

Current strategies and interventions for ongoing heart health management³

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- Interventional cardiology is a relatively young speciality. The first cardiac catheterisation (placing a thin tube into the heart via a vein) was performed by Dr Forssmann (Eberswald, Germany) in 1929. He was expelled from his hospital and it was not until later that his achievements were recognised when he received the 1956 Shared Nobel Prize for Medicine (Forssmann, Cournand & Richards)
- The first coronary artery bypass graft operation was performed in 1967. The three pioneers were Kolesov, Favaloro & Sabiston
- The first coronary balloon angioplasty was by Gruentzig in 1974
- The first coronary stents were implanted in 1985 Palmaz – Schatz (stent), Puel & Sigwart (Wallstent)
- In 2003 the first Cypher drug eluting stent was implanted

The coronary arteries wrap around the outside of the heart and supply it with energy so that it can pump. Blockages in these arteries can cause angina or heart attack. Coronary plaque refers to build-up inside the arteries which can eventually restrict blood flow and cause symptoms. Plaque is composed of cholesterol as well as calcium and scar tissue. Coronary plaque can be assessed with:

- Screening tests
 - Stress test, stress nuclear, stress echocardiogram
 - CT calcium score +/- CT angiography (new scanner at the San)
- Definitive tests
 - Coronary angiography
 - Intravascular ultrasound (IVUS - this involves placing a tiny, rotating ultrasound camera inside the coronary arteries at the time of a coronary angiogram)
 - Other (angioscopy, pressure wire)

Stable plaque inside arteries is preferable to unstable plaque. Stable plaque has a thick, smooth cap. Unstable plaque can crack, rupturing the surface and attracting platelets. A blood clot then rapidly forms which can block the artery suddenly and cause heart attack. Risk factors for unstable plaque include:

- Local factors
 - Cap fatigue, atheromatous soft core, cap thickness, cap inflammation
- Systemic factors
 - Smoking, cholesterol, diabetes, homocysteine, impaired fibrinolysis, fibrinogen

Lifestyle aspects as well as medication (especially aspirin, statins and ACE-inhibitors) help stabilise plaque.

Treatment of plaque depends on severity.

- Severe Plaque

- Mechanical
 - Balloon & stent
 - CABG
- Mild plaque
 - Medical therapy

Medication for the treatment of plaque is very effective. It can reduce the 1 year death rate after a heart attack from around 30% on no medication to 4% on treatment.