Bioabsorbable stents show promise

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A study published today online in The *Lancet* (March 13, 2009) presented two year data for the bioabsorbable everolimus coronary stent. Commenting on the results, interventional cardiology specialist, Professor Franz Eberli from the University Hospital Zurich (Switzerland) and official spokesperson for the European Society of Cardiology, said:

"In addition to the ABSORB study presenting the longest ever follow up data for a bioabsorbable stent, the investigators used multiple imaging systems, including Optical Coherence Tomography. This technical advance has allowed them to get really detailed images of the intra coronary structures for the first time. What really impressed me was the smoothness of the vessel wall at two years, and images showing the stents had disappeared to a great extent, which was a very promising finding.

The study showed an overall 19 % loss in luminal diameter at 18 months and an angiographic in- stent late loss of 0.48mm at two years. These results fall intermediate between those commonly seen for bare metal stents (which typically have an in stent late loss of 1.0 mm), and drug eluting stents (which typically have an in-stent late loss of 0.15 to 0.3 mm). But the upside of this bioabsorbable stent data is that patients don't appear to be getting any in-stent thrombosis here.

Since in-stent late loss increased by only 0.05 mm between 6 months and two years, the most probable explanation for the in-stent late loss is early recoil after stent implantation. This indicates that this bioabsorbable

stent initially is not exerting enough radial force to keep the vessels perfectly open. The challenge facing stent designers is to achieve a balance between sufficient radial strength, and a structure that can be reabsorbed in a reasonable time period. Industry is already acting on this data and looking to produce stronger second generation bioabsorbable stents by developing novel stent designs that retain integrity and radial strength for a longer time period.

The fact that vasomotion (the ability to undergo vasodilation and vasoconstriction) was restored in response to vasoactive agents in the stented vessel segment was a really good sign. It shows that after two years the physiological function of the stented part of the vessel has been almost completely restored, and that patients will not get any symptoms of angina or limitations in physical activity. In contrast, for first generation drug eluting stents, studies have shown "paradoxical vasoconstriction" in the area of the stent, where the vessel constricts instead of opening during exercise.

This is a proof of principle study that teaches us a lot about the way bioabsorbable stents work and affect remodelling of the stented vessel segment. But with only 30 patients included in the study, numbers are too small to show us if the technology is safe. Furthermore the study was only performed in patients with single de novo coronary lesions, who are considered by far the most straight forward cases. The study doesn't show us if the new stent will work in real world situations of patients with long lesions, calcification or bifurcations."

More information: A bioabsorbable everolimus-eluting coronary stent system(ABSORB): 2-year outcomes and results from multiple imaging methods. P W Serruys, J A Ormiston, V Onuma, et al. Lancet 2009;373: 897-910.

Source: European Society of Cardiology (news : web)