The long and short of it: Treatment of multilayered stents instent restenosis with a Ultralong, Ultrathin strut, Tapered stent (Biomime Morpheus)

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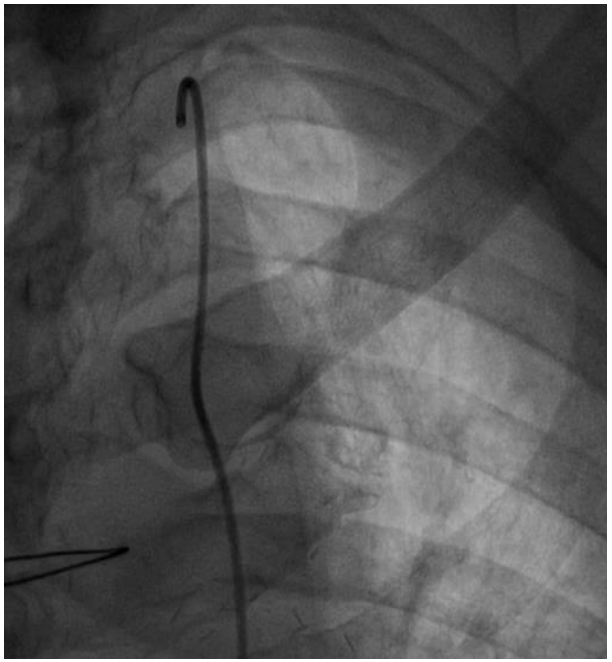
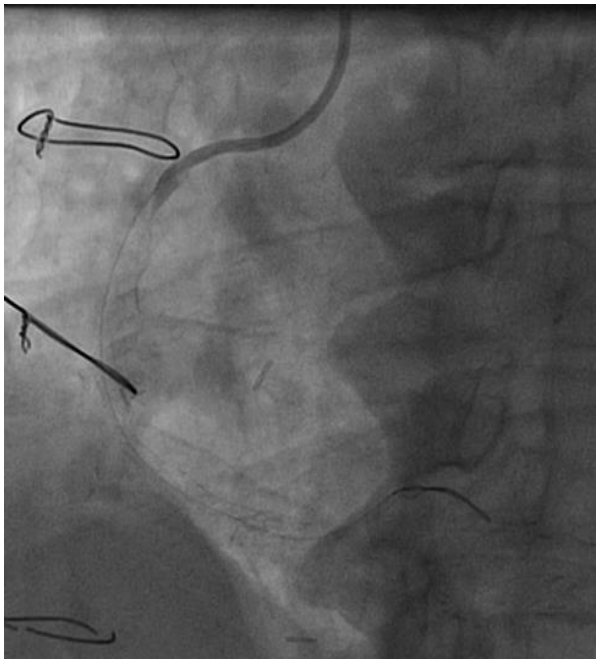
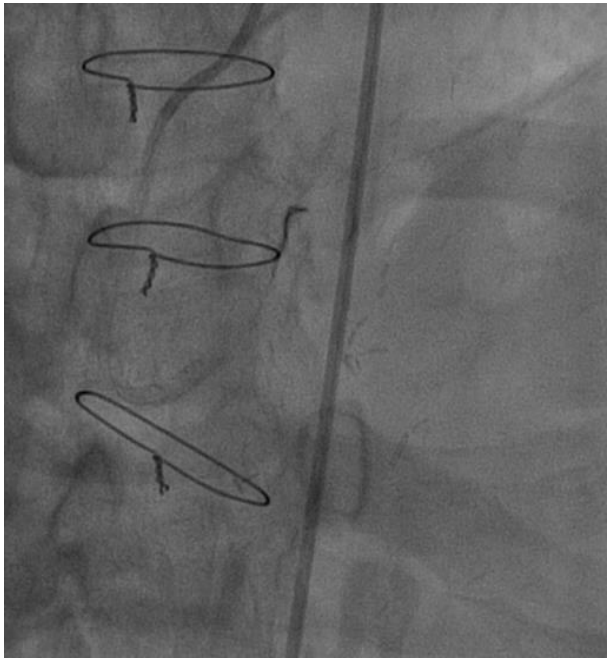
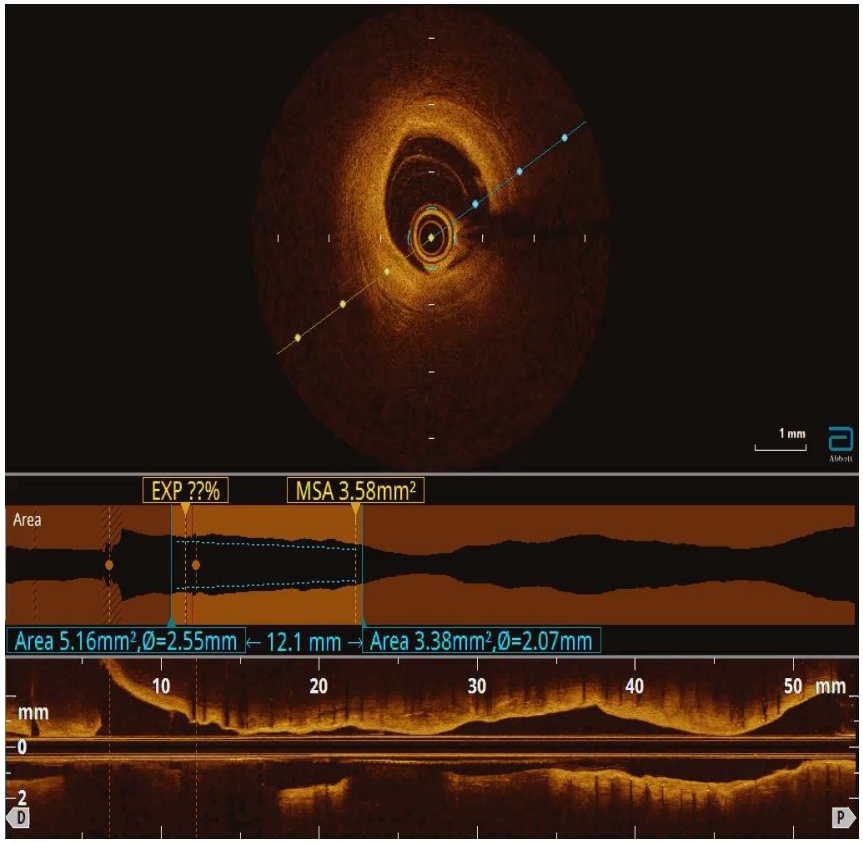
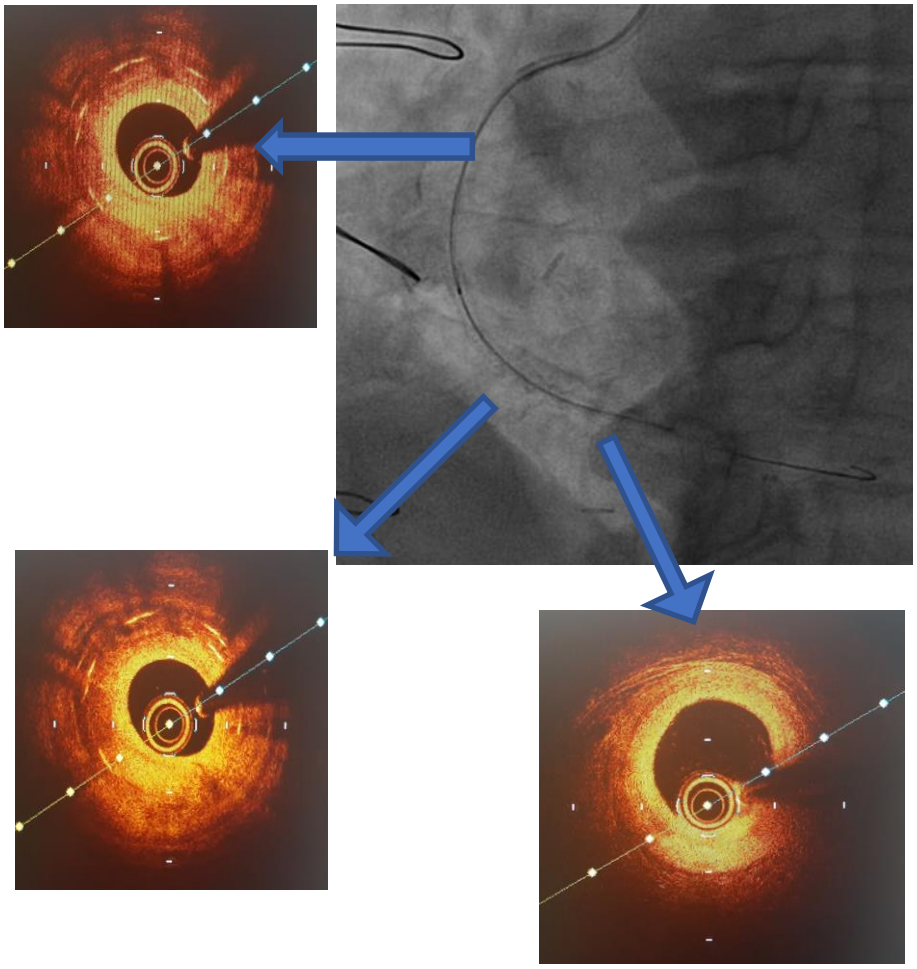
- 74 Year old gentleman with chest pain and breathlessness on exertion
- PCI to RCA Taxus 2005, Xience 2012
- CABG with LIMA jump graft using LRA to LAD and OM1; SVG to RCA-PDA in 2013
- Hypertension, dyslipidaemia, no HX T2DM or CKD
- Angiogram at other centre : difficult to cannulate LIMA so not visualised but likely patent, long segement ISR of RCA, occluded RCA graft, occluded native LAD and LCX
- Cardiac MRI showed good LV function, inducible ischemia in the RCA territory, with an established infarct in circumflex territory.

