



“Drill and Shock”

Coronary intravascular lithotripsy in a tight circumferential calcified lesion in the presence of haematoma formation after rotational atherectomy

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瑪麗醫院
Queen Mary Hospital

History:

67 year old women, ex- smoker

HT, HL. New-onset Canadian Cardiovascular Society class IV angina for 3 days

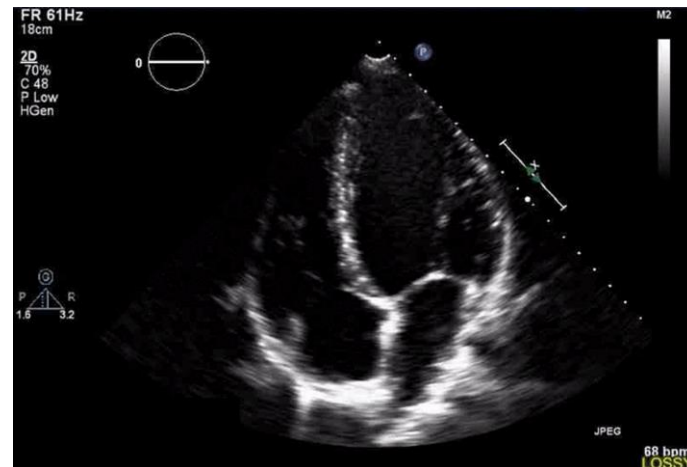
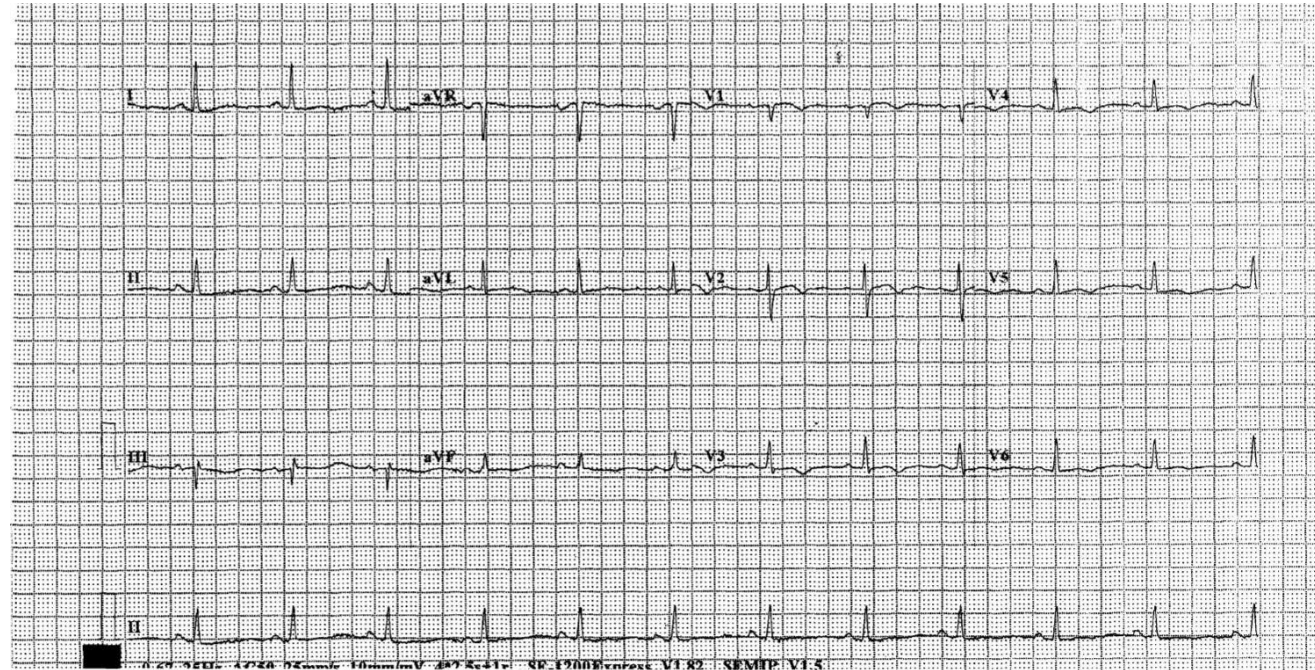
Physical Exam:

