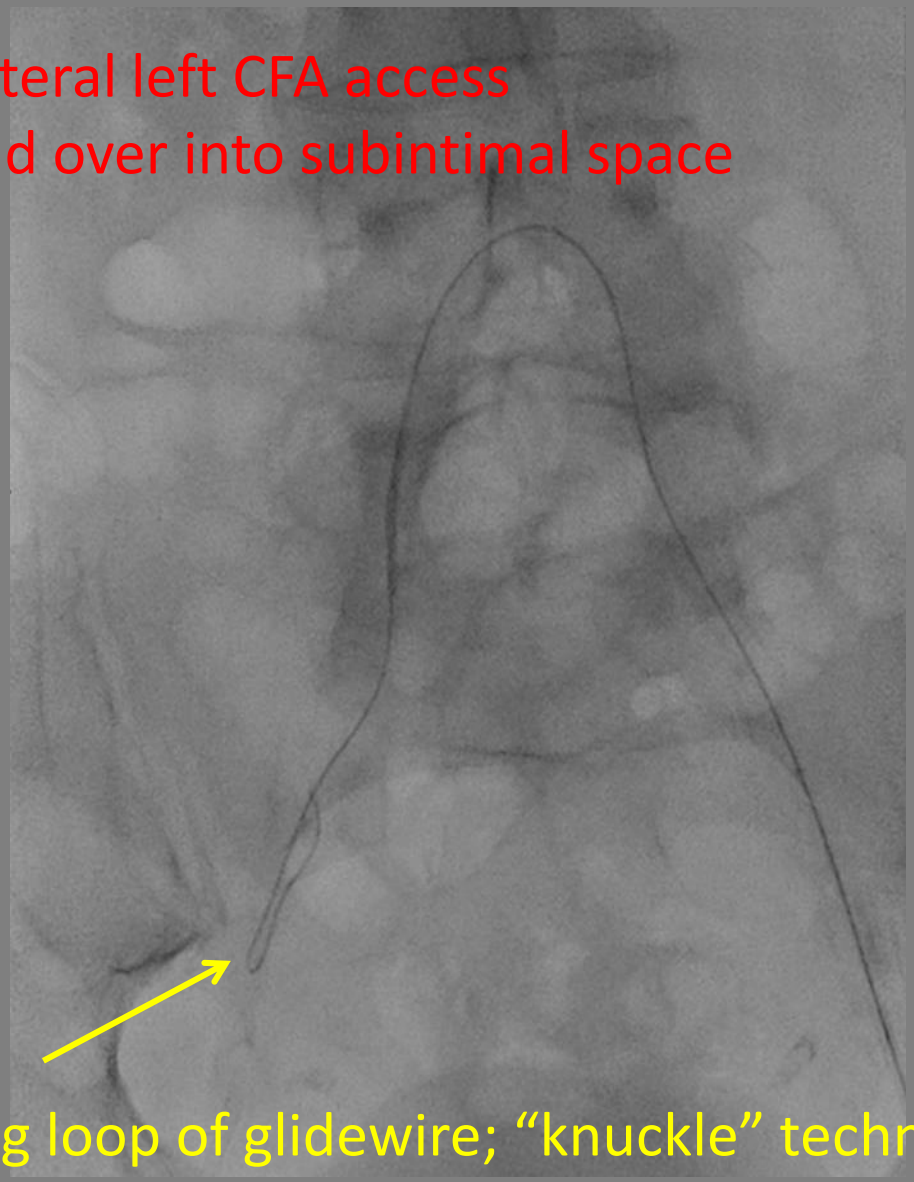
Aortogram performed from contralateral access:

