COMBINED CAROTID ARTERY STENTING (CAS) AND CORONARY ARTERY BYPASS GRAFTING (CABG)

THESIS

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Who give me unwavering support,
Inspiration and love.

Abstract

Perioperative stroke and ischemic encephalopathy are two well recognized complications of coronary artery bypass grafting (CABG).

Surgical treatment of simultaneous coronary carotid disease is still controversial.

Carotid artery stenting (CAS) is being investigated as an alternative treatment to carotid endarterectomy (CEA).

The safety of CAS has been particularly strengthened with the routine use of distal protection devices.

There should be a protocol for use of antiplatelet drugs before and after CAS and after CABG.

Keywords: Carotid Artery Stenting,

Coronary Artery Bypass Grafting ,

Carotid Endarterectomy.

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List of Abbreviations	
ACAS	Asymptomatic Carotid Atherosclerosis Study
ACT	Activated Clotting Time
AHA	American Heart Association
CABG	Coronary Artery Bypass Graft
CAD	Coronary Artery Disease
CAS	Carotid Artery Stenting
CBF	Cerebral Blood Flow
CCA	Common Carotid Artery
CDFI	Color Doppler Flow Imaging
CDUS	Carotid Duplex Ultrasound
CEA	Carotid Endarterectomy
CHI	Contrast Harmonic Imaging
CT	Computerized Tomography
CVA	Cerebrovascular Accident
CASANOVA	Carotid Artery Stenosis with Asymptomatic Narrowing Operation Versus Aspirin
CRNA	Certified Registered Nurse Anesthetist
DSA	Digital Subtraction Angiography
DUS	Doppler Ultrasound
ECA	External Carotid Artery
ECG	Electro Cardiography
ECM	Extra Cellular Matrix
ECST	European Carotid Surgery Trial
ESR	Erythrocyte Sedimentation Rate
FEV1	Forced Expiratory Volume in the 1st second
ICA	Internal Carotid Artery
IHD	Ischemic Heart Disease
HIV	Human Immunodefeciency Virus
HDL	High Density Lipoprotein
LDL	Low Density Lipoprotein
MR	Magnetic Resonance
MRA	Magnetic Resonance Angiography

MI	Myocardial Infarction
NASCET	North American Symptomatic Carotid Endarterectomy Trial
PTA	Percutaneous Transluminal Angioplasty
rtPA	Recombinant Tissue Plasminogen Activator
SMCs	Smooth Muscle Cells
TIA	Transient Ischemic Attack
TCD	Tran-Cranial Doppler
US	Ultra Sound
VLDL	Very Low Density Lipoprotein

INTRODUCTION

Introduction:

Carotid and coronary arteries' atherosclerotic lesions frequently co-exist as a part of systemic atherosclerotic disease.

A staged CAS-CABG approach has been recently proposed, but need of an aggressive anti-platelet therapy for approximately one month after stenting represents an important limitation due to the risk of coronary events during this period. A new therapeutic strategy consisting in a simultaneous hybrid complete revascularization of the carotid artery by CAS, immediately, followed by CABG. Such an approach has the potential to minimize the incidence of coronary events in patients with high surgical risk**. (*Rutherford et al., 2005*)**.

Peri-operative stroke and ischemic encephalopathy are two well-recognized complications of CABG . The risk of stroke in the peri-operative period has remained ≅ 2% for the past three decades. The presence of carotid disease in patients undergoing CABG has been shown to increase this risk of peri-operative stroke from the cardiac procedure three folds. Trials of combined or staged carotid endarterectomy in these patients is an attempt to reduce peri-operative mortalilty **(*Randall et al., 2006*)**

Surgical treatment of simultaneous coronary and carotid disease is still controversial, because of the high risk of morbidity and mortality after combined or staged carotid artery endoarterectomy and the coronary artery bypass grafting approach**. (*Chiariello et al., 2006*)**

Carotid endartrectomy is used to be considered as the golden standard treatment for carotid artery stenosis . However this approach is not free of complications**.** ***(Stankovic et al .,2002)***

Carotid artery stenting (CAS) is being investigated as an alternative treatment to carotid endarterectomy (CAE).The goal of both procedures is the prevention of

stroke from extra cranial carotid artery occlusive disease. Carotid stenting , compared with surgery , offers patients a less invasive and traumatic means of achieving this goal. The efficacy of carotid stenting in preventing stroke depends on the ability of the operator to achieve complications-free results. ***(Vitek et al.,2000)***

Use of carotid artery stenting (CAS) , as one alternative to CAE before or with cardiac surgery , has been proposed as a less risky carotid revascularization strategy***.(Kovacic et al., 2004)***

The safety of CAS has been particularly strengthened with the routine use of distal protection and the use of these devices should be considered the standard of care. ***(Yadav et al., 2004)***

AIM OF WORK

Aim of work

The aim of this work is to determine the best available approach and time for management of carotid stenosis in patients undergoing coronary artery bypass surgery, in this current literature, in order to minimize the incidence of complications such as myocardial infarction, cerebrovascular stroke, congestive heart failure, arrhythmias and others. And also to show the methods that can be used to minimize the effect of anti-platelet therapy on CABG following CAS.

ANATOMY