GE Healthcare

StentViz

Enhanced Stent Visualization

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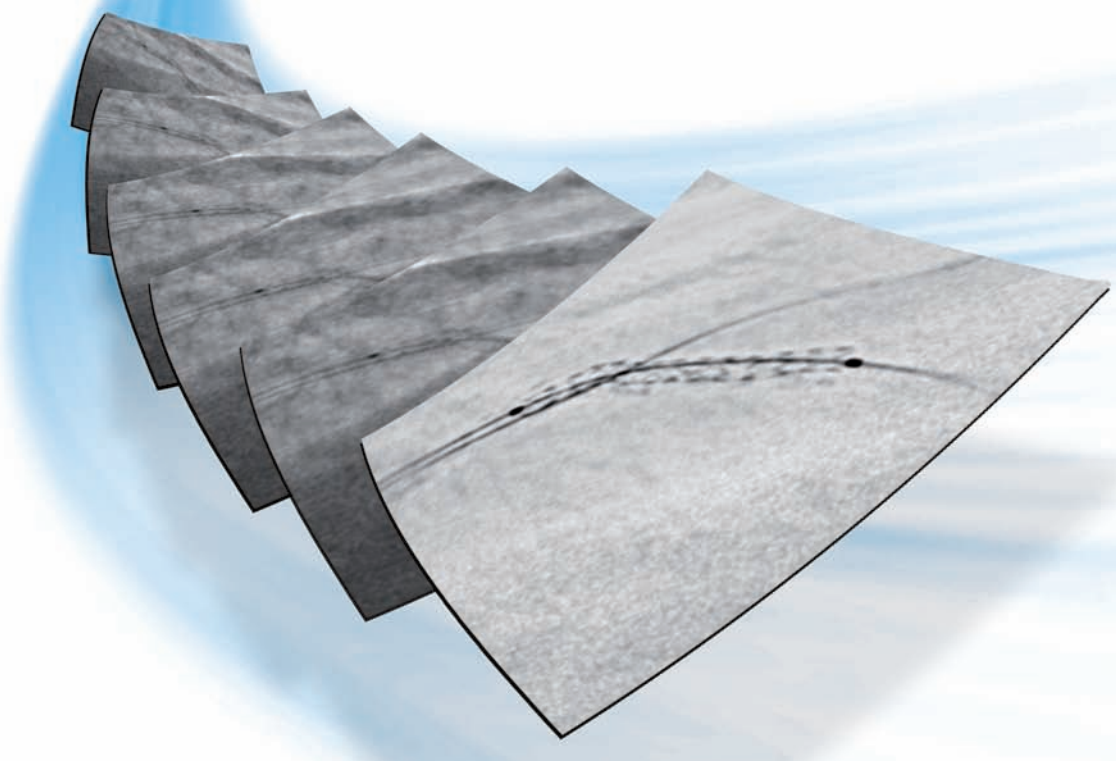


Assessing the deployment of stents during angioplasty procedures is critical for minimizing the risk of future adverse events.

But accurately assessing stent deployment, or gauging stent placement in relation to existing stents, can be highly challenging with conventional fluoroscopic imaging.

Latest stent designs, low metal content, bio-degradable materials, steep angulations and fast stent motion can all obscure stent visibility.

Innova® with StentViz provides exceptional stent visualization, with easy, one-button activation.

StentViz potentially helps you to:

- Enhance stent visibility and visualization to assess stent deployment.
- Position stents more precisely with respect to existing stents.
- Accurately evaluate stent overlap in cases of in-stent restenosis, long lesions or bifurcation stenting.
- Increase clinical confidence with immediate and routine control of stent deployment.
- Save time and money by choosing the right stenting strategy to avoid additional procedures and patient re-treatment.

StentViz

Fully automated processing

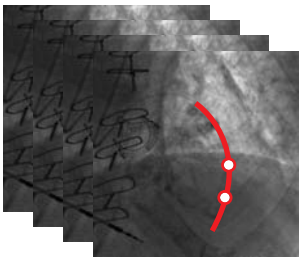
A visualization tool for easily assessing stent positioning and deployment, StentViz is a perfect fit within your cathlab workflow. It automatically improves the image quality of stents from cine X-ray acquisitions.

Unlike other technologies, StentViz detects automatically both the guidewire and the marker balls to perform an elastic registration that allows to compensate for non rigid stent deformation.

In addition, StentViz detects and removes radio-opaque objects for optimal stent visibility and robust performance.