BP/P stable, Heart sound dual.
No murmur. Killip class I

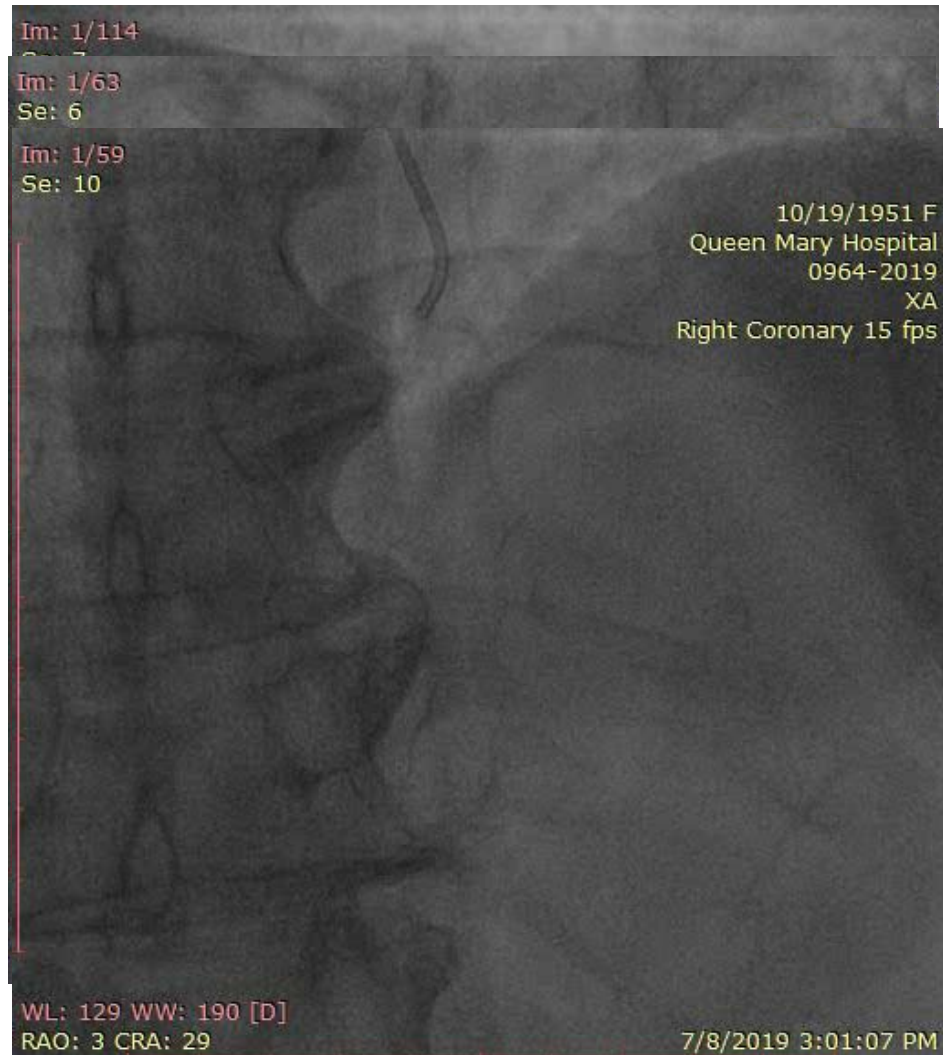
Investigation:

TnT not elevated. ECG anterior bisphasic T

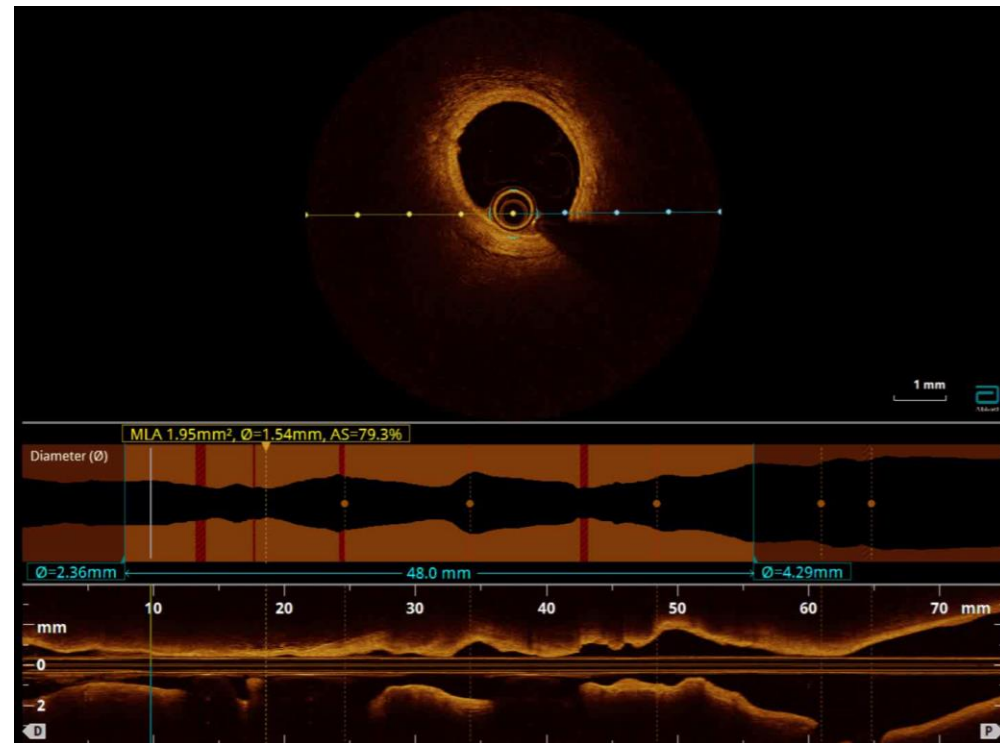
Echo: Normal resting regional wall motion



