

Link between positive remodeling and unstable lesions confirmed

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MedWire News: Researchers have published the first in vivo evidence that patients with positive coronary artery remodeling commonly have unstable plaques.

The association is well established, but has so far only been demonstrated in post-mortem studies.

Ik-Kyung Jang (Harvard Medical School, Boston, Massachusetts, USA) and colleagues combined intravascular ultrasound (IVUS) and optical coherence tomography (OCT) to examine 54 coronary lesions in 48 patients.

They used IVUS to assess the presence and type of arterial remodeling, according to the remodeling index (RI), ie, the ratio of lesion to external elastic membrane area. The 20 lesions with positive remodeling (RI >1.05) were associated with similar patients characteristics to the 15 without remodeling (RI 1.05-0.95) and the 19 with negative remodeling (RI <0.95).

Lesions associated with positive remodeling were most likely to have unstable features, as assessed using OCT, the team reports in the *European Heart Journal*.

All plaques associated with positive remodeling had lipid-rich cores, compared with 60% of those with absent and 47% of those with negative remodeling (p=0.01).

Fibrous caps were significantly thinner when associated with positive remodeling, rather than absent or negative remodeling, at 40.2 versus 15.6 and 87.0 μm , respectively.

Most - 80% - of the lesions associated with positive remodeling were both lipid-rich and had thin caps (<65 μm), compared with 38.5% and 5.6% of those associated with absent or negative remodeling, respectively (p<0.001).

Also, macrophages were more abundant in lesions associated with positive remodeling than in those with absent or negative remodeling, at respective densities of 6.9% versus 5.7%, and 3.9%.

In an accompanying editorial Gerard Pasterkamp and Imo Hoefer (University Medical Centre Utrecht, The Netherlands) commented: "The study by Raffel *et al* supports the concept that OCT may be ready for more widespread application in clinical studies."

They said: "Even though basic technological challenges must be addressed prior to widespread use of this technology, the unique capabilities of OCT will facilitate the search for surrogate markers of atherosclerotic disease progression.

"Imaging technologies such as OCT may provide new insights into the natural history of atherosclerotic disease and provide markers of plaque destabilization."

[*Eur Heart J* 2008; 29: 1721-1728](#)