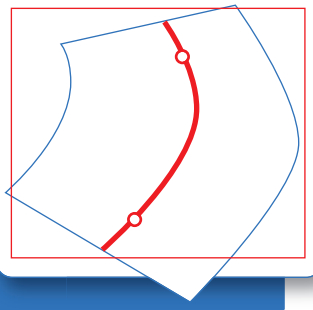
Markers & guide wire detection

Automatic detection on each image



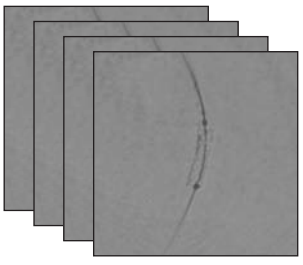
Elastic registration

Compensate for non rigid motion



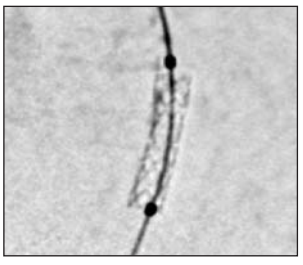
Temporal integration

Cumulate information into a single image



Zoom & contrast optimization

Subtract background and enhance stent



technology

Elastic registration technique

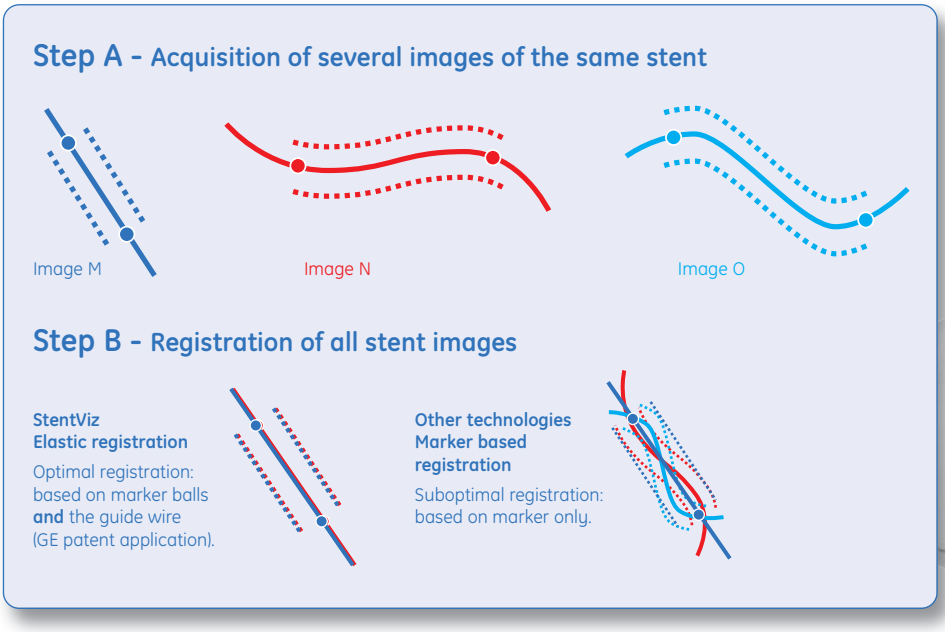
Stent enhancement techniques are based on motion compensated temporal integration of the stent images. The motion of the stent is classically inferred from the motion of the highly contrasted balloon marker balls.

StentViz detects and tracks the guide-wire between the markers and uses it to predict the deformation of the stent. The elastic curve-based registration technique accounts better for the guide-wire and stent deformation, thus avoiding potential blurring linked to rigid registration.

One touch activation

Fast and easy to use, StentViz is fully automated to fit into your interventional workflow. From a cine X-ray acquisition an enhanced StentViz image is instantly generated at the press of a button.

- A cardiac record run with approximately 30 frames is acquired with the balloon and marker balls in place.
- Press the StentViz key in the exam room or in control room.
- The enhanced StentViz image appears within thirty seconds.
- If the enhanced stent image is non-optimal, you can choose a frame and zoom to re-launch the processing.
- StentViz image is stored as a DICOM image for review and archiving.

