

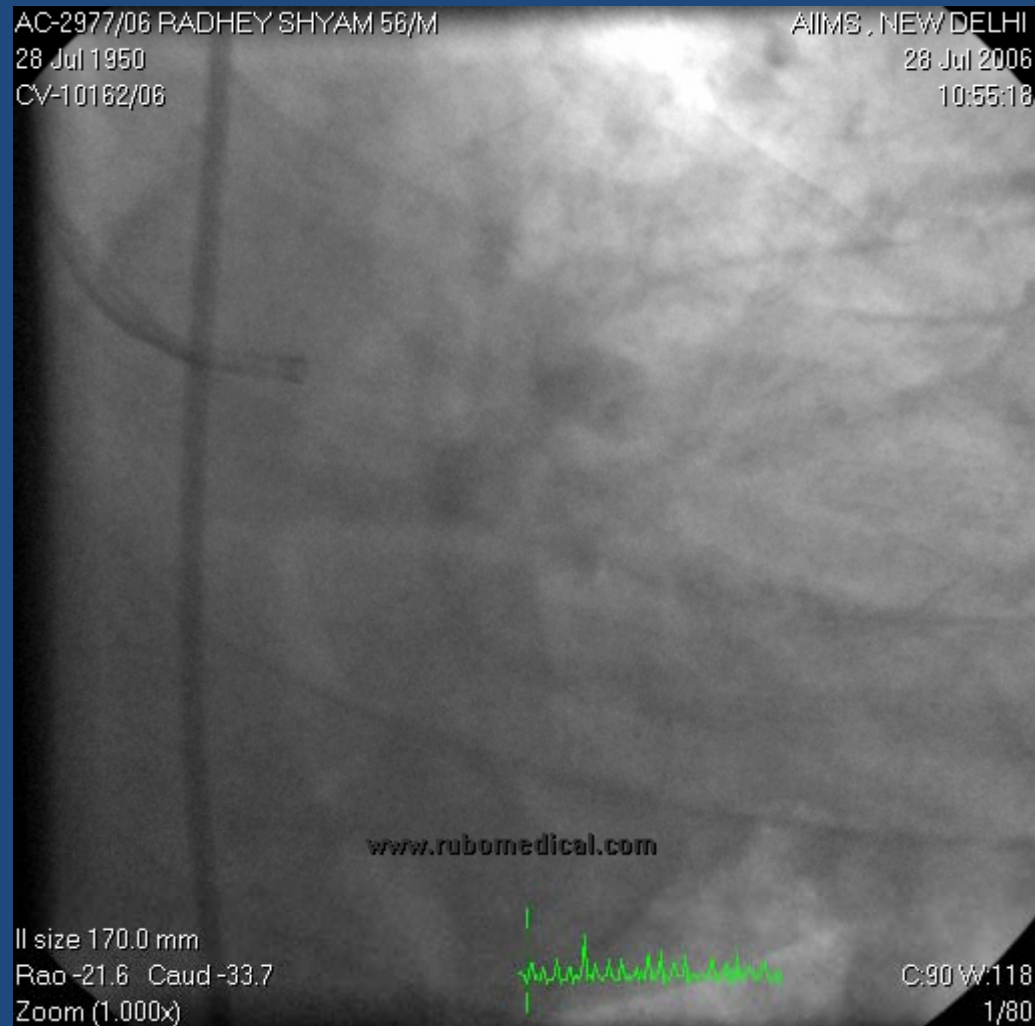
Antegrade Recanalization of CTO using Star Technique

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Clinical History

- 56 year old male,
- Diabetic on Insulin Rx, HT
- CAD Past H/O MI 4 months back,
- Now chronic stable angina
- h/o Failed attempt to reanalyze CTO 6 weeks back
- After failed CTO attempt, progression of symptoms