- R CIA occluded
- L CIA severe stenosis

# Recanalization attempts…

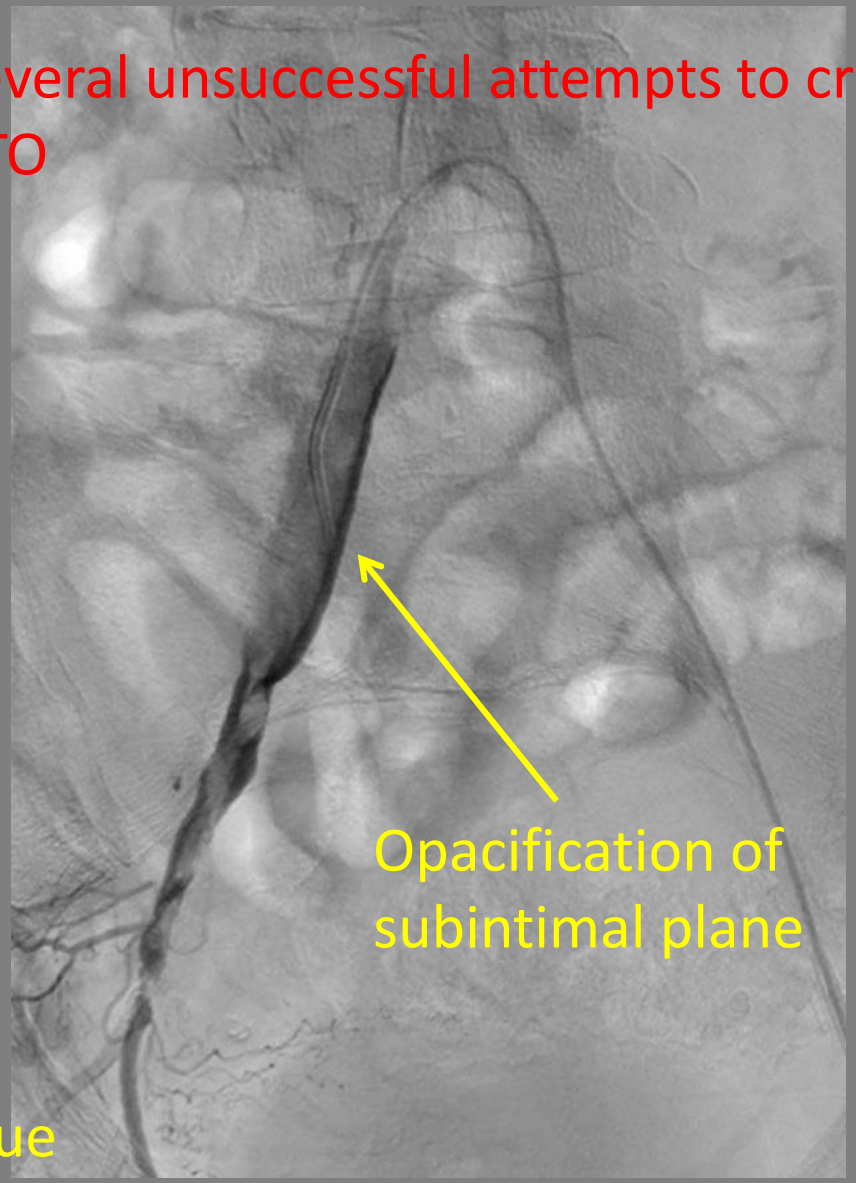
Contralateral left CFA access

- Up and over into subintimal space



Leading loop of glidewire; “knuckle” technique

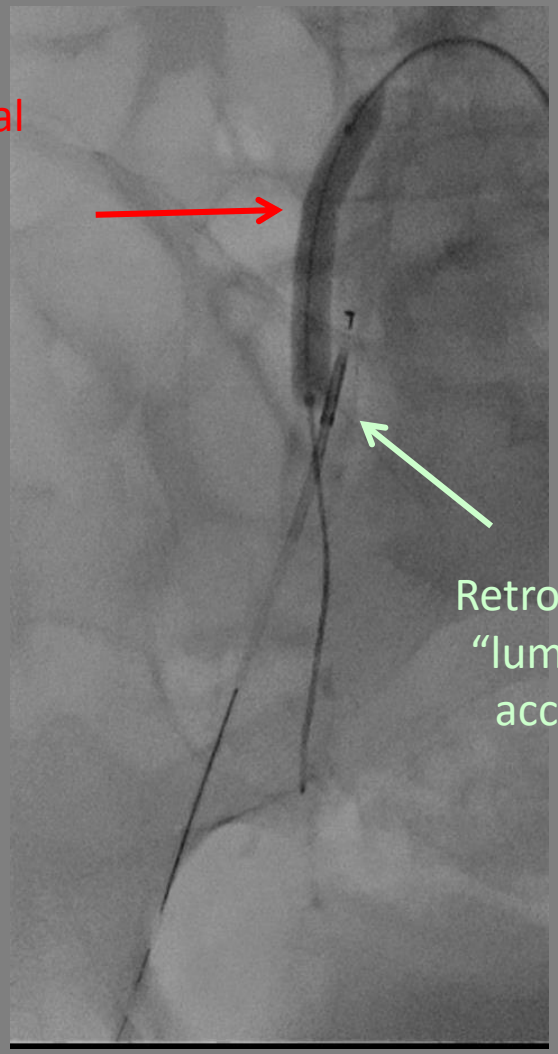
Several unsuccessful attempts to cross CTO