Coronary angiogram



PCI to LCx, Rotational atherectomy



7 Fr, right femoral access. EBU 3.5 guiding catheter.

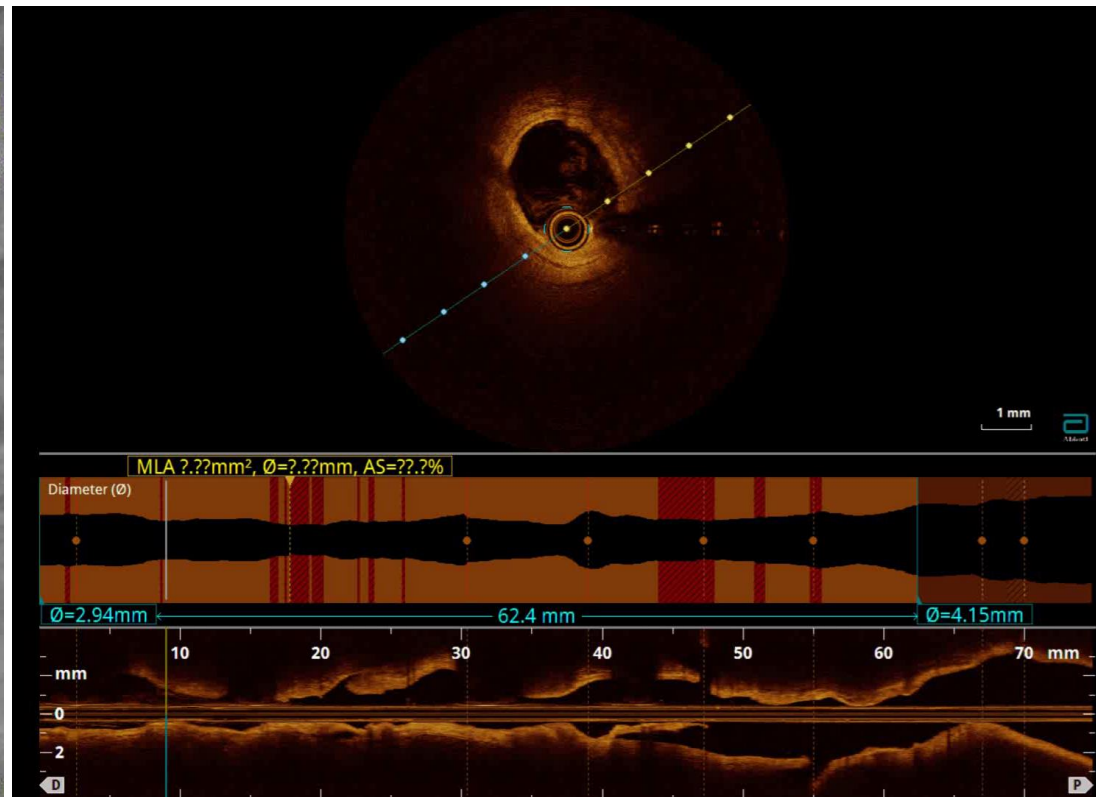
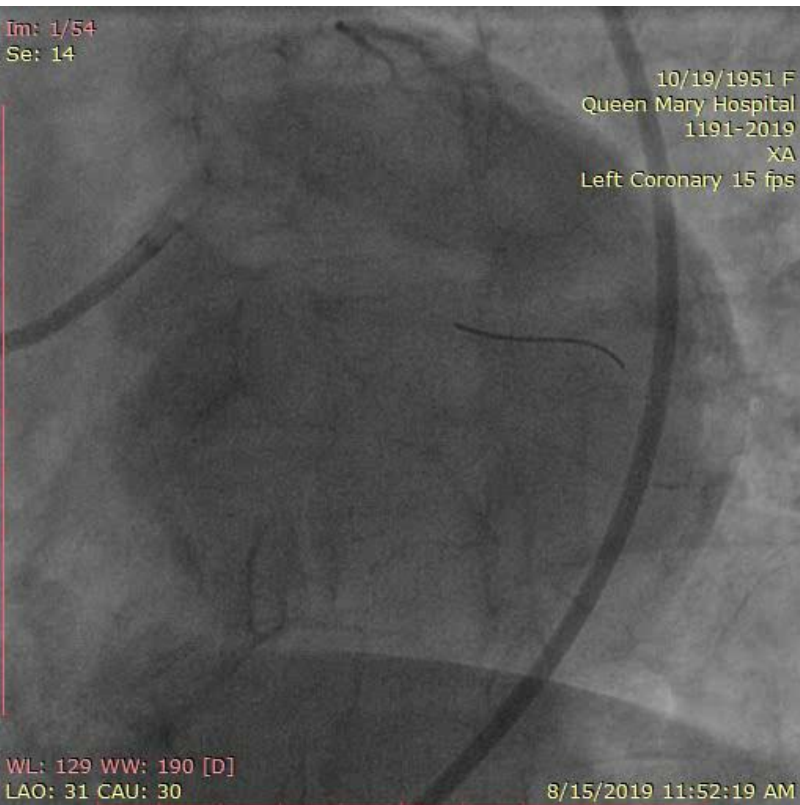
Runthrough HC guidewire to LAD