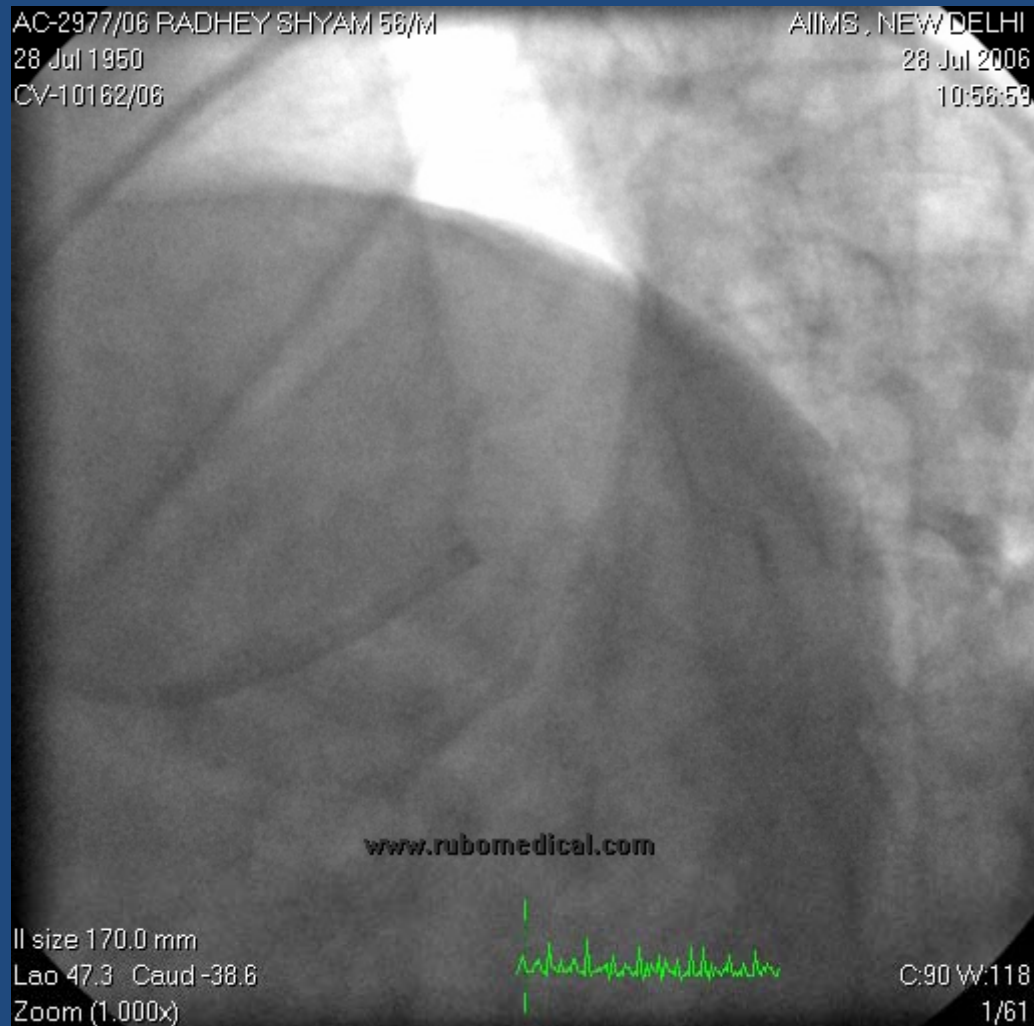
Cine Angiogram : Short Segment CTO



The Difficulty: artery is tortuous at the occluded part



Plus: Stumpless CTO with Side Branch



Important to Recapitulate the previous attempt

- Wire was repeatedly going to SB, therefore IVUS Guidance was taken to identify true lumen
- Used Fielder FC to enter the true lumen but couldn't make much progress
- Tried parallel wire technique, used Miracle wire but failed
- Then did something which shouldn't have been done, used Conquest Pro 12 wire which led to minor perforation and therefore the procedure had been abandoned

Options Available

- Retrograde technique: Collateral connection present but not good, distal artery seemed diffusely diseased
- Antegrade approach : Star Technique – generally avoided for non-RCA vessels (because of risk of compromising side-branch), but here there was only short segment occlusion.
- Star technique with micro-catheter contrast injection is another option but we feel it is too invasive (? Responsible for high ISR seen in Colombo's technique)

