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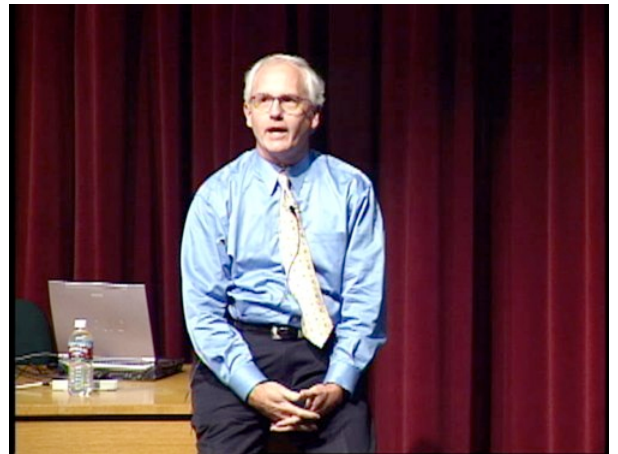
Restentosis and Stents: Just in Time Design

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January 22, 2003

Video URL: <http://ecorner.stanford.edu/videos/447/Restentosis-and-Stents-Just-in-Time-Design>

Yock talks about how over the years the technology improved and the problem of re-narrowing of blood vessels could be addressed. He shares the reasons of this re-narrowing - the blood vessels shrink. He further discusses the solution that he and other doctors have employed.



Transcript

It turned out that over the years the technology improved and we started to be able to look at this problem of the narrowing of the blood vessels in humans, in hearts. Now I was very sure that the reason that we were getting the re-narrowing was that we were tearing the arteries and tearing them a little bit inside and that was causing a scarring process and causing a heaping up inside the artery and that was why we were giving re-stenosis. Well I was completely wrong about that. 100% wrong, but what we did learn was that there is a little bit of that heaping up stuff as it's got a fancy name of course, intimal hyperplasia it's called. But to our pretty considerable surprise that the biggest problem is that the whole artery actually shrinks. So in the area where you're dialing... Well so there are a lot of engineers in the crowd so, I'm going to ask you to invent on the spot. Invent for me a technology that takes care of this problem. What would you do if the main cause of recurrence is the fact that these things are just kind of squeezing down over time. Give me a technology that'll work.

Yeah. Hold them open or maybe proper them open right? So it's good to have that idea 12 years ago. You'd be a very wealthy man right now. And it turns out that the answer as we put in, some of you have heard of stents. All arranged in my business, this is just, it has dominated the field. We put in these little short metal tubes, you can kind of see a tube there. This is, you know, potpourri of different stance from different manufacturers. We actually implant these and we leave them in to prop open the artery. And it's gotten particularly popular here at Stanford. So that reduced the levels of re-stenosis by about half.

So we went down from 40% to 20%. Huge progress. But we still had this problem of a little bit of heaping up of the intima inside the vessel, that scarring process that I mentioned. And so this, you know, local network of inventors went to work and two doctors over at the Medical Center, Dr. Vake and Dr. Austerly decided that this stuff inside the stent was behaving kind of like a tumor. It was an uncontrolled growth so let's radiate it. Let's use radiation therapy to make it go away. And as the little slide on the right shows this actually worked and we do this over the Medical Center and it's done all away around the world. The radiation works and then it turns out that if you get the right dose and have the right conditions and so on, it's a very effective treatment.