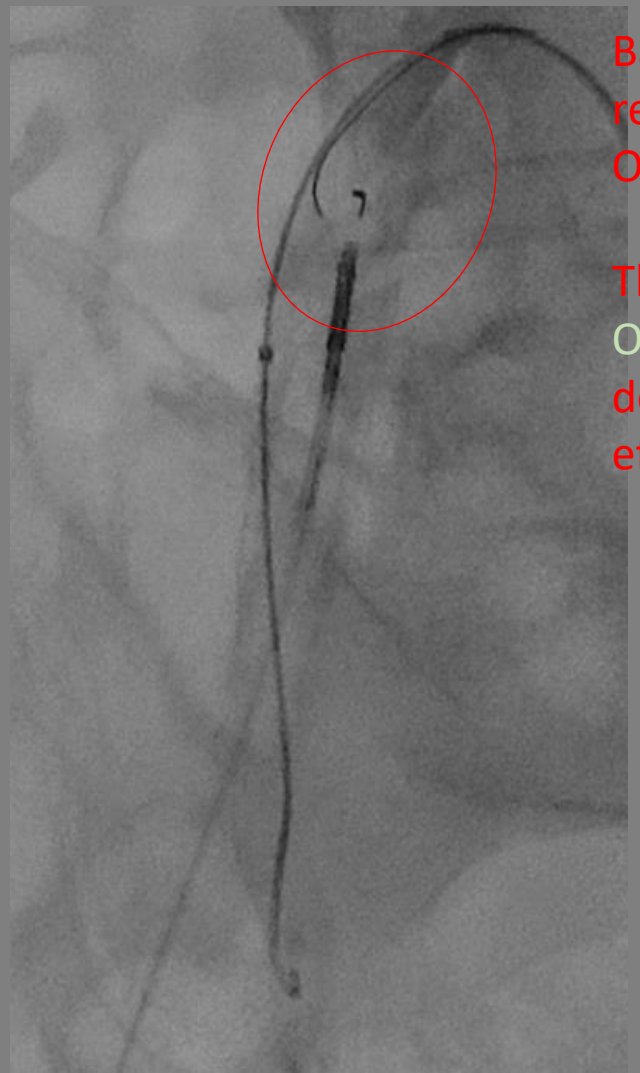


# Antegrade–Retrograde Recanalization

Antegrade subintimal access

- 6 x 40 mm balloon



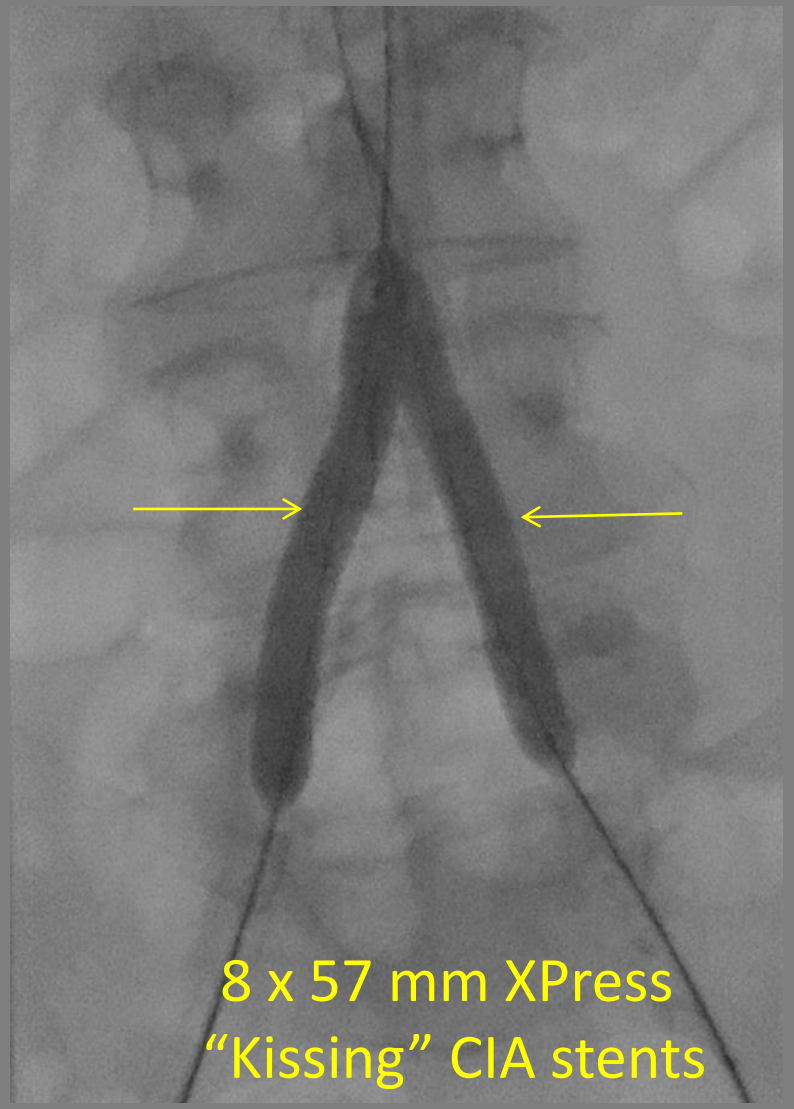
Balloon puncture via retrograde access using Outback reentry device