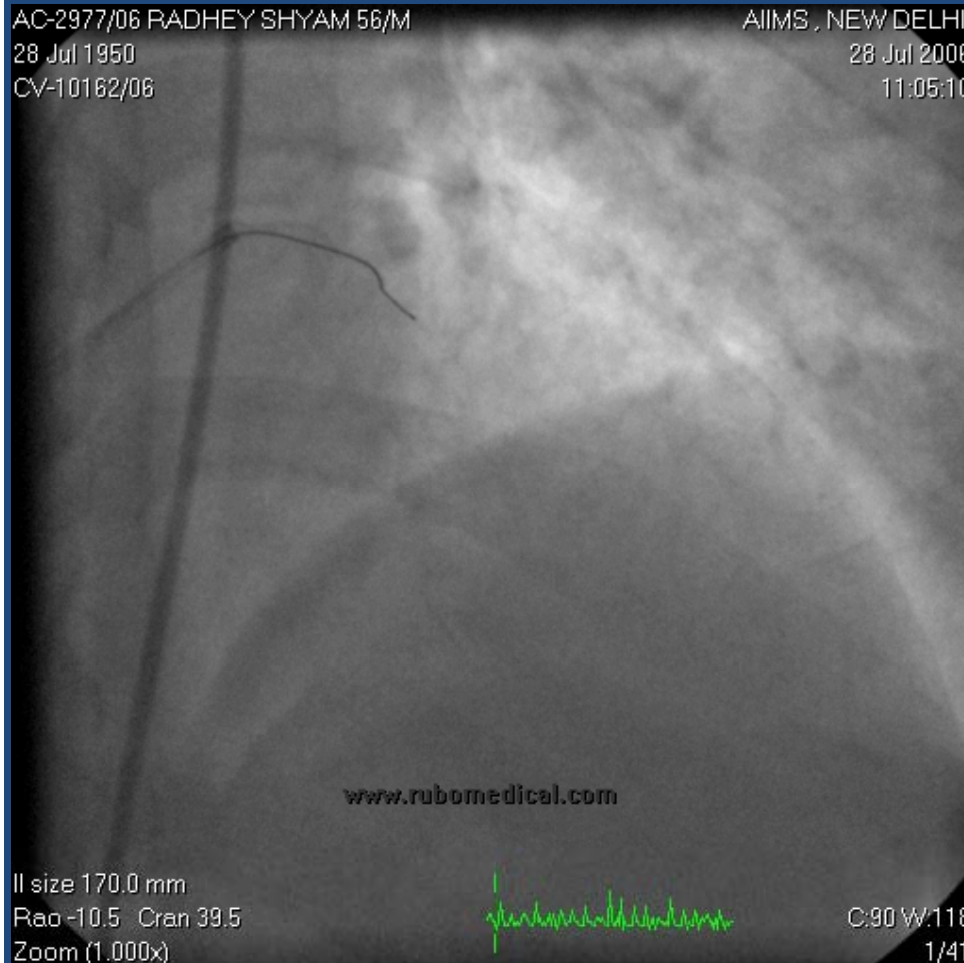
Initially tried with Whisper wire but Failed

- Whisper is not a very persuasive wire with a tip load of 1 and lateral support of only 8.
- An option was to take Fielder XT wire, however again tip load is only slightly more (1.2) and lateral support only 9, but very poor tactile feel, the only advantage is a tapered tip (009) and long polymer coated distal tip (160 mm), which will glide easily through a micro-channel.

Crosswire™ from Terumo was used

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- Crosswire is a unique non-penetrating wire:
- It is completely made of nitinol (unlike Asahi which are stainless steel)
- But tip load is 6
- Lateral support is also more
- Its distal tip is non tapering and tactile feel is more than Fielder XT

Il size 170.0 mm
Rao -10.5 Cran 39.5
Zoom (1.000x)

C:90 W:118
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An angle of $>45^\circ$ was made and crosswire was used to create a false lumen

