

The effectiveness of intravascular lithotripsy after suboptimal non-compliant balloon inflation for treating calcified coronary lesions

Evan Watson*, John Davies and Alechia Van Wyk

Basildon University Hospital, UK

Background: Coronary Arterial Calcification (CAC) is a significant manifestation associated with atherosclerosis that results in poor clinical and patient outcomes. Moreover, CAC hinders Percutaneous Coronary Intervention (PCI) for vessel revascularisation, with stent under-expansion and malposition not uncommon. Many lesion preparation techniques have been developed, including Non-Compliant (NC) balloon angioplasty, accompanying debated effectiveness and an increased risk of procedural complications. Therefore, the need for a low-risk yet effective CAC modification technique has resulted in the development of Intravascular Lithotripsy (IVL), delivering pressure waves to fracture calcification, creating greater vessel compliance for stent deployment.

Objectives: This study aimed to evaluate the implementation of IVL after suboptimal NC-balloon inflation for modifying calcified lesions as part of PCI, with vessel measurements as part of a detailed clinical assessment.

Methods: This was a retrospective audit acquiring the data of patients (n=30) who underwent IVL therapy after suboptimal NC-balloon inflation as part of PCI. IVL performance was assessed by procedural success (vessel stenosis <50%, <30%, 20%), quantified using angiography, Intravascular Ultrasound (IVUS) and Optical Coherence Tomography (OCT).

Results: Procedural success was observed in 93% of cases, with 80% ending with <30% stenosis and 47% with <20%. A significant difference was found between lumen diameter measurements after each stage of PCI ($H(3)=86.64$, $p<0.001$), with the largest difference observed between pre-procedure and post-stent-deployment. IVUS measurements revealed a significant difference between lumen diameter pre-procedure and post-stent deployment ($t=-12.84$, $p<0.001$). OCT measurements revealed a significant difference between lumen diameter and area measurements pre-and post-procedure [$F(2,3)=10.70$, $p=0.043$; $F(2,3)=17.06$, $p=0.023$].

Conclusion: IVL therapy is an effective lesion preparation technique superior to conventional balloon angioplasty facilitating successful stent deployment. Future research should assess IVL from larger samples employing more routine implementation of intravascular imaging mediating detailed procedural assessment.

Biography

Evan Watson is affiliated to Basildon University Hospital, UK. His research interests are in the field of cardiology implementation of IVL.

Received : September 05, 2022; **Accepted:** September 07, 2022; **Published:** October 31, 2022