- Angiogram at our centre showed
  - Patent LIMA and LRA pedicle graft to LAD and LCX
  - Diffuse long segment in stent restenosis in RCA and occluded vein graft to RCA.
  - Stents in mid RCA appeared underexpanded
  - Multi-layered stents in RCA

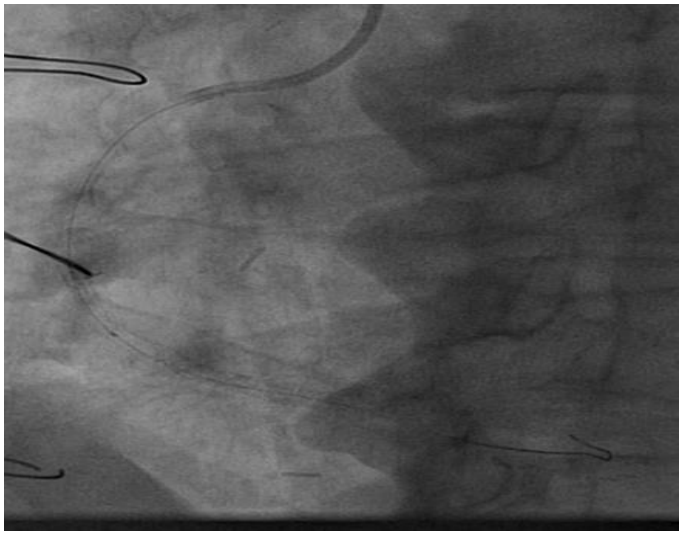
Long segment fibrocalcific ISR



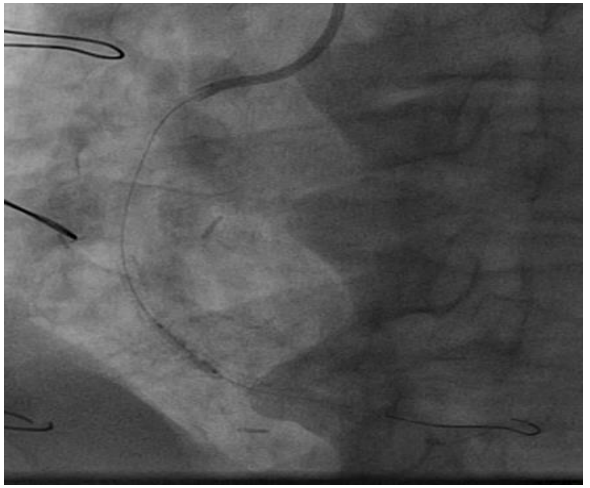


- **OCT showed two layers of stents, with long segments of under-expansion, malapposition and diffuse in stent restenosis.**
- **Fibrocalcific ISR with calcium behind struts**