Thruway wire fed through the Outback device into the deflating balloon, used effectively as a “snare”

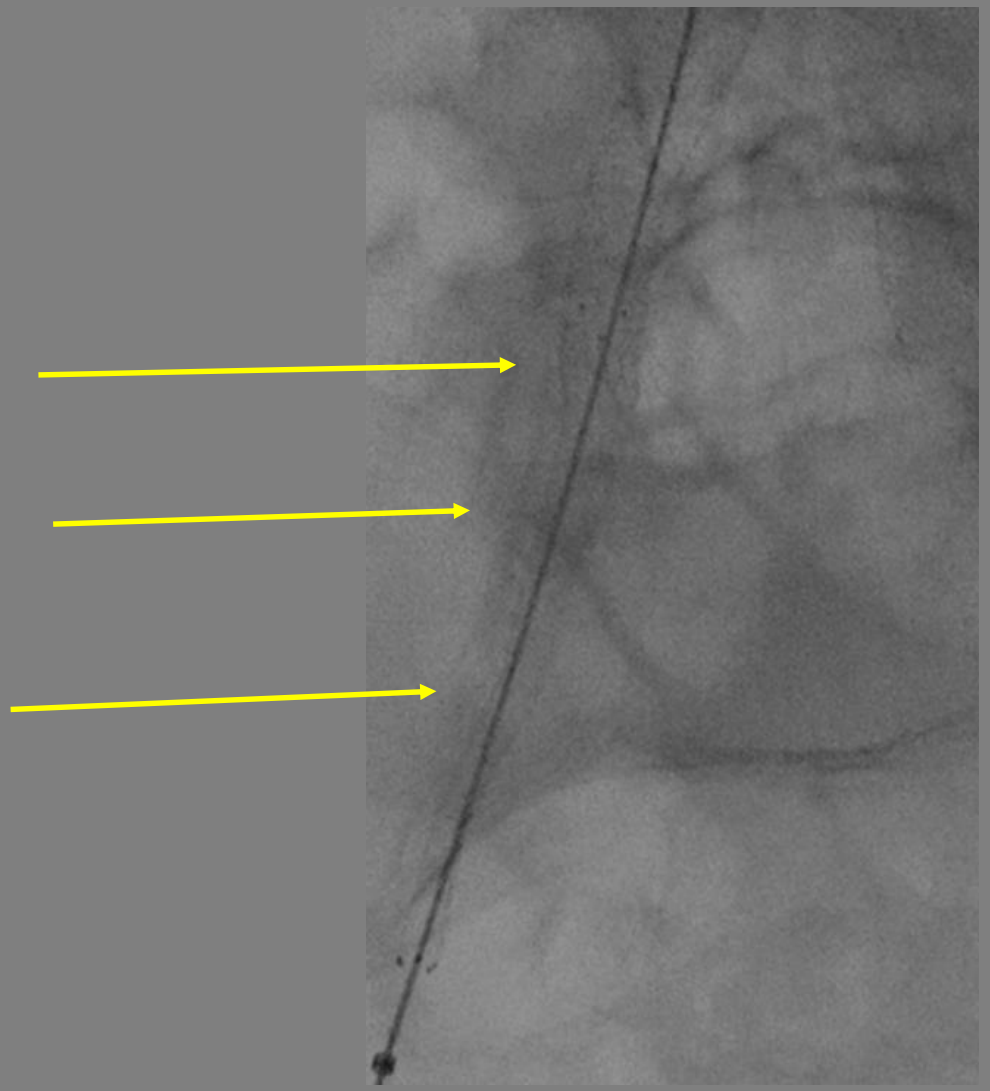
# Post Antegrade-Retrograde Device-Facilitated Balloon Re-entry