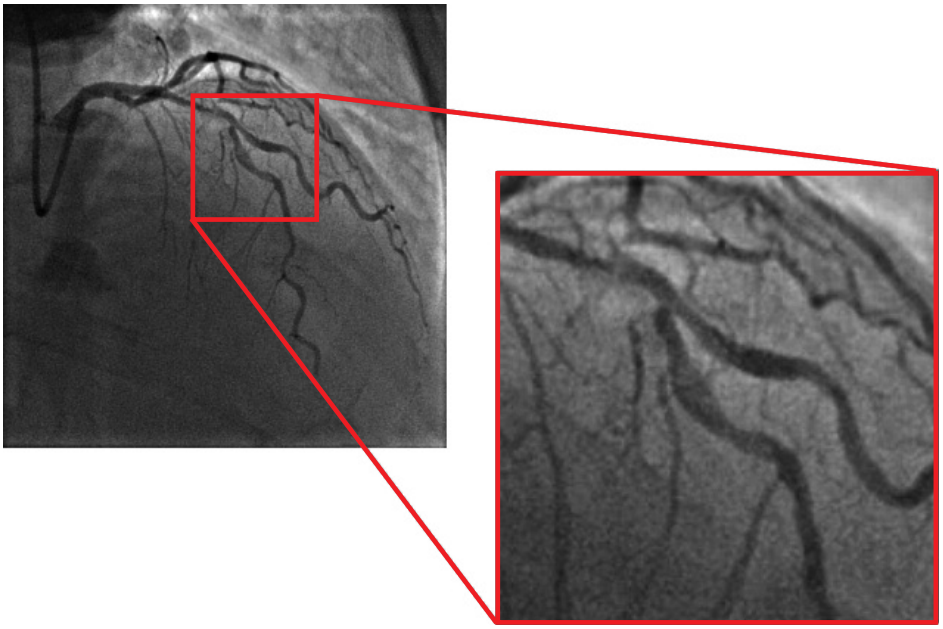


Case Study #1

Institut Cardiovasculaire Paris Sud, Massy, France

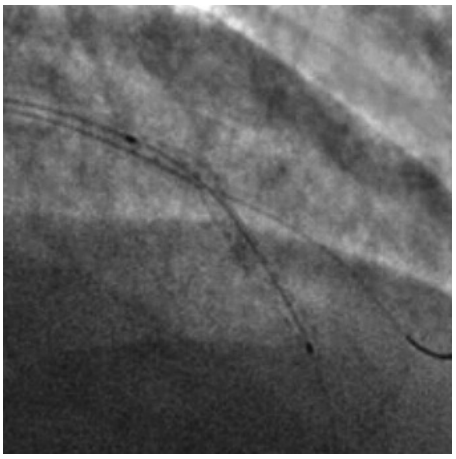
This is the case of a male patient - 83kg/170cm - presenting a stable angina.

Coronary angiography on Innova 2100[IQ] is showing 2 lesions: a 20-25mm stenosis on the 2nd segment of the LAD and a stenosis at the bifurcation with the 2nd diagonal.

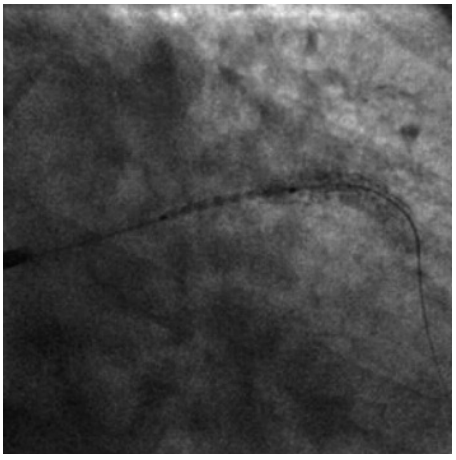


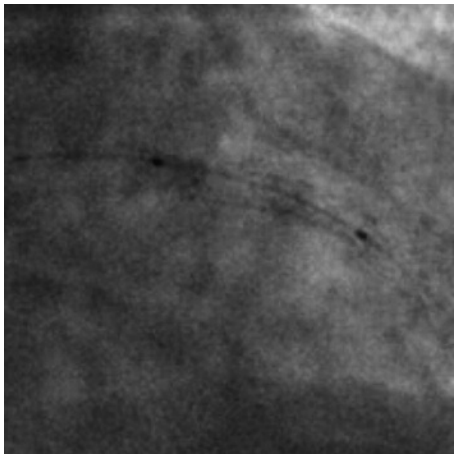
A 2.5mm/33.0mm DES Cypher® stent (Cordis Corporation, Miami lakes, FL, US) is placed at the bifurcation level by inflating at 12 atm during 30s.