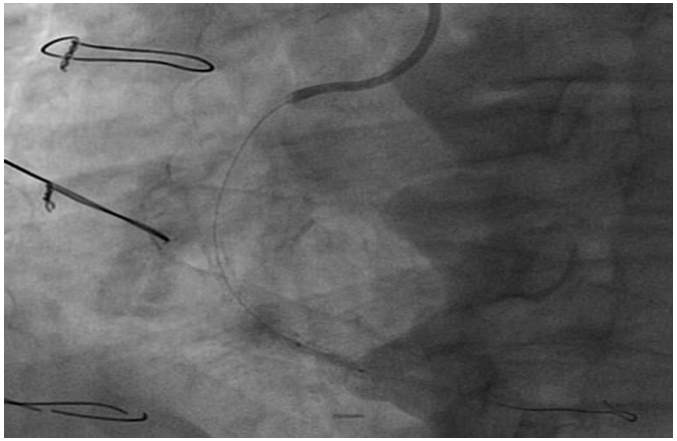
Lesion preparation



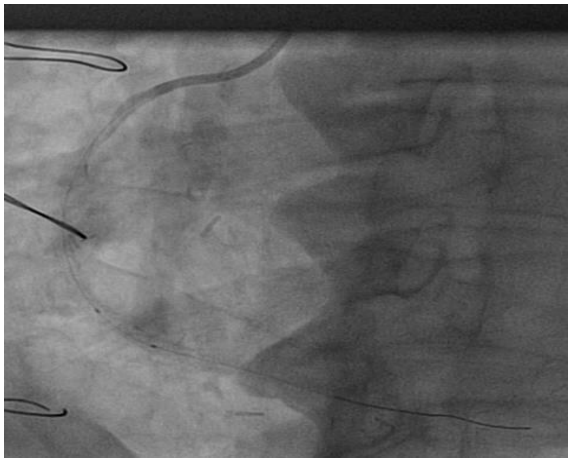
2.5NC balloon



2.5 cutting balloon

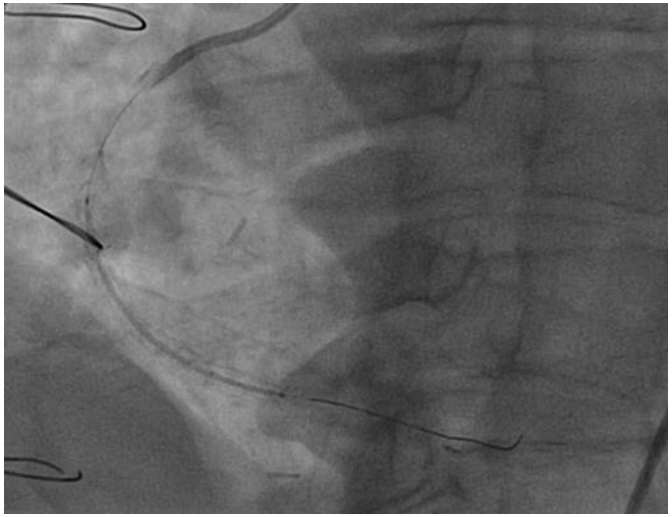