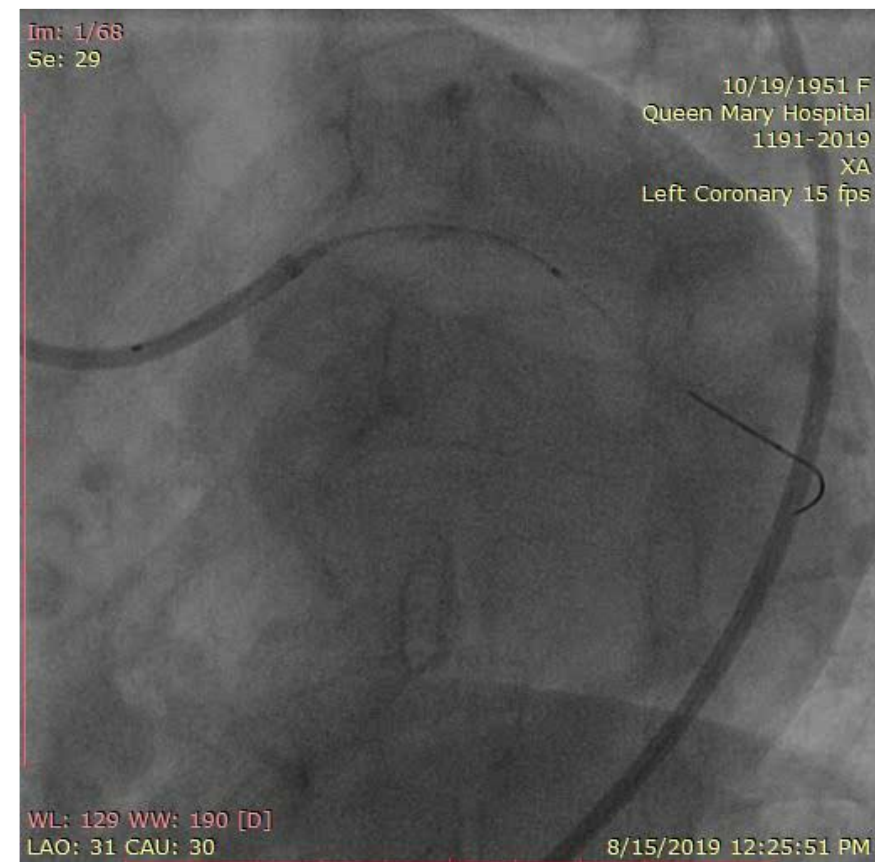
OCT to LAD showed severe concentric calcified lesion and mLAD, large vessel size.

Wire to LCx, unable to advance OCT die to tight pLCx lesion. Rotation done with Rotawire floppy on Finewire MC and 1.5 burr at 185,000 rpm with 6 passes

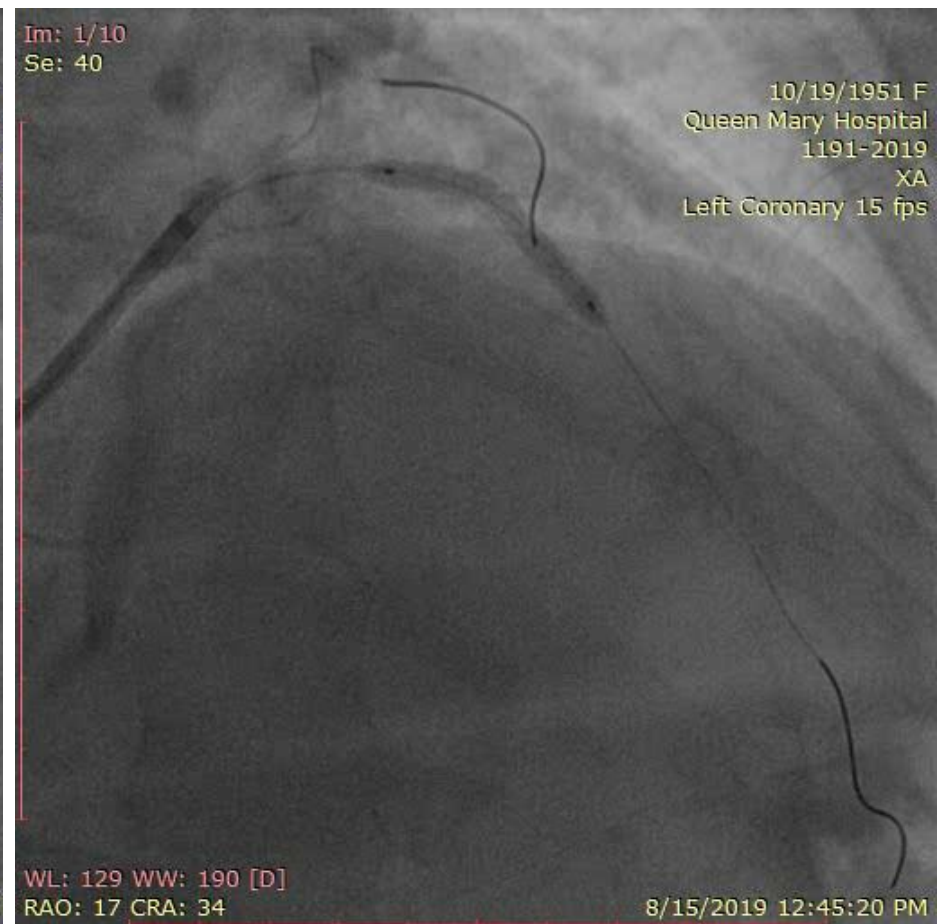
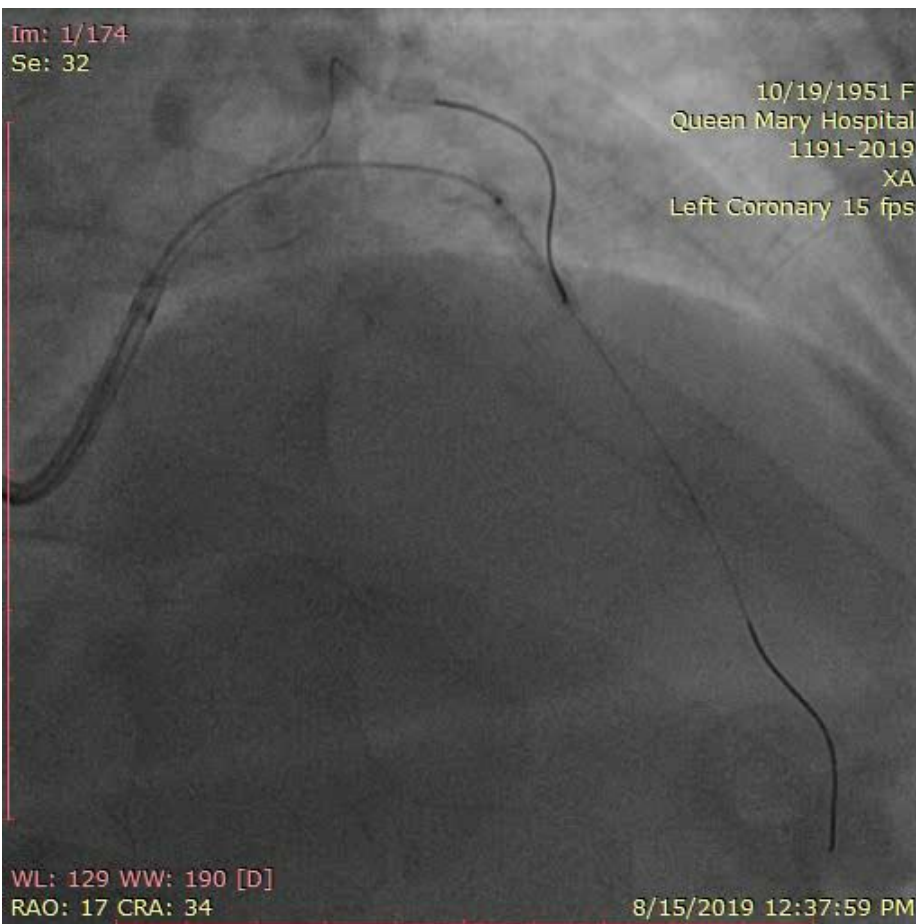
PCI to LCx, Rotational atherectomy

