**CORKSCREW CORONARY ARTERIES: INNOCENT BYSTANDER OR SIGNIFICANT RISK FACTOR?**

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Background: A significant portion of patients who have non-obstructive epicardial coronary arteries have corkscrew architecture (extreme tortuosity with several 90 degree angulations) which may predispose them to increased cardiac events.

Methods: Of 3248 patients, 214 with non obstructive coronary arteries were divided into those with normal and corkscrew architecture. Several variables, including risk factors [hypertension, chronic kidney disease (CKD), diabetes], ejection fraction (EF), left ventricular mass index (LVMI), myocardial infarction and mortality were compared.

Results: Of 214 patients, 58.4% (n=125) had corkscrew architecture and 41.6% (n=89) had normal architecture. Number of frames used in corkscrew coronaries was 121 versus 90 in normal coronaries (P value<0.0001).The patients with corkscrew coronaries are more likely to have systolic heart failure (EF <35%), myocardial infarction and higher mortality (P value< 0.0001).Increased incidence of corkscrew arteries were seen in patients with hypertension (91% Vs 13.4%; P value <0.0001), diabetes (48.8% Vs 33.7%; P value 0.03), non-Caucasian race (87.2% Vs 33.8%;

P value <0.0001) and chronic kidney disease (12.8% Vs 2.3%; P value 0.005). Increased LVMI was observed in 60.4 % with corkscrew arteries versus 43.4% with normal coronary architecture in males

(P value: NS) and 75% versus 59% in females (P value: NS). Based on the multivariate analysis, hypertension, diabetes, CKD and non-Caucasian race are independent predictors for myocardial infarction and systolic heart failure (EF<35%) in patients with corkscrew coronaries.

Conclusions: Corkscrew coronary architecture is associated with increased incidence of heart failure, myocardial infarction and death. Aggressive risk factor (hypertension, diabetes, CKD) modification may help prevent this condition.