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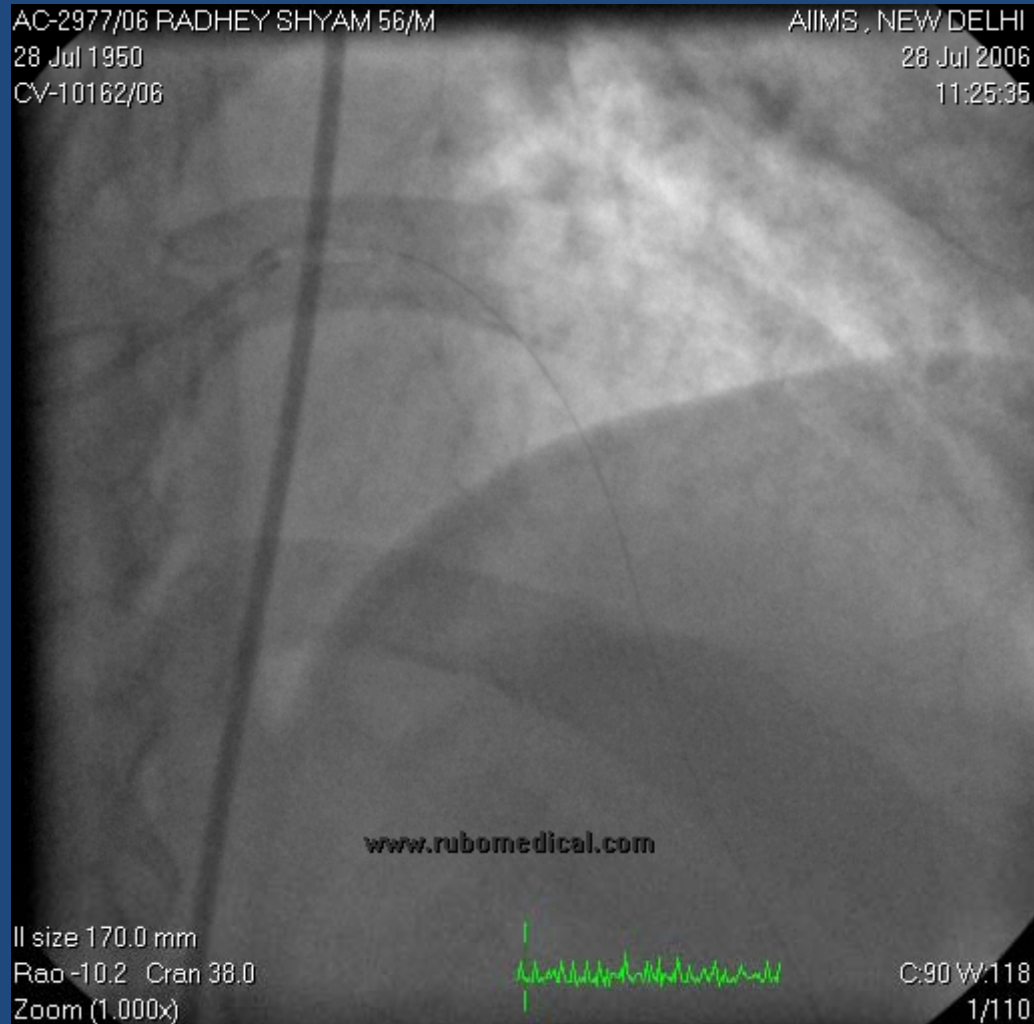
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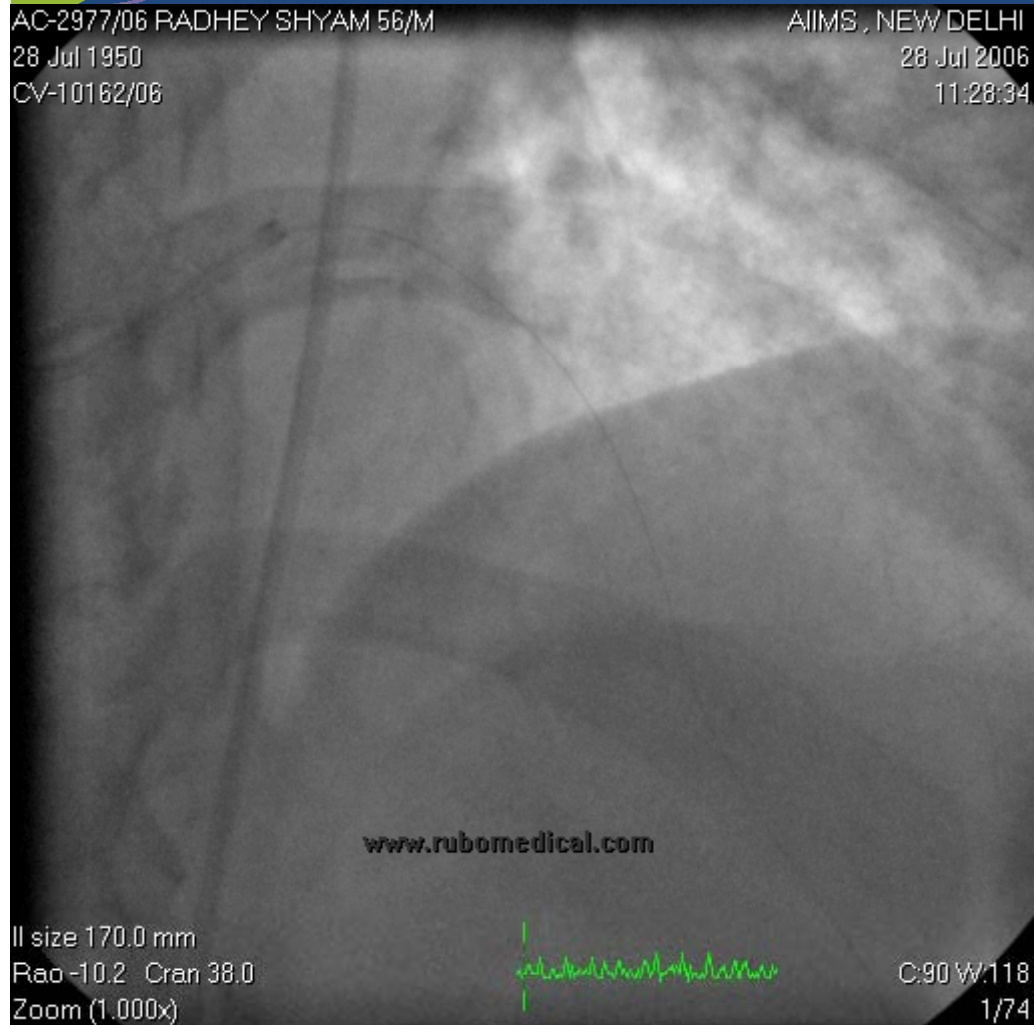
Il size 170.0 mm
Rao -9.2 Cran 36.4
Zoom (1.000x)



