Lithotripsy in calcified coronary stenosis: retrospective multicenter registry Rolling-Stone

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Introduction and objectives: intravascular shockwave lithotripsy (IVL) is a ballon based technique for breaking deep coronary calcium using acoustic pressure waves.

Safety of IVL in a real world setting remains unclear and the effects of combination with other "plaque modification" devices are unknown, especially in high risk settings (acute coronary syndrome).

Methods: A multicenter cohort analysis was performed enrolling patients undergoing IVL to treat calcified coronary lesions. The primary effectiveness endpoint was stent delivery with residual stenosis < 20%; secondary endpoint were serious angiographic complications, major adverse cardiac events (cardiac death, myocardial infarction or target vessel revascularization, MACE) in hospital, a 30 days and at 6 months.

The entire cohort was analyzed according to the timing of IVL use: before stent implantation (Group 1); bail-out strategy for stent under-expansion (Group 2), in-stent restenosis (Group 3).

Results: This retrospective multicenter registry, included 431 patients treated with IVL between January 2019 and November 2021 in 20 high volume PCI-centers in Italy and Spain. The population's average age was 73 +/- 9 years old, and 77% were males, with hypertension (80.5%), diabetes mellitus (43,1%), dyslipidemia (69,6%), prior myocardial infarction (34,1%).

Among them 229 patients (53,1%) presented with an acute coronary syndrome, a bifurcation lesion with side branch involvement was treated in 159 patients (36.9%) and moderate/severe tortuosity was found in 93 patients (21 %).

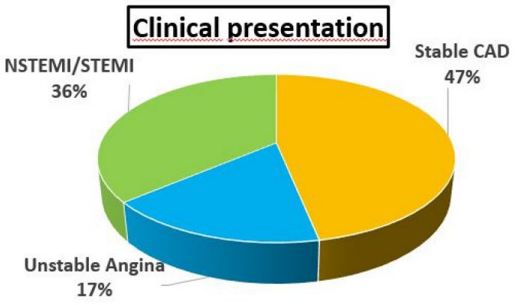
In addition, an hybrid approach with IVL and rotational atherectomy (Rotatripsy) was performed in 35 patients (8,1%).

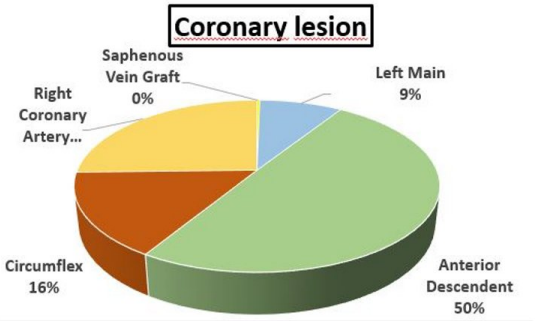
IVL was planned before stent implantation (Group 1) for 331 lesions (76,8%), in 59 lesions (13,7%) as a bailout strategy for stent under-expansion (Group 2) and in 41 lesions (9,5%) for in-stent restenosis (Group 3).

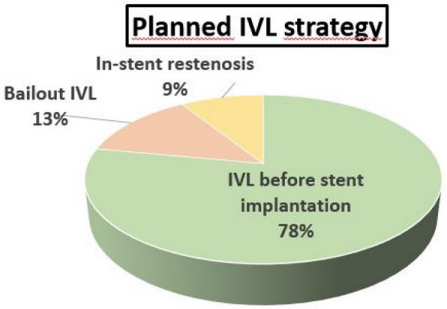
Residual stenosis < 20% and procedural success was reached, respectively, in 399 patients (93.5%) and in 399 patients (92.3%).

In-hospital MACE occurred in 1.2% , 30-day MACE in 1.6% of cases and after 6 months in 6.1%.

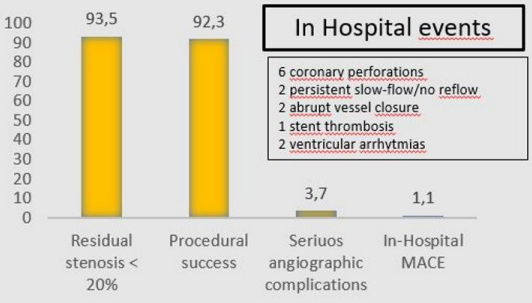
Conclusion: Intravascular lithotripsy appears to be a valid technique in the Interventional Cardiologist armamentarium for the treatment of an all-comers cohort of complex patients with highly calcified coronary lesions in a real-world setting.







Procedural characteristics	
Radial access n (%)	312 (73.6)
6F Guiding catheter	325 (74)
Concomitant Rotational Atherectomy	40 (9)
Intravascular imaging	102 (23.4)



In-hospital events	
Cardiovascular death	4 (0.9)
Periprocedural MI	23 (5.3)
Ischemia drive TLR	0
Pericardial effusion	6 (1.4)
Stent thrombosis	1 (0.2)