Safety & efficacy of using chromium stents versus stainless steel stents in patients undergoing P.C.I for bifurcation lesions

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List of abbreviations

ACC	American College of Cardiology
AHA	American Heart Association
IVUS	Intravascular Ultrasound
MACE	Major Adverse Cardiac Events
PTCA	Percutaneous Transluminal Coronary Angioplasty
ST	Stent Thrombosis
TLR	Target Lesion Revascularization
CAD	Coronary Artery Disease
CCS	Cobalt-Chromium Stent
CS	Chromium stent
DES	Drug Eluting Stents
DM	Diabetes Mellitus
HDL	High Density Lipoprotein
ISAR—STEREO	**I**ntracoronary **S**tenting and **A**ngiographic **R**esults-**S**trut **T**hickness **E**ffect on **Re**stenosis **O**utcome
ISR	In-Stent Restenosis

LDL	Low Density Lipoprotein
NO	Nitric Oxide
PCI	Percutaneous Coronary Interventions
SSS	Stainless Steel Stent
TVR	Target Vessel Revascularization
WHO	World Health Organization
BA	Balloon Angioplasty
CABG	Coronary Artery Bypass Grafting
Cath. Lab.	Catheterization Laboratory
ECG	Electrocardiography
F H	Family History
HTN	Hypertension
LAD	Left Anterior Descending artery
LCX	Left Circumflex artery
MI	Myocardial Infarction
OM	Obtuse Marginal
RCA	Right Coronary Artery
UA	Unstable Angina
BP	Blood Pressure

CCU	Coronary Care Unit
Chol.	Cholesterol
DIAG.	Diagonal
DM	Diabetes Mellitus
EF	Ejection Fraction
FBS	Fasting Blood Sugar
IHD	Ischemic Heart Disease
LV	Left Ventricle
STEMI	ST segment elevation myocardial infarction
NSTEMI	Non ST segment elevation myocardial infarction

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Introduction

Advances in coronary stents technology both in terms of design and function have significantly improved the safety and efficacy of P.C.I, including marked reduction in restenosis .

Up to 2 million P.C.I procedures are performed world wide each year. [1]

Coronary stents are typically implanted in over 90% of these procedures [2].

The majority of current stents are manufactured in stainless steel alloy Composed primarily of iron (60-65%), nickel (12-14%), chromium (17-18%), the later providing excellent anti corrosion property in addition to radial strength. [3]

cobalt based alloys which may enables thinner strut size while preserving radiopacity and radial strength this may be clinically relevant since use of thinner (50um)compared to thicker (140um)stent struts has been associated with favorable reduction in rates of clinical and angiographic restenosis[4] and may lead to a reduction in profile and enhanced flexibility which can be particularly advantageous in the design of small vessel stents[5].

In this study we will give a special concern to safety and efficacy of cobalt chromium stents versus stainless steel stents especially to major adverse cardiac events(death ,M.I,emergency bypass surgery,or target lesion revascularization).

This will be done in patients undergoing P.C.I to bifurcation lesion.

In percutaneous coronary intervention, the treatment of bifurcation lesion is a challenge to the interventional cardiologist, P.C.I operators ,in general use the term bifurcation lesion ,when a coronary artery divides into two equally important branches or when a side branch gives away a side branch which is large enough to be of hemodynamic significance, whereas when a large coronary artery gives away a small hemodynamicaly unimportant side branch, the term bifurcation is less used [6] .

A number of well known technical and clinical problems are associated with bifurcation P.C.I, dependent on the anatomy, the lesions, and on the technology we used. Important concerns are:

I)plaque shift causing flow problems .

ii)stent deformation .

iii)stent overlap.

iv)incomplete lesion coverage .

v)subacute stent thrombosis.

vi)restenosis[7] .

AIM OF THE WORK

To asses safety and efficacy of cobalt chromium versus stainless steel stents in patients undergoing percutanous coronary intervention for bifurcation lesions.

Bifurcaton lesions

Coronary bifurcation lesions are diagnosed if there is >50% diameter stenosis adjacent (<5mm) to, and or at, the ostium of both a main vessel (MV) and a side branch (SB). [8]

Classification of bifurcation lesions:

Bifurcation lesions can be further divided into true and false bifurcation in light of lesion location.

The significance of classification of bifurcation lesions lies in its effects on procedural safety and long-term outcomes.

Most importantly, false bifurcation lesions might becomes true once immediately after balloon inflation or stenting, mainly due to plaque shift.

This underlies the complexity of interventions in bifurcation lesions, and reminds us of the need for precise classification before percutaneous intervention (PCI).

From the procedural standpoint, vessel segments involved in bifurcation lesions are divided into three segments: Prebifurcation MV,distal_to_bifurcation MV,and SB.

According to lesion location in the MV or SB, several classifications of coronary bifurcation lesions were proposed;