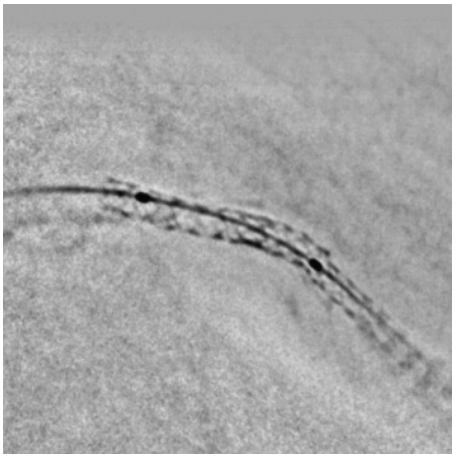
StentViz processing is launched on a short sequence acquired at 15 fps low dose setting. The enhanced StentViz image provides a high visibility of the stent deployment before the first kissing.



A 3.0mm/18.0mm DES Cypher stent (Cordis) is placed proximal to the first stent. In order to assess its position before its deployment, StentViz is performed. This allows to manage optimally the stent overlap.

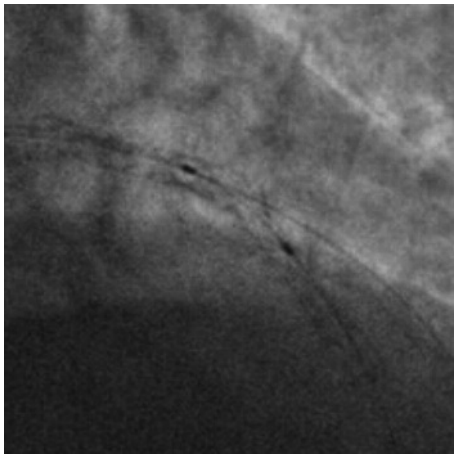


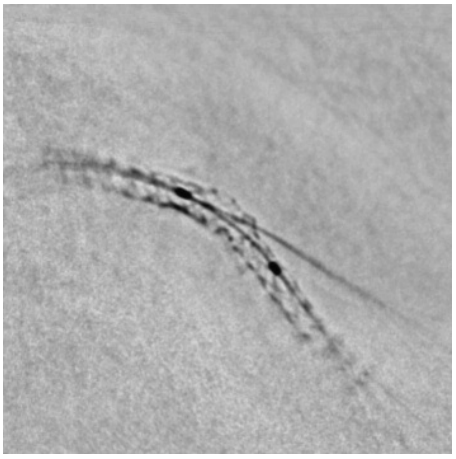




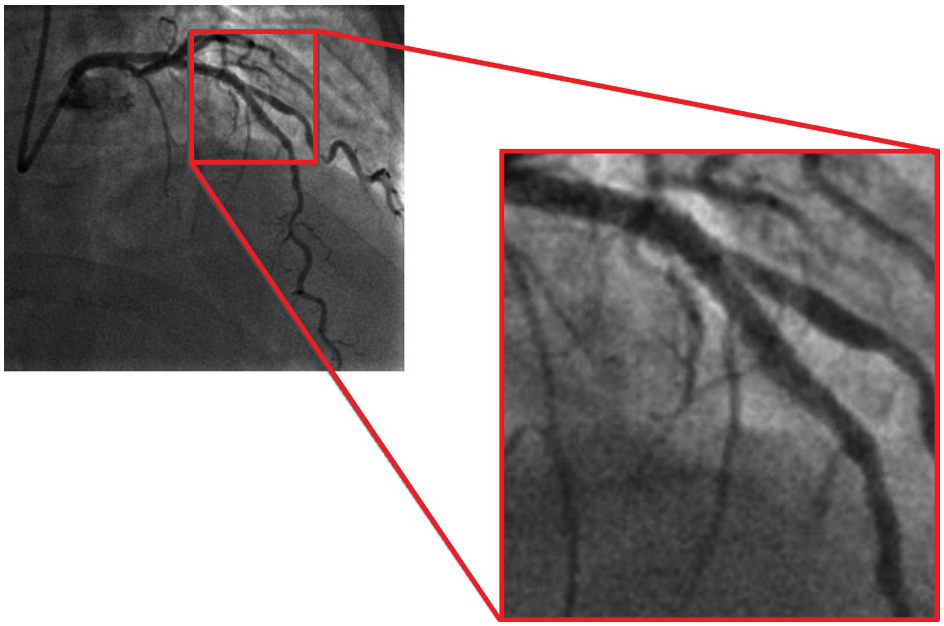
The positioning of the stent being considered optimal, it is deployed during 30s at 16 atm and a new StentViz processing is launched.
It allows to depict the overlap between the 2 stents and the regularity of the deployment.