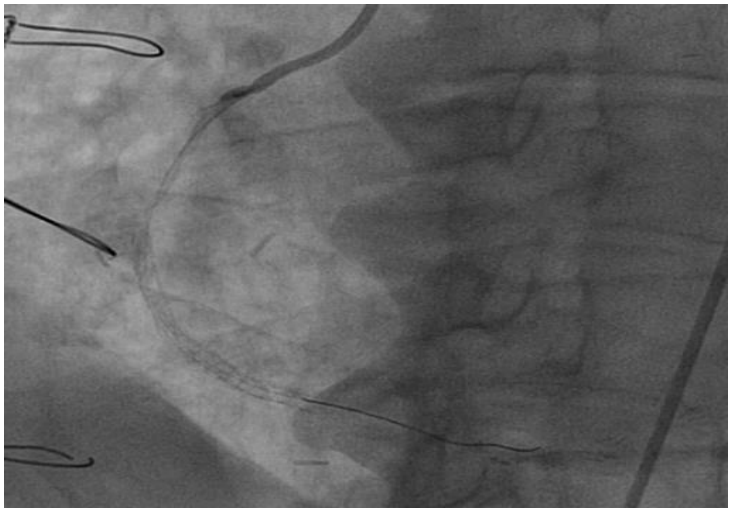
3.0 Shockwave balloon

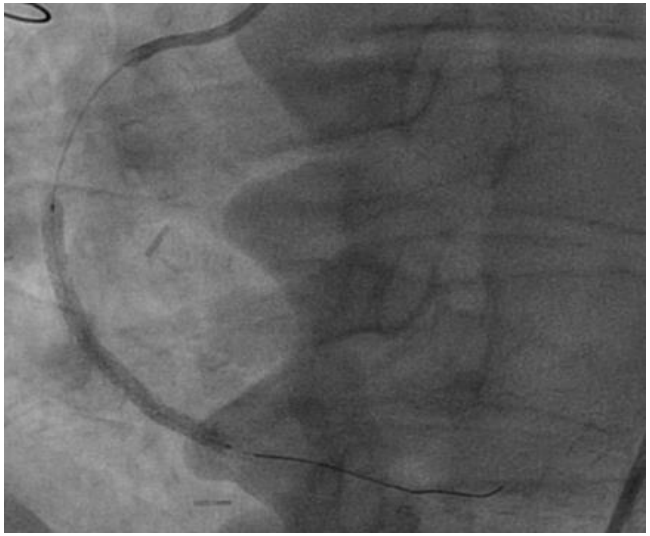


3.0 NC balloon@20 atms

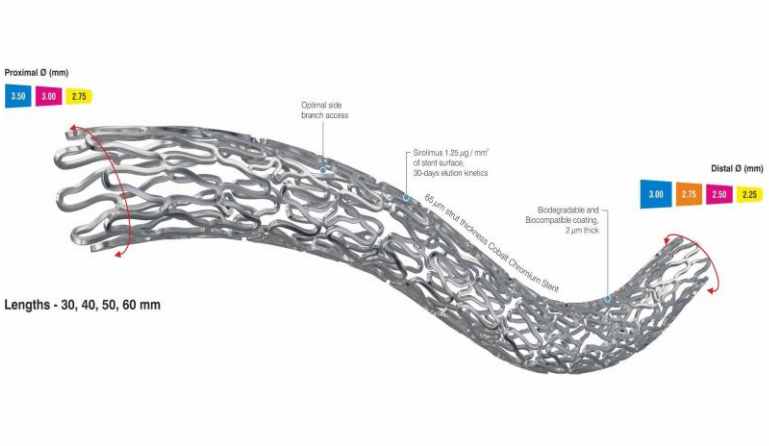
3.0X2.5X50mm Stent delivery and optimisation



