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Impact of longitudinal straightening of vessel after left main to left anterior descending artery crossover stenting

Background: The straightening effects on vascular curves occur and may result in stent-induced vascular injury. The longitudinal straightening effect of coronary artery stents contributes significantly to the occurrence of Major Adverse Cardiac Events (MACE) and angiographic restenosis. Our purpose was to evaluate the conformity of coronary stents with the course and change of vascular angle and occurrence of MACE. Methods and results: We analysed data from 54 patients who underwent intervention with drug-eluting stents which were implanted into left main(LM) to left anterior descending (LAD) crossover technique. Conventional angiographic spider views were compared before and after stent placement to record changes of shape and course of the coronary artery. Angle between LM and LAD were measured on DCAS coronary measuring system. The straightening index (SI) was defined as the ratio of the lesion's change in angulation after stent implantation to the initial angulation. We evaluate MACE after 18-30 month follow-up. Overall MACE rate was 26.9% during follow up period(TVR 19.2%, MI:3.8%, Death 3.8%). SI was predictors of MACE both continuous variable analysis(hazard ratio 8.14, 95% CI 1.61- 43.77, p=0.01) and categorical variable(SI>0.22) analysis HR 0.119, CI 0.023-0.618, p=0.01 ). Conclusion: With conventional risk factor, longitudinal straightening of vessel is additional predictor for occurrence of MACE after stent implantation in LM to LAD cross over.