OCT showed Calcified plaque extending to LM with intramural hematoma. Thick calcified plaque at ostial LCx





Shockwave balloon for plaque modification. 3.0 x 3 cycles, 10 seconds each. Ostial LCx lesion was dilated



Sion blue to LAD, Shockwave balloon 3.0 for 3 cycles (10 seconds). lesion dilated.

LAD stented with 3.0/29 DES and postdilate with NC 3.0/20atm and NC 3.5 at 20atm. OCT showed good result.

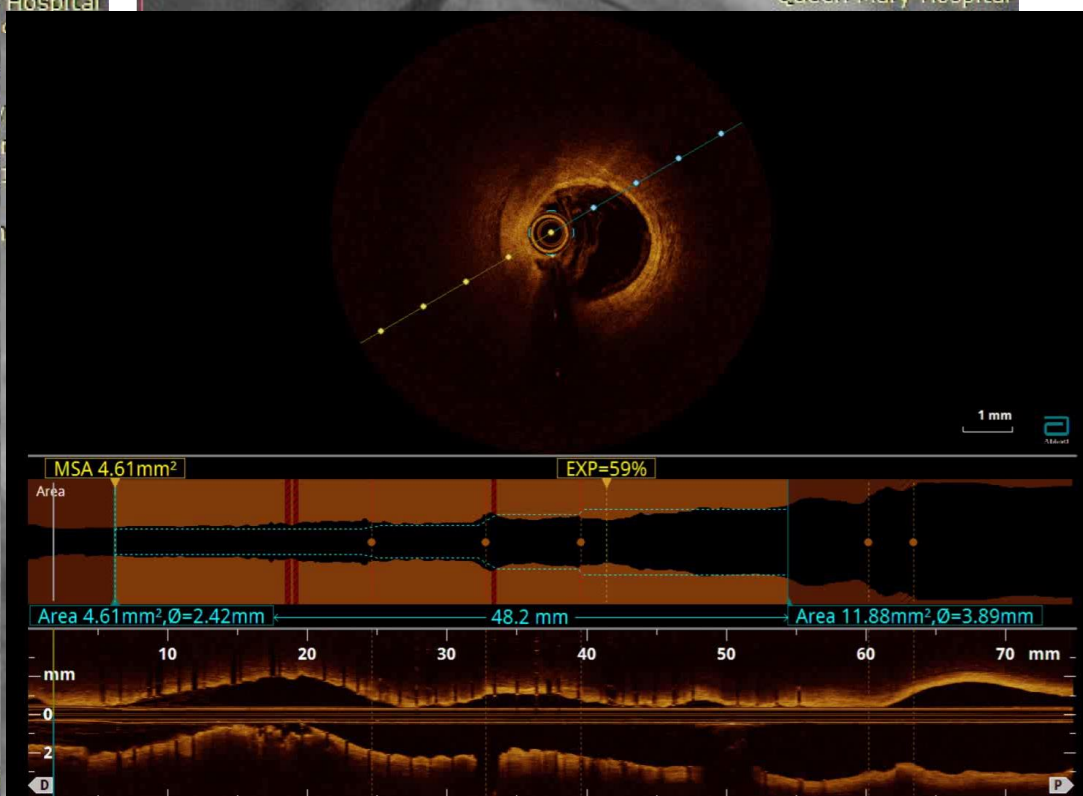


WL: 129 WW: 190 [D]
LAO: 26 CAU: 31

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WL: 129 WW: 190 [D]
LAO: 26 CAU: 31

