**Splurge** - Volume 8 Issue 3 (March 2013)

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## **ANGIOPLASTY**

In the late 1970's, Swiss physician Andreas Gruntzig and his team performed the first series of treatments to open a clogged artery. He used a tiny catheter that he snaked through the vessel to the blockage that had formed: a narrowing that threatens heart attack should it clot off. When inside the vessel he carefully inflated a small balloon to open up the artery, allowing blood to flow more freely. In the field of medicine and certainly in my specialty of cardiology, this breakthrough technology heralded a new age of advancement and increased patient longevity.

I had the privilege of working with Gruntzig in those early days, and helped bring the technology back to the U.S. Prior to angioplasty, many patients had few options for treatment of coronary artery disease: open-heart surgery, medication or "wait and see." Suddenly we were looking at a non-surgical treatment with low risk, short recovery time and huge improvement in quality of life that held the key to many further improvements.

Over the years, we created an outpatient cath laboratory, streamlining the process of treatment and further minimizing the time a patient has to spend in the hospital. The procedure was quickly expanded to repair arteries in the legs, kidneys and neck. These were truly outpatient procedures allowing patients to go home very quickly and safely.

Not all bypass surgeries can be avoided - indeed, there are times when bypass surgery is the absolute best treatment option, particularly when several vessels are involved. Furthermore, the safety and outcomes of bypass surgery have improved markedly through the years. As an interventional cardiologist, I'm always excited by the ever -expanding array of tools and options we can utilize for better patient outcomes.

Early on we used angioplasty to treat acute heart attacks, often with tPA or other clot -busting drugs; decreasing the amount of damage to the heart and decreasing death rate due to heart attack. The death rate due to heart attacks once a patient arrives at the hospital has fallen from 18% in the 1980's to 2-3% today using a combination of therapies including balloon angioplasty and stent placement.

A kind of angioplasty called PTA (referring to arteries outside the heart), is used to treat arterial blockages in the legs, kidneys, and now in the neck to treat strokes. PTA has also enabled us to prevent limb loss and leg pain due to blocked leg arteries.

In the mid-1990's, we began to use stent technology as part of a balloon angioplasty procedure. A stent is a tiny mesh implement that is inflated by the balloon to clear the blockage. When the balloon is deflated and removed, the stent stays behind to keep the passageway open for blood to flow more freely.

In recent years, drug-eluting stents have become the devices of choice. These stents slowly release medication to help prevent restenosis (re-clogging of the artery). Research shows that use of drug-eluting stents are statistically more effective in preventing restenosis than bare metal stents.

As an example of how astonishing the technological advancements have come, consider these numbers: the restenosis rate from balloon angioplasty is 35%; the restenosis from a bare metal stent is less than 25%. Today, the restenosis rate using drug-eluting stents is less than 5%.

As clinical developments constantly evolve, the field of cardiology is always a hotbed of innovation. The prognosis for heart disease vastly improves as doctors and researchers develop was to live longer with better outcomes for our patients than we experienced ever before. Indeed, the phrase "the old days" could mean as recently as a few years ago in the field of cardiology! Every day we see patients who benefit from these technological advances, and it is a privilege to work and keep trying to find ways to increase longevity and our patients' quality of life.

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