

Editorial

Frank's Sign as a Marker of Coronary Artery Atherosclerosis

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The Diagonal Ear Lobe Crease (DELCL), or Frank's sign, has long been recognised as a potential marker of coronary artery disease (CAD). Despite its identification over forty years ago [1], few clinicians are aware of the relevance of Frank's sign as a cutaneous indicator of coronary atherosclerosis. In this article, we aim to highlight evidence linking the DELCL with CAD. We argue that this easily identifiable yet easily missed sign provides a valuable contribution to the practitioner in his assessment of patients at risk of ischaemic heart disease.

In the UK, coronary heart disease is responsible for approximately 80,000 deaths per year. In 2010, 46,000 premature deaths were due to coronary heart disease. Nearly 300 million prescriptions are issued each year for cardiovascular disease. Frank's sign is an easily identifiable independent external marker for atherosclerosis, with numerous studies suggesting its wider use in assessment of all patients at risk of coronary heart disease. Around half of those patients with demonstrable coronary artery disease will have a positive Frank's sign, with research demonstrating a statistically significant association. On this evidence we suggest that this uncommonly recognised yet easily identifiable clinical sign be incorporated into the routine assessment of all patients likely to suffer coronary artery atherosclerosis.

Frank's sign refers to an oblique indentation in the skin overlying the ear lobe. The phenomenon was first described in 1973 by Sanders T. Frank, M.D., following his observations that the DELCL was present in a cohort of 20 young patients with angina [1]. Since then, numerous reports have demonstrated its significance as a surrogate marker of CAD.

After its initial description, a US-based observational study showed that the DELCL (unilateral or bilateral) is significantly more common in patients admitted to hospital following myocardial infarction than in age-matched controls without clinical indication of CAD (47% versus 30%) [2]. A later report correlated angiogram-confirmed severe coronary artery stenosis with a higher prevalence of DELCLs; 72% of patients with significant ($\geq 50\%$) coronary artery stenosis had a DELCL compared with 21% of patients with non-significant stenosis ($< 50\%$). Moreover, the number of diseased coronary vessels was directly proportional to the prevalence of DELCL [3].

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Submitted: 20 February 2014

Accepted: 26 February 2014

Published: 28 February 2014

ISSN: 2333-6676

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More robust clinical research has since been undertaken to evaluate the validity of the DELCL in CAD. Studies as recent as 2012 advocate Frank's sign as an independent and significant marker of CAD with sensitivities ranging from 48-78% and specificities 43-88% [4-9]. Overwhelmingly evidence supports the DELCL as a useful predictor of CAD. Despite this, our observations in the Aberdeen Royal Infirmary Department of Cardiology suggest that a diagonal ear lobe crease is seldom identified in Primary Care, likeliest due to a lack of wide-ranging knowledge of its significance. Enhanced awareness of this easily-identifiable clinical sign could prompt Primary Care physicians to screen patients for other cardiovascular risk factors and institute primary preventative measures early, thereby preventing cardiovascular morbidity and mortality.

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Cite this article

Gulsin GS, Clement KD, Anglim N (2014) Frank's Sign as a Marker of Coronary Artery Atherosclerosis. *J Cardiol Clin Res* 2(3): 1032.