C:90 W:118
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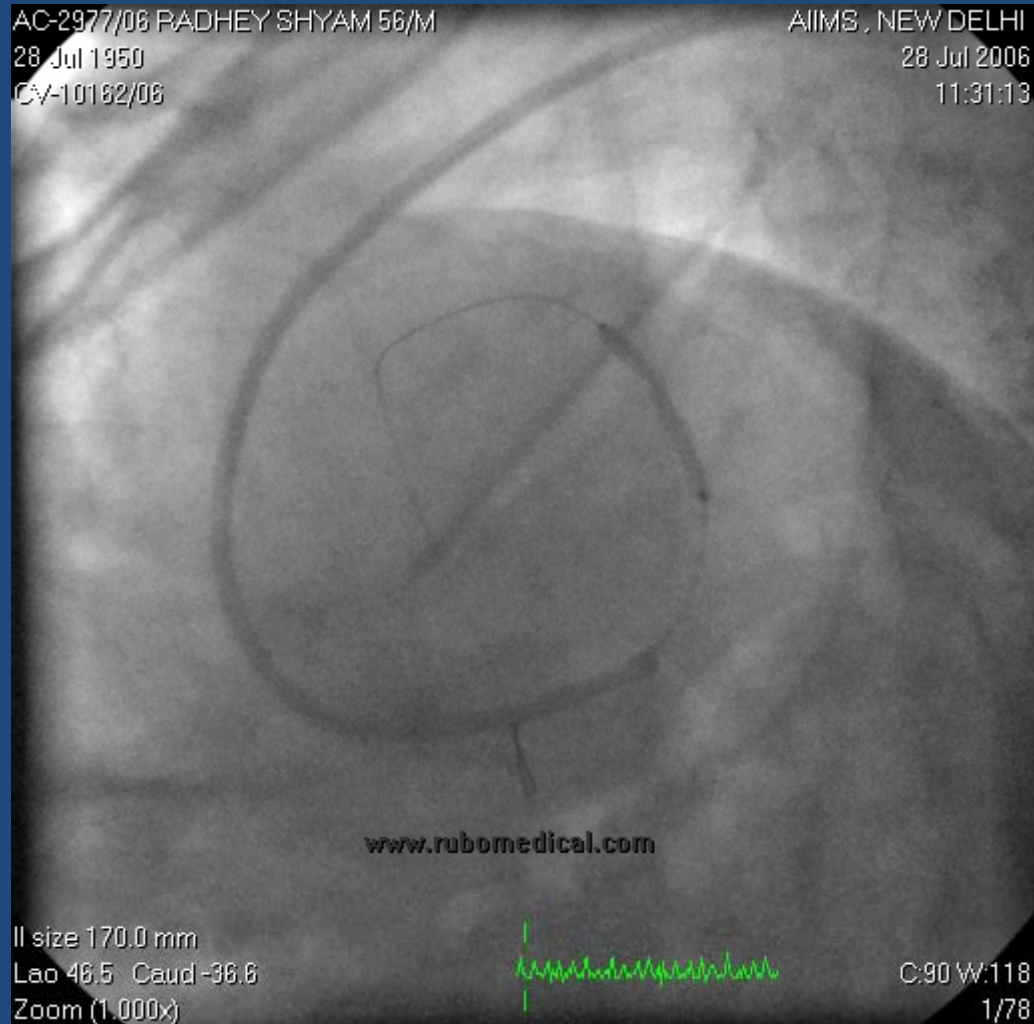
Wire was re-crossed into true lumen and a dissection flap was raised