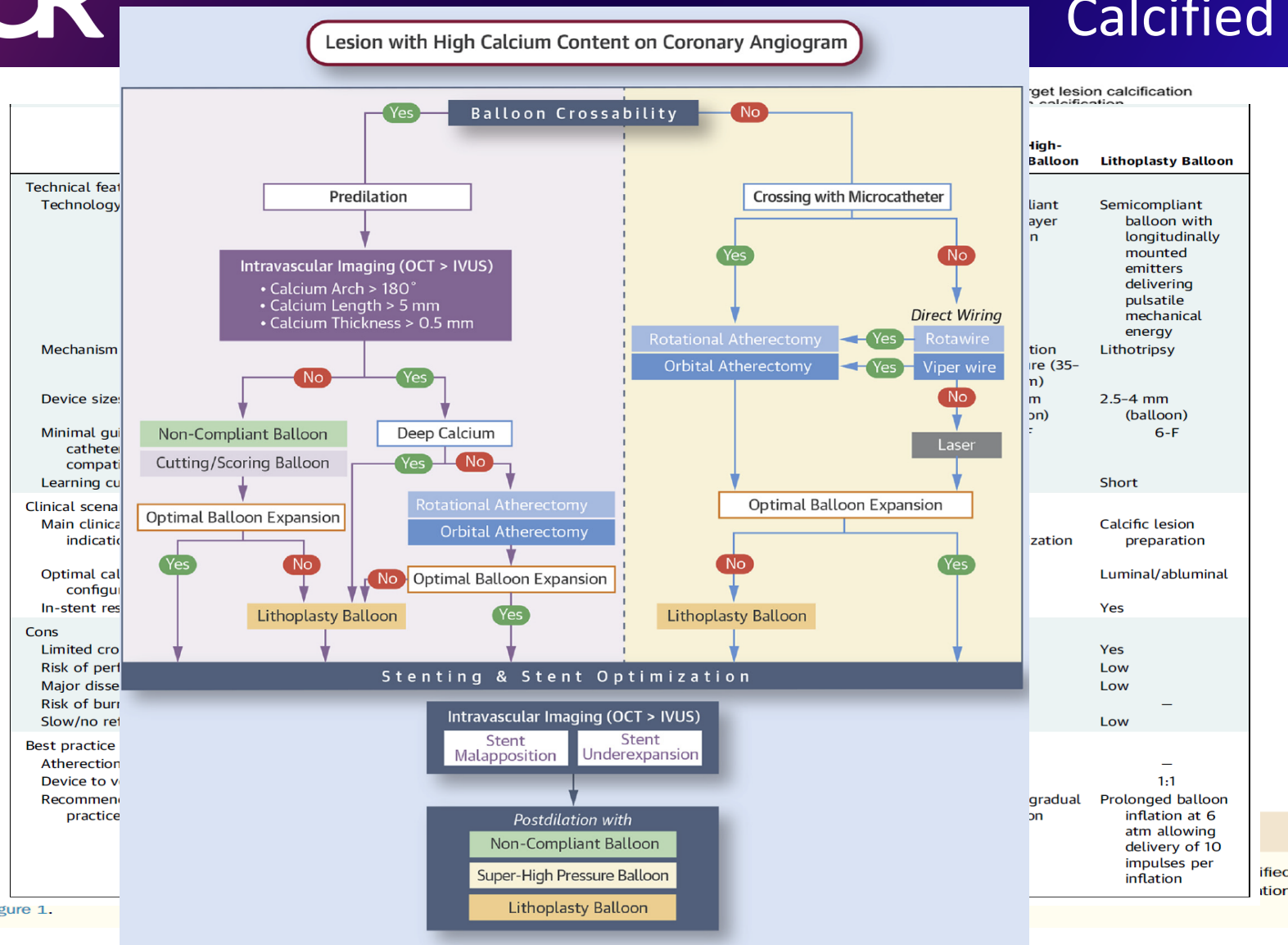
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WL: 129 WW: 190 [D]
RAO: 12 CRA: 35

