Making the invisible visible

Philips StentBoost

Who/where
Catharina Hospital, Eindhoven, The Netherlands; General Training Hospital, 696 beds, 350,000 patients per year
Head of cardiology department: Dr. Jacques Koolen

Middelheim Hospital, Antwerp, Belgium; General Hospital, 600 beds, Interventional cardiologists: Dr. Pierfrancesco Agostoni, Dr. Glenn van Langenhove and Dr. Stefan Verheye

Challenge
Find a fast and accurate way to evaluate the deployment of stents during interventional cardiology procedures.

Solution
StentBoost, a non-invasive interventional tool that enables cardiologists to see the stent in relation to the vessel during procedures to immediately check the deployment and expansion of stents in the coronary arteries.

Philips recently introduced the newest version of its unique StentBoost software on its Allura Xper systems. We spoke with four cardiologists at two leading cardiology centers, the Middelheim Hospital in Antwerp, and Catharina Hospital in Eindhoven. They confirmed that StentBoost has become an invaluable tool in their routine practice that greatly increases their chances of deploying stents correctly, the first time.

How StentBoost works

The first version of the StentBoost interventional tool was introduced to the hospitals a few years ago to provide a quick assessment of stent deployment. It displays an enhanced stent image in the examination room during a procedure. The latest StentBoost version was recently introduced to enable cardiologists to see the stent in relation to the vessel. Clinicians can use these images to immediately check the deployment and expansion of stents in the coronary arteries – while the patient is still in the exam room and the catheter is in place.

Improved visibility

With StentBoost stent fractures can be seen. Dr. Van Langenhove, interventional cardiologist at Middelheim Hospital says, "We have had several cases of stent fractures that were only seen with StentBoost. To be honest, even with the IVUS system and with the current angioscopic system that we have it was impossible to see whether or not the stent was intact, but with StentBoost we easily saw that there were stent fractures inside."

> "We have had several cases of stent fractures that were only seen with StentBoost."

Dr. Van Langenhove continues, "One very interesting case was this fairly older woman of 76 years who we had diagnosed as having very heavily calcified vessels. We thought, 'let's have a look at it with StentBoost'. And what we saw was that in a very detailed fashion we could actually see a heavily calcified proximality plaque. And when we tried to open it with a balloon we didn't succeed. So actually we had confirmation of the very heavily calcified vessel because the balloon didn't open."

PHILIPS

Dr. Glenn van Langenhove

Dr. Jacques Koolen

Left coronary artery bifurcation stent contrast

Left coronary artery bifurcation stent without contrast, stent clearly visible

In some cases, clinicians may not know that previous stents have been placed which can pose a potential risk to the patient. StentBoost can help them see this during the procedure. Dr. Verheye, interventional cardiologist at Middelheim Hospital says, "It happens if the stent has a very low radio opacity that you don't even know that a stent has been positioned, so doing the StentBoost also helps in determining whether a stent is there or if it is calcium. That helps us a lot."

Improves accuracy

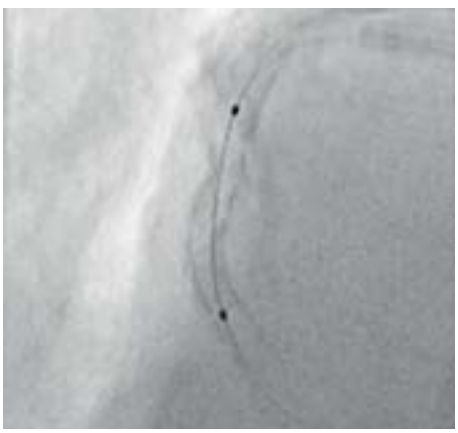
The StentBoost images are helping clinicians place stents more accurately the first time, and that can reduce the chance of complications. Dr. Agostoni, interventional cardiologist at Middelheim Hospital uses StentBoost for positioning and post deployment control of the position of the stent, specifically in ostial situations. He says, "Sometimes we have a lesion that is really in the ostium of the branches and we don't want to have our stent too far inside the main vessel. StentBoost can help us either in the positioning or in the post deployment control, to check that the position of the stent is okay. In some cases it may be too proximal and then we can also do something more to improve the final result."

> "You can clearly see whether or not the stent is well opposed to the vessel wall."

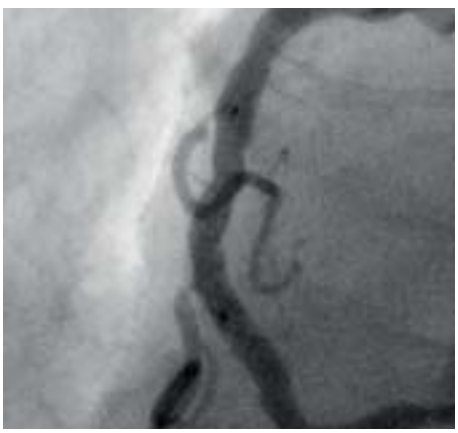
The StentBoost feature is very useful according to dr. Van Langenhove. "With the new StentBoost version, you see the relationship between the stent and the vessel. So you have the stent without contrast and immediately after that you can have the stent with contrast. That means that you can clearly see whether or not the stent is well opposed to the vessel wall which is one of the most important features of StentBoost."