Wire must have entered from true lumen to false lumen, raised dissection flap and then re-entered true lumen

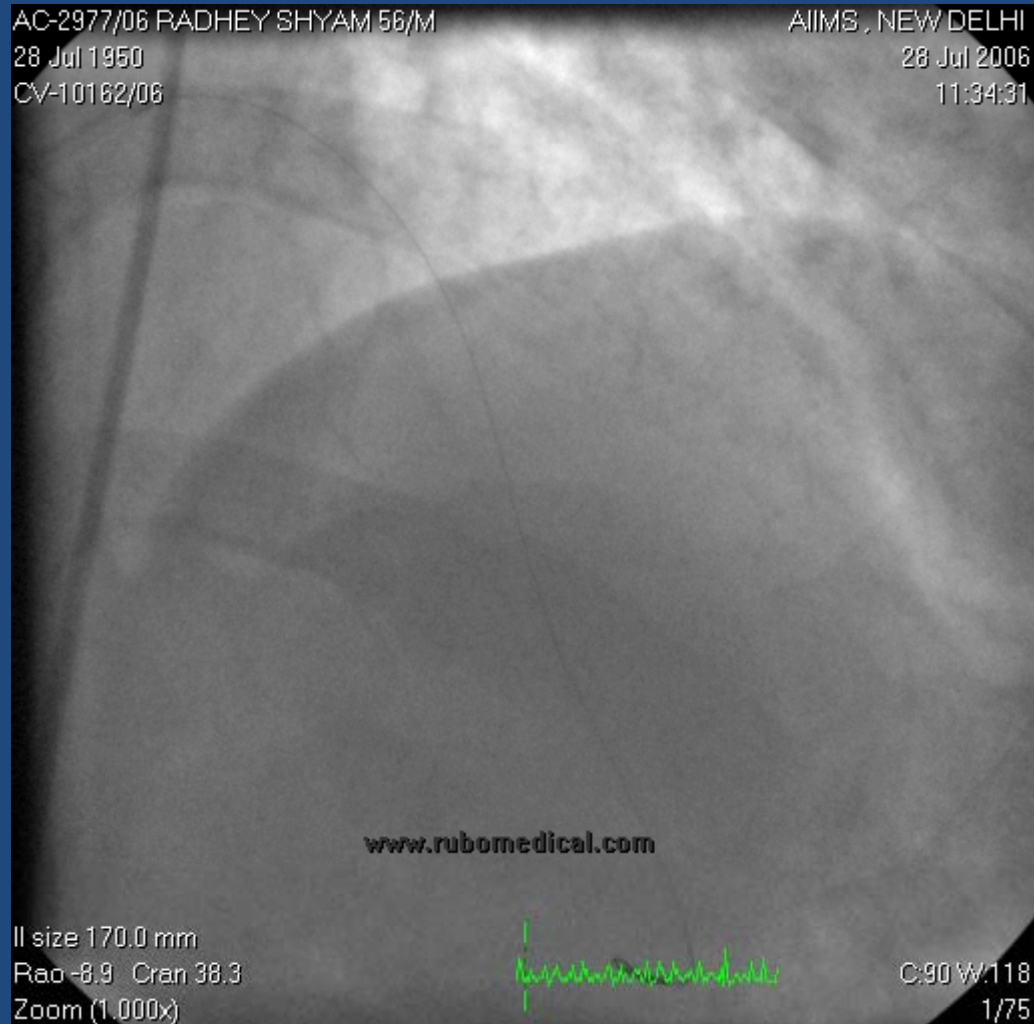
Therefore decided to Balloon Dilate



With balloon dilatation, dissection in false lumen increased

