

Findings From Assessment Of A Novel Spring Tip: *NIRxcell™* CoCr Coronary Stent System

Dr. Max Amor, MD; Clinique Louis Pasteur, Nancy, France

Background:

Historically, stent delivery systems have been designed with polymer distal tips. Polymer tips are prone to flare-out or buckling during percutaneous coronary interventions (PCI), particularly in challenging anatomies and when crossing calcified lesions and stented segments. Flare-out or buckling may affect the overall deliverability of the stent system and may lead to conflicting requirements as the more flexible you make the tip (e.g. by making it thinner) the less resistant it is to buckling.

Recently, a stent manufacturer (Medinol®) launched a bare metal stent system (*NIRxcell™*) that incorporates a new catheter technology featuring a novel spring tip (Figure 1). The new technology breaks the need for compromise and provides a catheter with high flexibility together with high pushability and resistance to buckling. In addition, the metallic spring tip is radiopaque and helps the operator to visualize the tip position during delivery.



Figure 1: The Metallic Spring Tip of the *NIRxcell* Stent System

It was my intent to understand how this new catheter and spring tip perform in a calcified vessel. This paper reports my findings after the first case using this new technology.

Case Report:

A male patient with a mid-LAD lesion presented at the Clinique Louis Pasteur, Nancy, France. Subsequent coronary angiography showed highly visible calcification of the proximal and mid LAD segments. A guide wire was placed in the LAD (Figure 2). The mid LAD calcified lesion was pre-dilated at high pressure with a 2.5/15mm non-compliant balloon which resulted in a dissection (Figure 3).



Figure 2: Placing a guide wire in the LAD

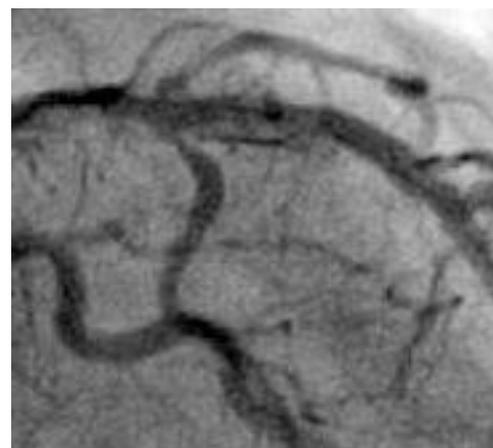


Figure 3: Dissection in the mid LAD

Subsequently, a 3.0/20mm bare metal stent system (*NIRxcell™*) easily crossed the calcified segment. Interestingly, the spring tip was radiopaque and visible on fluoroscopy, a visibility

that is not available in all other stent delivery systems.

The stent was deployed at a nominal pressure of 12 ATM. To treat the dissection, a second bare metal stent (NIRxcell™) 3.0/17mm was placed proximal (but not overlapping) to the previously implanted stent. A third bare metal stent (NIRxcell™) 3.0/17mm was delivered through the proximal stent and implanted between these two stents overlapping them. The resulting angiography showed a smooth scaffolding of the artery without evidence of lesion prolapse (Figure 4), with a slight narrowing of the septal branch ostium. The ostium of the septal branch was subsequently dilated with a semi-compliant balloon with a good final result.

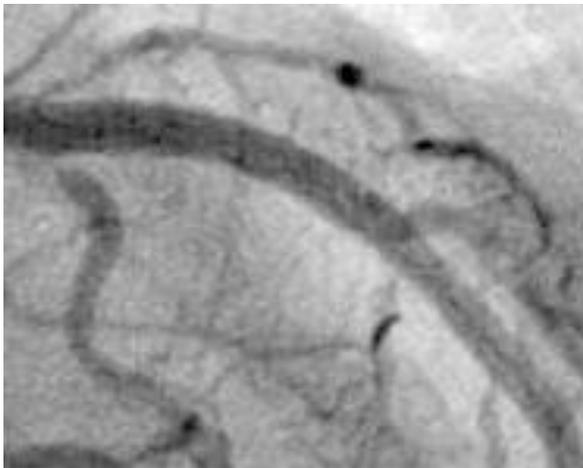


Figure 4: Post procedure angiography showing smooth scaffolding following pre dilatation

Discussion and Conclusion:

The delivery of the bare metal stent system (NIRxcell™) incorporating the novel spring tip was successful. The delivery system was able to traverse a calcified lesion and a previously stented arterial segment. The metallic spring tip was visible throughout the case. It was the first time I was able to visualize the distal end of the catheter during PCI which may be beneficial in certain challenging cases. The angiographic result was satisfactory, without apparent lesion prolapse and the stent conformed smoothly to the vessel's natural curvature

In this author's opinion, perhaps the most unique aspect of this delivery system is the flexible stainless steel spring tip that replaces the polymer tip common to all other stent delivery systems and PTCA balloons available today.

The spring tip may enhance the delivery system's overall flexibility and pushability without the risk of tip buckling, hence, allowing the repeat use of a system after a failed cross. Additionally, the tip gave the appearance of more closely tracking the guide wire, thus potentially lessening the "fish-mouthing" effect sometimes seen with polymer tips at high curvatures. From a scientific perspective we must be careful not to conclude too much after only one PCI. However this initial experience suggests that this spring tip may enhance the ability of coronary delivery and balloon systems to traverse difficult and/or tortuous anatomy.

Disclosure of Commercial Conflict of Interest: Nothing to disclose