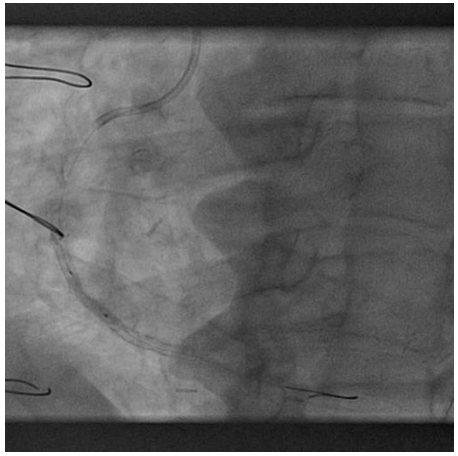


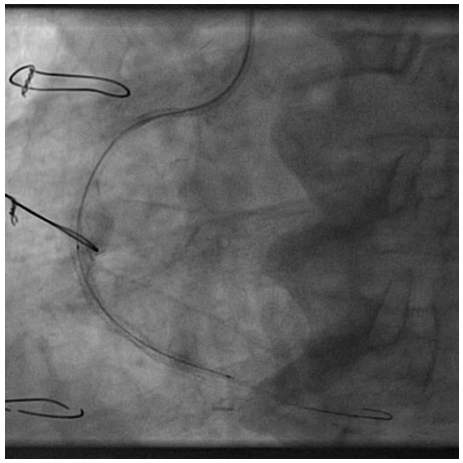


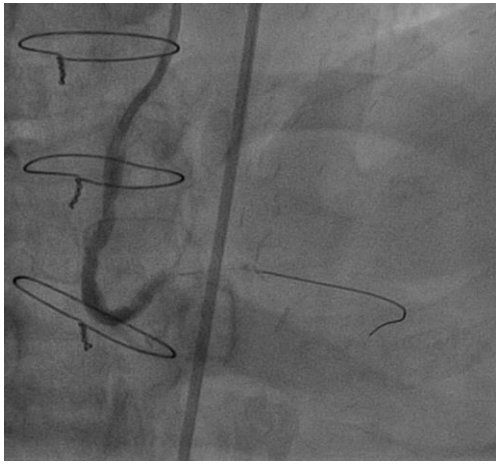
Morpheus tapered stent

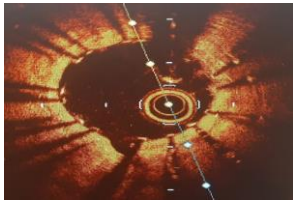


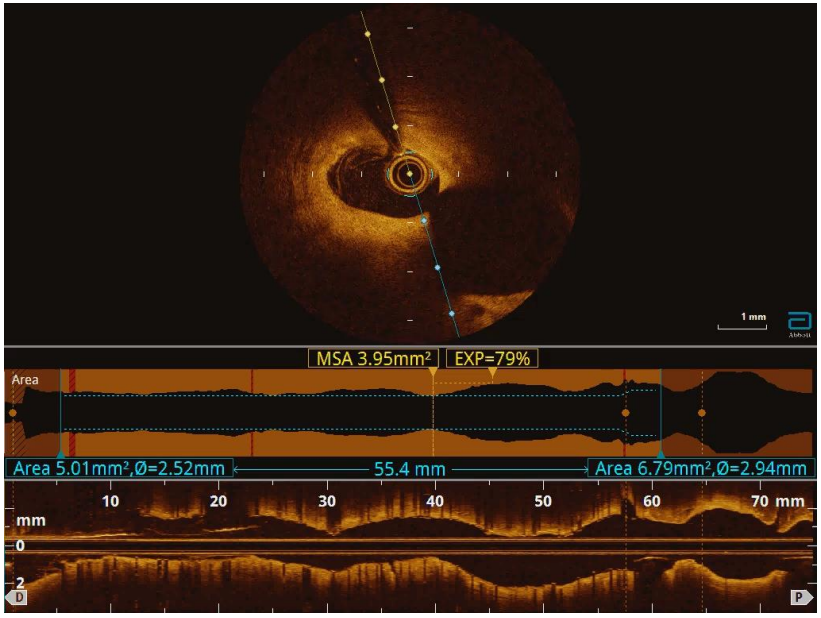
OCT guided stent optimisation

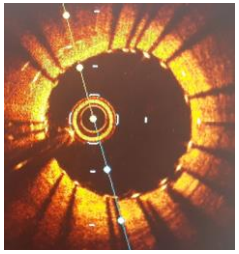


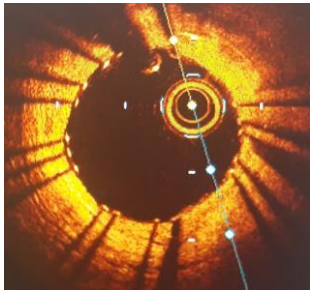


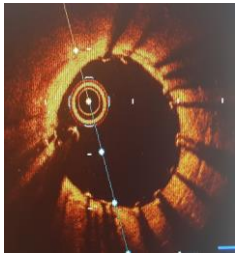












Challenges and take home messages

- PCI is often avoided in recurrent ISR
- Intra coronary imaging is essential for planning and optimisation
- Single stents are preferred as stent overlap in long lesions is nidus for future ISR
- Thin struts provide optimal endothelialisation
- Tapered stents minimise trauma in distal vessels

Recurrent ISR and malapposition	**OCT to understand pathology**
Luminal fibrous ISR inside the stent	**Cutting balloon angioplasty**
Calcification behind stent struts	**Shockwave lithotripsy**
Multi-layered stents and recurrent ISR: Minimise future ISR and metal load	**Ultrathin strut long tapered stents**