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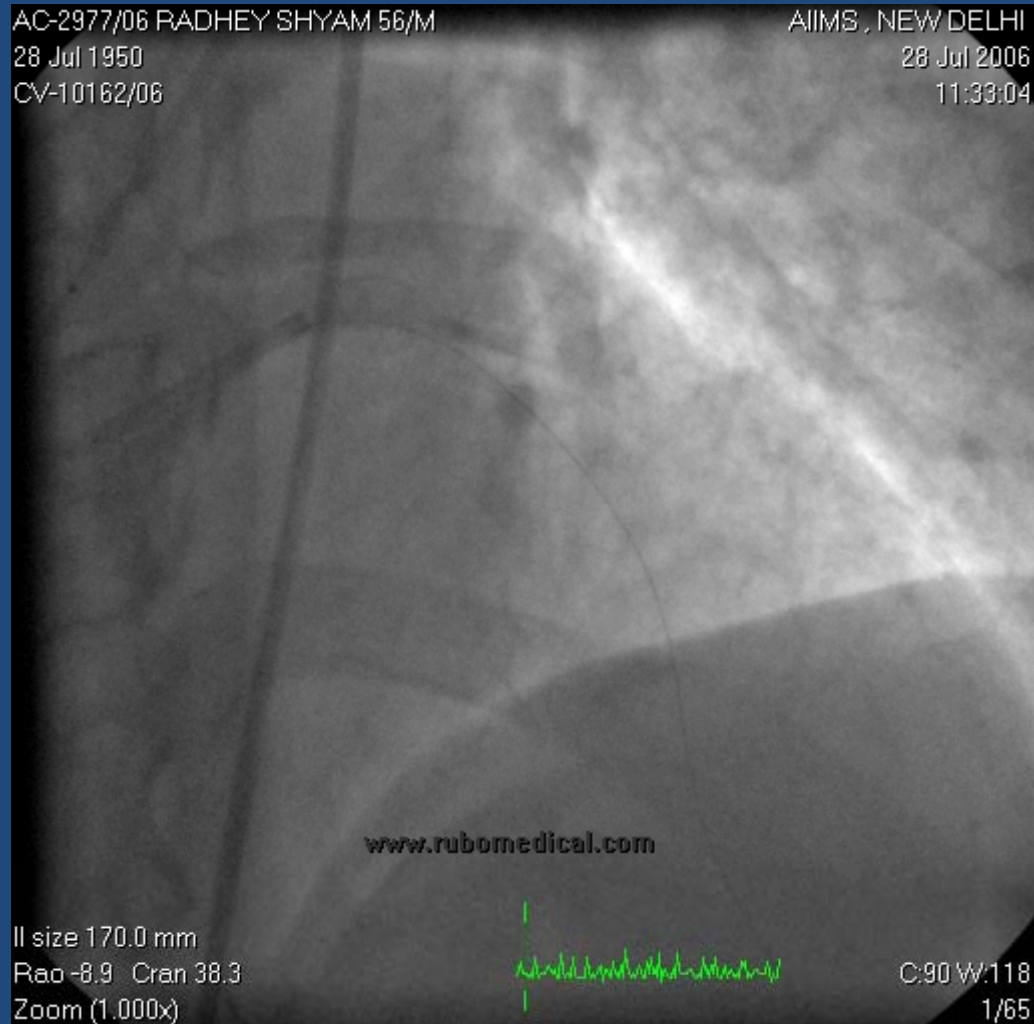
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Il size 170.0 mm
Rad -8.9 Cran 38.3
Zoom (1.000x)