No further inflation is needed.





A final kissing is applied at the bifurcation level and a last StentViz allows to assess an optimal strut opening at the level of the side branch.



Successful angioplasty of proximal LAD and 2nd diagonal bifurcation using 2 Cypher stents is demonstrated.

During this case, StentViz was useful for the assessment of

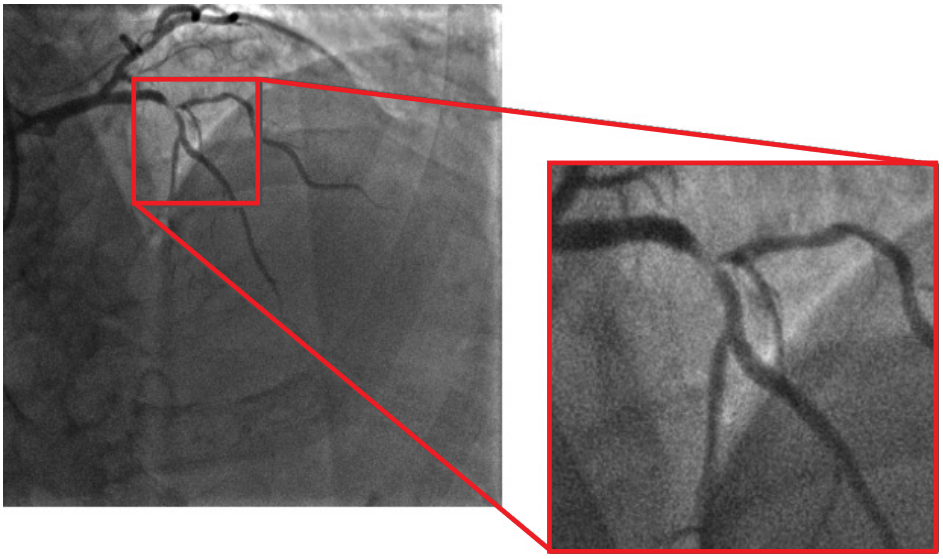
- the stent deformation vs the first bifurcation before the first kissing.
- the optimal placement of the 2nd stent vs the 1st stent, before its deployment
- the deployment of the 2nd stent and its overlap with the 1st stent.
- the 1st stent deployment after the final kissing.

Case Study #2

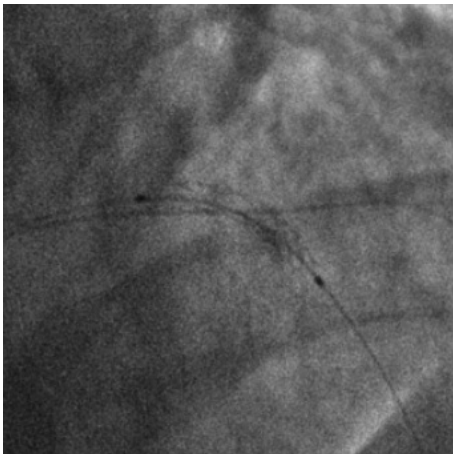
Institut Cardiovasculaire Paris Sud, Massy, France

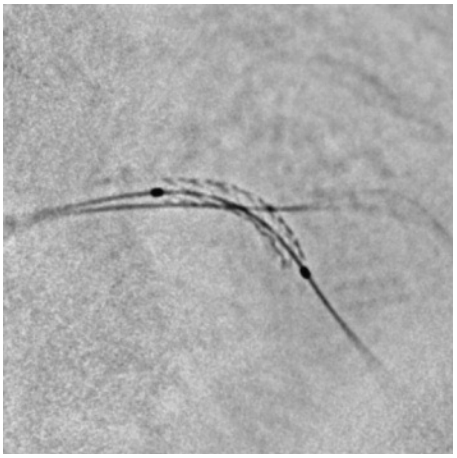
This is the case of 67-year-old male patient - 78kg/172cm - presenting a stable angina.

Coronary angiography on Innova 2100[IQ] presents a 16 to 20mm lesion at the bifurcation of the LAD and the 1st diagonal.



A 2.5mm/18.0mm Nobori™ Stent (Terumo, Tokyo, Japan) is deployed during 40s at 14 atm at the level of the bifurcation. StentViz is launched and allows to depict the stent deployment. It shows clearly that the stent requires a further dilatation, which is performed using a 3.0mm/10.0mm Hiryu™ balloon during 30s at 12 atm.