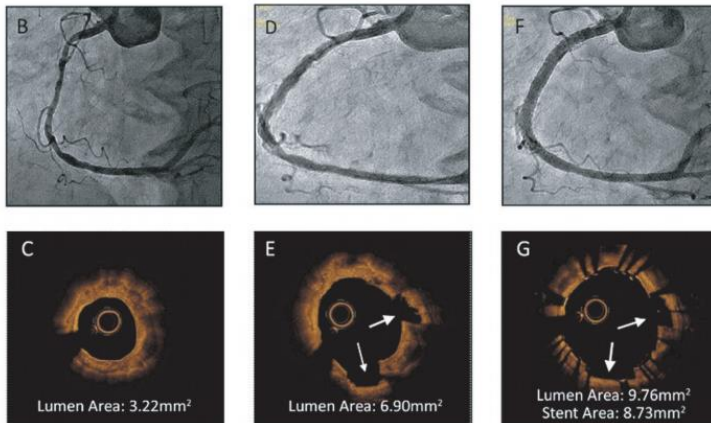
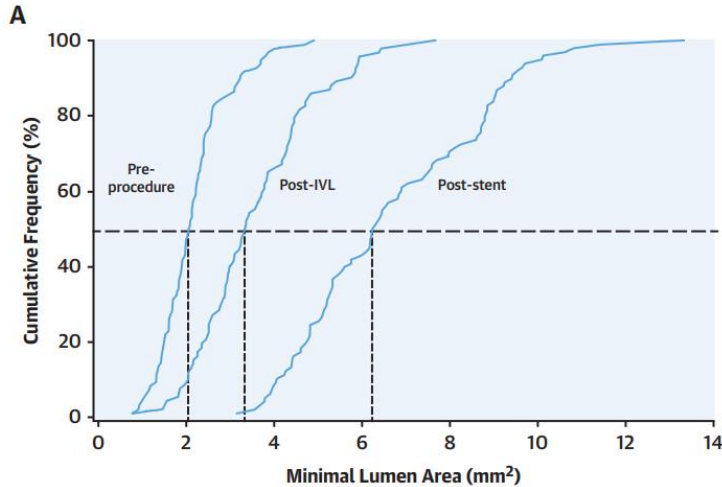
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LM-LCx stented with 3.5/38 DES and postdilated with NC 3.5 balloon at 20atm. POT with NC 4.5 balloon at 12 atm and 5.0 balloon at 6 atm.



1. De Maria GL, Scarsini R, Banning AP. Management of Calcific Coronary Artery Lesions. Is it Time to Change Our Interventional Therapeutic Approach? *JACC Intervention* 2019;12(15):1465-78.
2. Généreux P, Madhavan MV, Mintz GS, Maehara A, Palmerini T, LaSalle L, et al. Ischemic Outcomes After Coronary Intervention of Calcified Vessels in Acute Coronary Syndromes: Pooled Analysis From the HORIZONS-AMI (Harmonizing Outcomes With Revascularization and Stents in Acute Myocardial Infarction) and ACUTITY (Acute Catheterization and Urgent Intervention Triage Strategy) Trials. *Journal of the American College of Cardiology*. 2014;63(18):1845-54.

CENTRAL ILLUSTRATION Luminal Area Gain Following IVL Treatment and Stent Deployment



Hill, J.M. et al. J Am Coll Cardiol. 2020;76(22):2635-46.



	Disrupt CAD I	Disrupt CAD II	Disrupt CAD III
Status	Enrollment completed	Enrollment completed	Enrollment completed
Study design	Single arm, safety & feasibility	Single arm, post-market, safety & effectiveness	Single arm, IDE, safety & effectiveness
# of patients	60	120	384
# of sites	7	15	47
Regions	AU, EU	EU	U.S., EU
OCT Sub-study	N=31	N=47	N=100

Relative ease of use, >90% success rate and OCT sub-study showed deep crack in calcification ~65%

Atherectomy-based complication such as eccentric ablation can be avoided and the risk of no-reflow and dissection is low.

Balloon crossability remains when of its disadvantage

JACC: Cardiovascular Interventions

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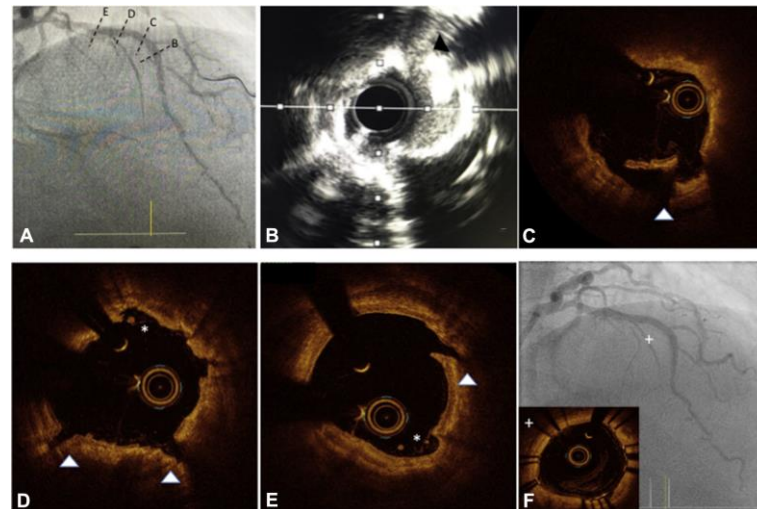
RotaTripsy: Combination of Rotational Atherectomy and Intravascular Lithotripsy for the Treatment of Severely Calcified Lesions

Images In Intervention

Alfonso Jurado-Román, Ariana González, Guillermo Galeote, Santiago Jiménez-Valero, and Raúl Moreno