C:90 W:118
1/75

But landing zone could now be identified



The stent was positioned to entirely cover the dissection flap i.e. from true lumen via false lumen into true lumen



Check angio showed that false lumen was covered but distal to the stent some disease was still persisting



Decided to position another stent

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Il size 170.0 mm
Rao -9.9 Cran 37.5
Zoom (1.000x)

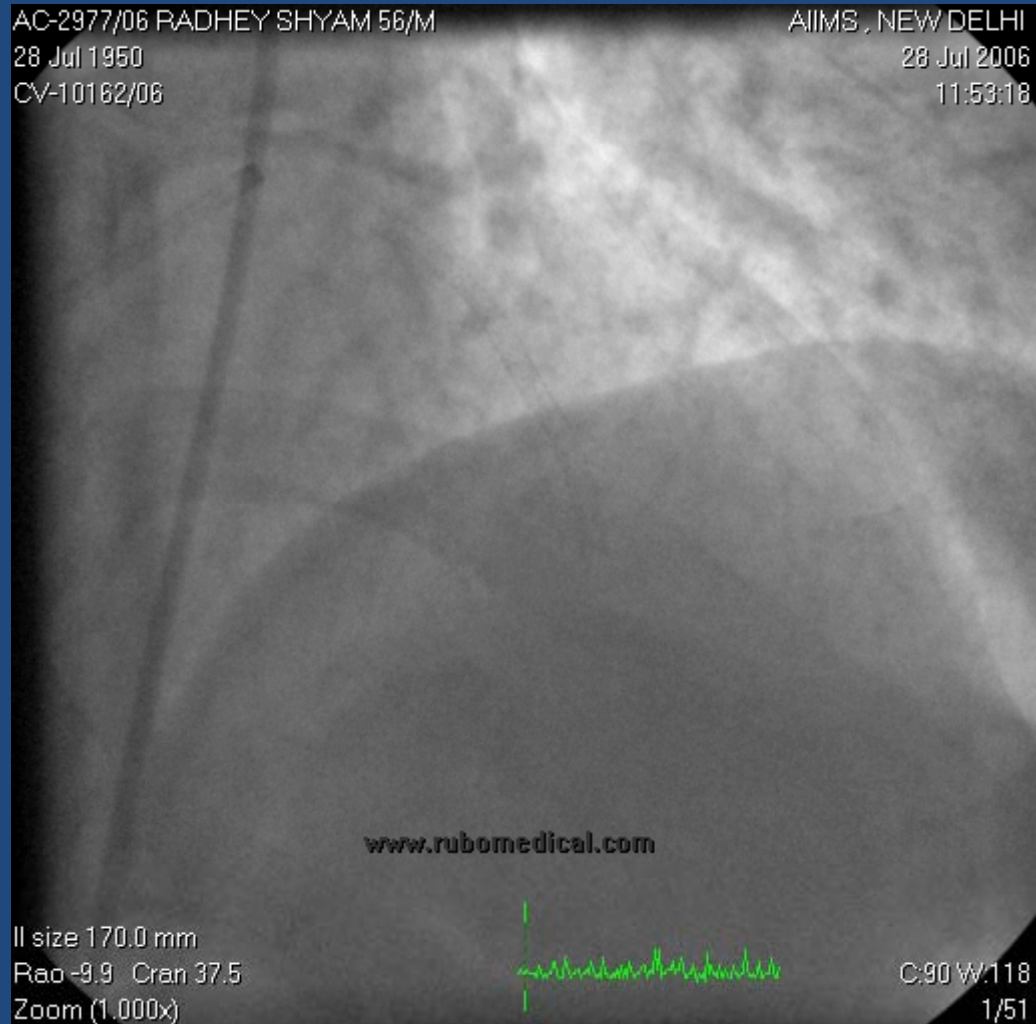


C:90 W:118
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Finally, good end result

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Il size 170.0 mm
Rao -9.9 Cran 37.5
Zoom (1.000x)

C:90 W:118
1/51

Discussion

Star technique should be the last resort

In our case it was a short segment, with no branch arising

- No Compromise of side-branch – short segment occlusion in our case
- No perforation
- After procedure patient became asymptomatic and remains so at 9 months follow-up
 - no stent thrombosis
 - no in stent restenosis