Saves time

A key advantage of StentBoost is the speed with which its images are available during a procedure. Dr. Koolen, head of cardiology at Catharina Hospital says, "StentBoost is a great help in daily practice because it is easy



Right coronary artery with deployed stent with plaque



Same image with contrast

Dr. Stefan Verheye

Dr. Pierfrancesco Agostoni

to use. It's non invasive, it takes only one step on the pedal and you have an instant picture of your stent."

Dr. Agostoni adds, "Using StentBoost allows us to better position our stents and to deploy them much better. Also to control the post deployment status much better than with the normal angiographic analysis. This of course allows us to save time because in other situations we would take additional pictures, additional fluoroscopy. In this case one round is enough to be sure that what we are doing is correct."

Fits smoothly in your workflow

In Middelheim, StentBoost is now used routinely. Dr. Van Langenhove says, "StentBoost works perfectly in coronary arteries, which is kind of surprising because these are vessels that are moving very heavily. But still the image provides you with an excellent view of the stent.

Dr. Van Langenhove adds, "Most of my colleagues often think that we are able to perform a procedure just with the tools we have at hand today, but StentBoost has often proven them wrong….In most of the cases that we do today I would say that in 70 to 80 percent there is a clear indication to use the StentBoost system."
Dr. Koolen feels there is a specific indication when you use two stents or when you're in doubt as to whether you have a full stent deployment. In these cases he says, "I think StentBoost can assist you greatly in placing and deploying the stent at the correct pressure."

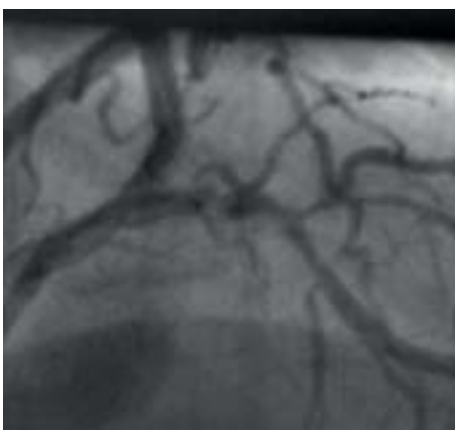
Saves money

Compared to IVUS procedures which require expensive consumables, StentBoost offers very good value for money. "IVUS procedures are pretty expensive because of the special catheters that are used. That is not a factor with StentBoost," says dr. Van Langenhove.

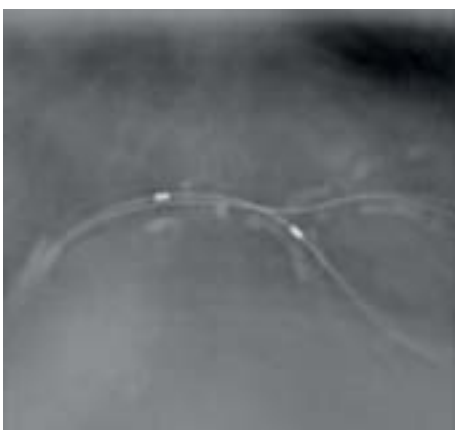
StentBoost can also help clinicians identify and correct potential problems in stent placement beforehand which can eliminate the need for additional procedures and prolonged hospital stays. Koolen relates one example from a colleague who did not use StentBoost in an initial stent procedure. "The patient came back with a stent thrombosis. We performed balloon angioplasty and then performed StentBoosting again and what we saw was that the stent was not fully deployed. So we implanted another stent and oversized a little bit and then we had a beautiful result and the patient didn't come back."

> "StentBoost is a great asset to have to better understand the deployment technique that you are using."

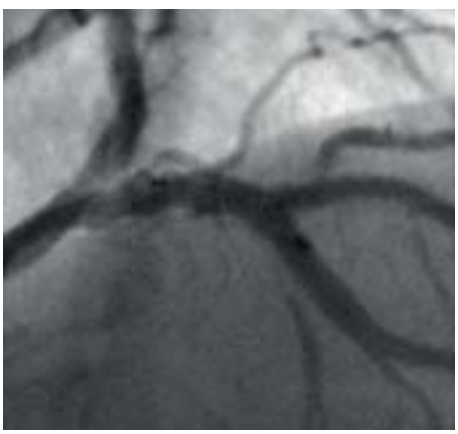
Good patient management is important Dr. Verheye sums it up, "I think for complex procedures where you do complex stenting bifurcations, overlap, putting in additional stents and multiple stenting, StentBoost is a great asset to have to better understand the deployment technique that you are using.



Left coronary artery stenosis with contrast before deployment



Left coronary artery stenosis in subtract. A lot of plaque visible



Same artery with deployed stent and contrast. Improved flow

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