Carotid Endarterectomy For Asymptomatic High Risk Cardiac Patients Value And Limitations

Thesis

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In General Surgery

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List Of Content

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vast pioneering experience in Endovascular Surgery, as he did with many generations, no words are enough to express my appreciation and deep respect .

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List of abbreviations

ACA	: Anterior cerebral artery
ACAS	: Asymptomatic carotid atherosclerosis study
ACC	: American college of cardiology
ACE	: Angiotensin-converting enzyme
ACHA	: Anterior choroidal artery
ACST	: Asymptomatic carotid surgery trial
ACT1	: Asymptomatic carotid stenosis, stenting versus endarterectomy
AHA	: American heart association
ARBs	: Angiotensin receptor blockers
ARCHER	: Acculink for revascularization of carotids in high-risk surgical patients
ASA	: American stroke association
BEACH	: Boston scientific EPI: a carotid stenting trial for high-risk surgical patients
Ca RESS	: Carotid revascularization using endarterectomy or stenting systems
CABERNET	: Carotid artery revascularization using the boston scientific epifilterative ex and the endotex nexstent
CABG	: Coronary artery bypass graft
CAPTURE	: Carotid acculink/accunet post-approval trial to uncover rare events
CAS	: Carotid artery stenting
CAS	: Carotid artery stenting
CASANOVA	: Carotid artery stenosis with asymptomatic narrowing operation versus aspirin
CAVATAS	: Carotid and vertebral artery transluminal angioplasty study
CCA	: Common carotid artery
CEA	: Carotid endarterectomy
CREST	: Carotid revascularization endarterectomyt versus stent trial

List of abbreviations (Cont.)

CT	: Computed tomography
CTA	: Computed tomography angiography
CTIAs	: Crescendo transient ischaemic attacks
DSA	: Digital subtraction angiography
DW-RR	: Diffusion-weighted brain MR imaging
ECST	: European carotid surgery trial
EPDs	: Embolic protection devices
EVA-35	: Endarterectomy versus angioplasty in patients with symptomatic severe carotid stenosis
FEV_1	: Force expiratory volume in 1 second
GSM	: Gray-scale-median
HOPE	: Heart outcomes and prevention evaluation
ICA	: Internal carotid artery
INR	: International normalized ratio
MACE	: Myo-asymptomatic carotid endarterectomy
MAVERIC	: Medtronic AVE self-expanding carotid stent system with distal protection in the treatment of carotid stenosis
MCA	: Middle cerebral artery
MI	: Myocardial infarction
MIP	: Maximum intensity projection
MPVR	: Multiplaner volume rendering
MRA	: Magnetic resonance angiography
MRI	: Magnetic resonance imaging
NASCET	: North American sytmptomatic carotid endarterectomy trial
NCEP	: National cholesterol education program
PCA	: Posterior cerebral artery
PTA	: percutaneous transluminal angioplasty
PW-MR	: Perfusion-weighted brain MR imaging
RIND	: Revesible ischemic neurological deficit

List of abbreviations (Cont.)

SAPPHIRE	: Stenting and angioplasty with protection in patients at high risk for endarterectomy
SECURITL	: Registry study to evaluate the neuroshield bare wire cerebral protection system and X-act stent in patient at high risk for carotid endarterectomy
SIE	: Stroke-in-evolution
SPACE	: Stent-supported percutaneous angioplasty of the carotid artery versus endarterectomy
SPARCL	: Stroke prevention with aggressive reduction of cholesterol levels
SPIRIT	: Stroke prevention in reversible ischemia trial
TACIT	: Transatlantic asymptomatic carotid intervention trial
TCD	: Trans-cranial Doppler
TIA	: Transient ischemic attack
t-PA	: Tissue plasminogen activator
VA-HIT	: Veterans affairs high density lipoprotein
WARSS	: Warfarin aspirin recurrent stroke study

List of Tables

Page

List of Figures

Introduction

It has been proved through various trials since 1950 that carotid endarterectomy is more effective than medical management in the prevention of stroke in patients with severe atherosclerotic carotid artery stenosis. Stroke is a devastating complication of coronary artery bypass surgery. It increases the mortality and morbidity of the operation and prolongs the length of hospital stay ***(Taylor and Bell, 2004)***.

The asymptomatic carotid atherosclerosis study (ACAS), on American trial, and large European based asymptomatic carotid surgery trial (ACST), showed a benefit in those patients undergoing carotid endarterectomy (CEA) with >60% stenosis compared to the medically treated group. The estimated 5-year risk of ipsilateral stroke or any stroke or death was 11% in the medical group and 5.1% in the surgical group ***(Shearman and Simon, 2001)***.

CEA can be safely performed in patients deemed at high risk, including those aged 80 years or older and others with significant comorbid conditions, with combined stroke and mortality rates comparable to those found in randomized trials, i.e., the asymptomatic carotid atherosclerosis study and North American symptomatic carotid endarterectomy trial ***(Reed et al., 2003)***.

Patients undergoing coronary artery bypass grafting (CABG) have a stroke risk due to a number of factors including embolisation of atheroma from aortic arch and problems associated with extra-corporeal bypass. The concurrent CEA and CABG can be performed with acceptable operative mortality and morbidity, and good long-term freedom from coronary and neurologic events ***(Koll et al., 2006)***.

The management of these patients need careful pre-intra- and post-operative assessment and timing aimed at reducing the ischemic injuries, both cerebral and cardiac. Therefore, we believe that surgical technique should be individualized for each patient ***(Chiappini et al., 2005)***.