

### **A 'Real-Time' Evaluation of a Novel Coronary Stent Expansion System Using an Advanced Visibility Enhancement Tool: Initial Clinical Experience**

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**Background:** Appropriate stent expansion is an important predictor of the long-term procedural success. The low opacity of current stents is a major obstacle in imaging their silhouette. Post-deployment image enhancement may assist clinicians in identifying suboptimal expansion and confirming proper stent deployment.

**Aim:** To evaluate the performance of a stent-enhancement tool in the catheterization lab and its clinical implications.

**Methods:** The study group consisted of 46 patients (age  $66 \pm 7$  years; 82.6% men) undergoing coronary intervention with a stent in our catheterization lab. The novel StentOptimizer system (Paieon Medical, Israel) was used for stent enhancement. After the stent was implanted, its diameter was measured along its length using dedicated a software. Post-deployment balloon inflation was performed at operator discretion and assisted by the enhanced stent images.

**Results:** A total of 48 stents were evaluated in real-time. The success rate of enhancement was 83.3%. The most common predictor of stent-enhancement failure was the presence of chest metal struts after sternotomy (75% of failures). Suboptimal stent expansion (below 90% of the designated diameter size in any part of the stent) was detected in 75% of stent enhancements, and further balloon inflation was performed in 93% of these cases (Figure 1). More than 2 balloon inflations were performed in 36.7% of cases. Stent under-expansion was more common on the middle part (46.7%) or proximal part (40%) of the stent than on the distal part (13.3%) ( $p < 0.01$ ).

**Conclusion:** Stent under-expansion is relatively common after implantation. The StentOptimizer system is a promising angiographic tool, enabling the optimization of stent expansion in 'real time' and may improve clinical results.

Figure 1. Serial stent enhancement images. A. Stent under-expansion within its middle and distal parts. B. After balloon angioplasty there is an improvement in stent minimal diameter.