J Am Coll Cardiol Interv. 2019 Aug, 12 (15) e127–e129

Topic(s): Emerging Technologies, Coronary, Peripheral & Structural Interventions



JACC: Case Reports

JACC Journals › JACC: Case Reports › Archives › Vol. 2 No. 15

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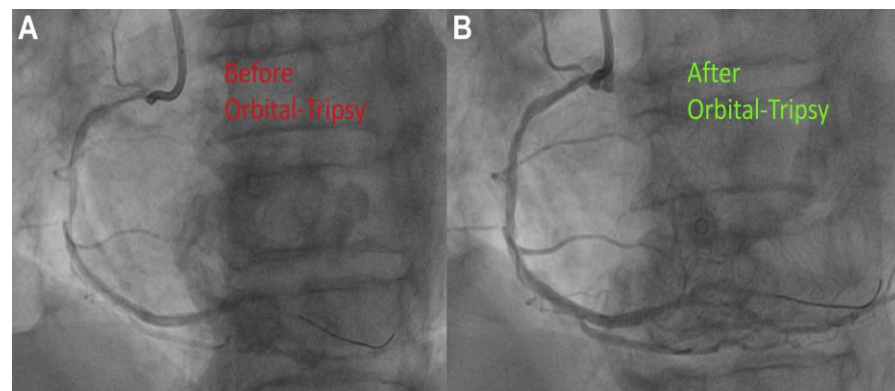
Orbital-Tripsy: Novel Combination of Orbital-Atherectomy and Intravascular-Lithotripsy, in Calcified Coronaries After Failed Intravascular-Lithotripsy

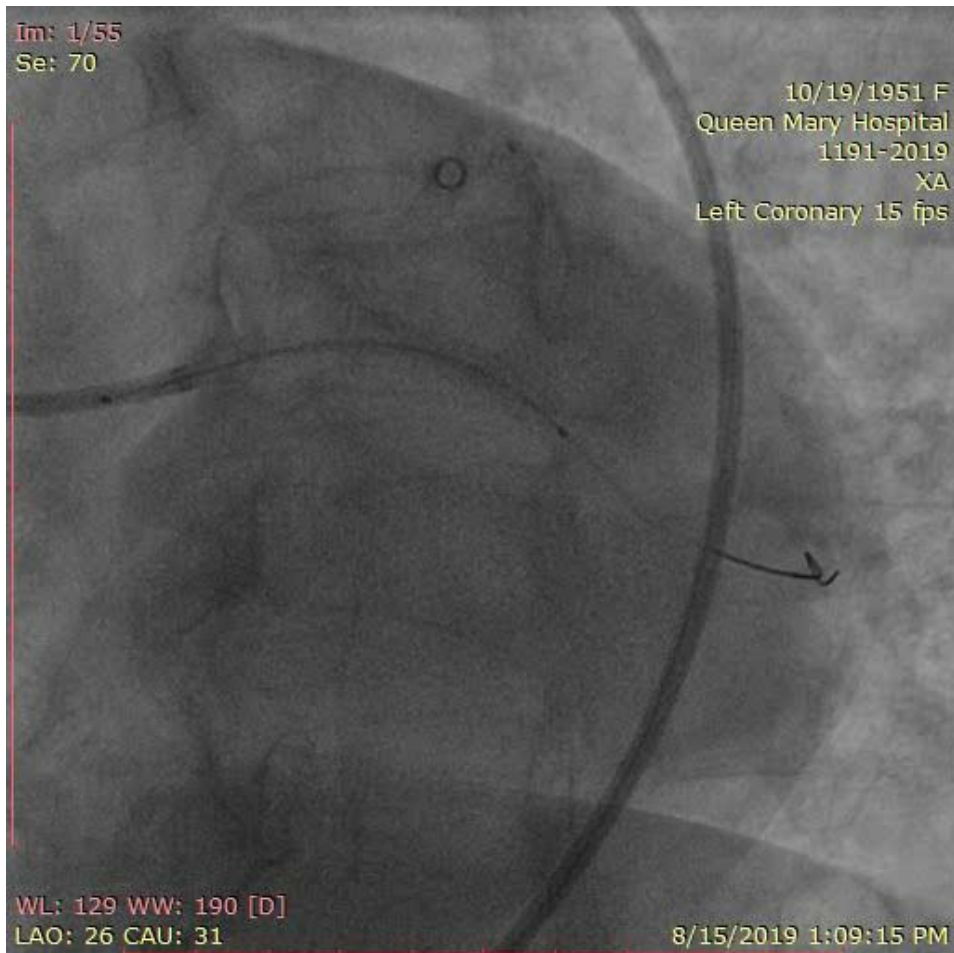
Case Report: Clinical Case

Chi Shing Michael Chiang, Ka Chun Alan Chan, Michael Lee, and Kam Tim Chan

J Am Coll Cardiol Case Rep. 2020 Dec, 2 (15) 2437–2444

Topic(s): Coronary, Peripheral & Structural Interventions





- Rotational atherectomy is reasonable as the initial option in uncrossable lesion. Wire bias and tortuosity may lead to eccentric ablation and related complications
- Coronary intravascular lithotripsy is a promising new option.
- Combination of rotational atherectomy and intravascular lithotripsy may improve lesion preparation
- intravascular lithotripsy still feasible and safe in the presence of large hematoma