- 0.014” Thruway wire snared and externalized for through-and-through access
- Sheath over Thruway wire
- Bilateral Amplatz wires placed into aorta from CFA access

# Bilateral CIA stents




# EIA stent extension



# Completion Right CIA Angiogram

# Clinical follow-up 1 month later

- Significant improvement in ambulatory status with no claudication
- 5th toe amputated at St. Joseph's Hospital after RCIA recanalization
- 60% of surgical wound healed with granulation tissue
- Vascular report Oct 11, 2018:
  - CFA 286 cm/s PSV, moderate plaque
  - SFA proximal PSV 135 cm/s, severe plaque; mid 237 cm/s, severe plaque; distal 57 cm/s, severe plaque
  - Popliteal artery 70 cm/s, minor plaque

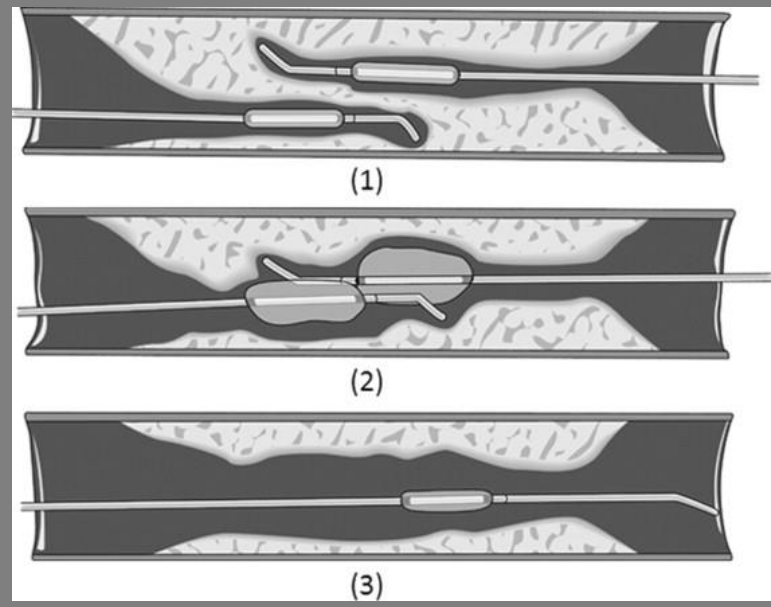
# Discussion

- The Controlled Antegrade-Retrograde Subintimal Tracking (CART) technique is well-described in recanalization of coronary CTO (1,2)
- Feasibility of retrograde recanalization of fem-pop (3,4), and subintimal angioplasty of SFA (5) have also been described as viable treatment options in CTO disease
- Primary patency of SFA via subintimal PTA at 6 months and 12 months = 90% and 73% (5)
- No significant difference (p=0.35) when comparing primary patency via antegrade recanalization at 12 months (86%) and 24 months (51%), vs retrograde at 12 (75%) and 24 months (44%) (5)
- Generally, combined antegrade-retrograde recanalization is performed after isolated antegrade or retrograde recanalization techniques have failed

# Discussion

- Confluent two-balloon technique has been described for subintimal recanalization of chronic iliac occlusions (6)
- Reentry device-facilitated puncture of retrogradely inserted balloon has been described recently in femoropopliteal CTO (7)
- To our knowledge device-facilitated reentry with puncture of a retrogradely placed balloon has not yet been described for common iliac CTO

Confluent two-balloon technique (6)



# Discussion

- It is important to know the various techniques for challenging revascularization in the setting of CTO
- Typically antegrade, then retrograde attempts at recanalization are attempted before then attempting more advanced simultaneous antegrade-retrograde techniques such as
  - SAFARI
  - Confluent two-balloon technique
  - Device-facilitated reentry with balloon puncture
- If there is a will and a plan, there is a way!

# References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3. Wojtaskik-Bakalarz et al. Twelve months follow-up after retrograde recanalization of superficial femoral artery chronic total occlusion. Postepy Kardiol Interwencyjnej. 2017; 13(1): 47-52
4. Li-Ming W., et al. Integrated application of antegrade and retrograde recanalization for femoral-popliteal artery chronic total occlusions: outcomes compared with antegrade recanalization. Quant Imaging Med Surg. 2018. Jul; 8(6): 568-578.
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7. Goltz JP, et al. Simultaneous Antegrade-Retrograde Subintimal Revascularization of a Femoropopliteal Chronic Total Occlusion by a reentry device-facilitated puncture of a retrogradely inserted balloon. J Endovasc Ther. 2017. Aug; 24(4): 521-524