Conclusion

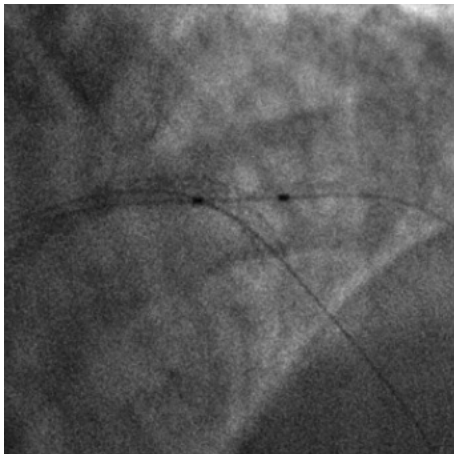
StentViz is a fully automated processing that improves clearly the image quality of stents from cine X-ray acquisition and is applicable almost without any additional steps or costs.

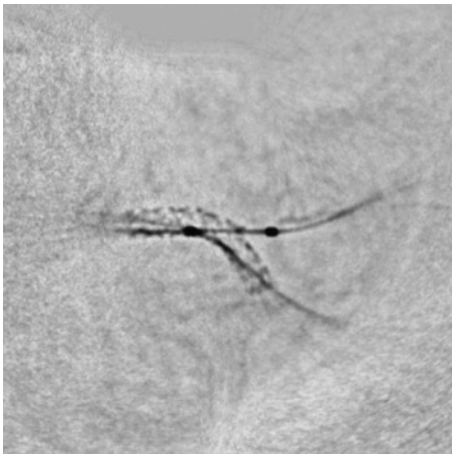
StentViz can help you clearly visualize stent borders and details from images in which the stent is barely visible to give you critical clinical information.

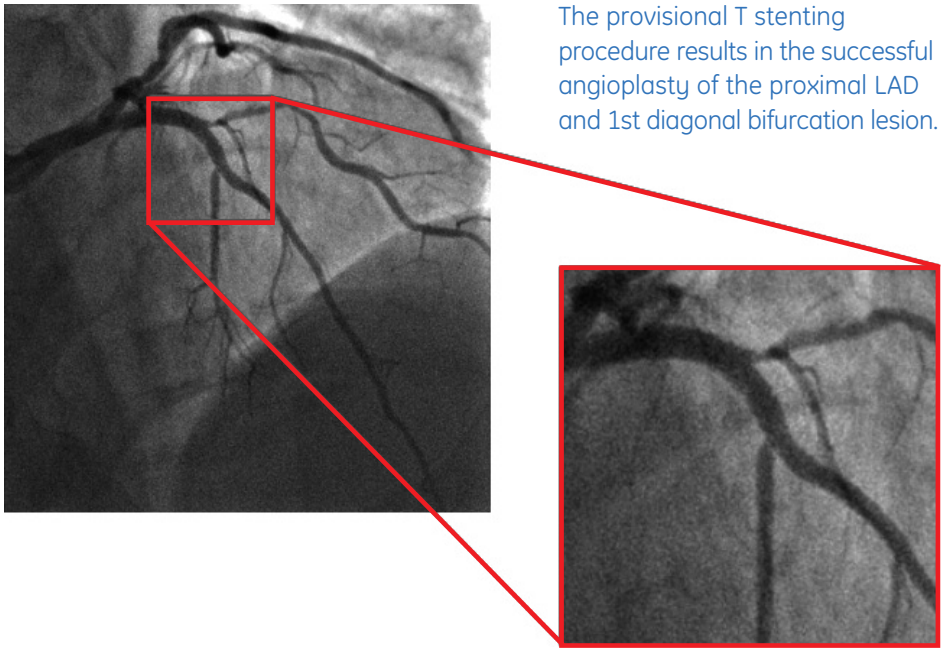
Combined with GE's excellent image quality, OneTouchQA Tableside Stenosis Analysis and integrated Innova IVUS, StentViz gives physicians a valuable visualization toolkit to help improve the long-term success of the interventional procedure.

The specificities of StentViz versus other advanced techniques are the elastic registration and the full automation, that provide exceptional image quality and make it fit perfectly within the cathlab workflow.

The Kissing technique is used with 2 Hiryu™ Ballons (Terumo, Tokyo, Japan) and a last StentViz is performed to assess the stent struts at the level of the bifurcation.







The provisional T stenting procedure results in the successful angioplasty of the proximal LAD and 1st diagonal bifurcation lesion.

Data subject to change.
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About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our "healthymagination" vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality and efficiency around the world.

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