Index

Page numbers in italics denote figures, those in bold denote tables.

AAN/AANS/ASITN/ASNR/CNS/SIR guidelines 162
abciximab 120
ACCF/SCAI/SVMIR/SIR/ASITN
   Clinical Expert Consensus 162
guidelines 161
AccuLink for Revascularization of Carotids in High-
Risk Patients (ARCHER) 149
Acculink stent 258, 259, 370
registry data 319
AccuNet see RX AccuNet Embolic Protection System
ACE inhibitors 113
acetazolamide challenge test 82, 83
ACST 2 trial 318
critical review 331
ACT 1 trial 318
critical review 330
Embosheild 352–3
age
   and hazard ratio 336
   as risk factor 153–4
alcohol consumption, moderation of 112
alexia 90
allergic reactions 122
amaurosis fugax 44, 50, 51, 89
   and plaque type 50, 55
American Heart Association/American Stroke
   Association (AHA/ASA) Stroke Guidelines 429
Amplatz Super Stiff wire 174
Amplatz Ultra Stiff-Flex Tip 174
anesthesia 133, 403
aneurysms
   carotid 133, 478–83
   intracranial 420–6
angina 440
angiography 171
aortic arch 231, 233
carotid stenosis 62–3, 63, 64
   European (E) method 62, 63
   North American (N) method 62
cervical carotid 231–2, 234, 234
   coronary heart disease 105
   intracranial 232, 234, 234
   magnetic resonance see MRA
   poststenting 119
   preprocedural 210–11
   restenosis 291–2
   vertebral artery revascularization 430
   Angioguard RX 214, 239, 351–2, 351
   crossing profile 370
   SAPHIRE trial 351
   SAPHIRE WW registry 352
   Angioguard XP 196, 196
   registry data 319
angioplasty
   balloon 180, 273
   kissing technique 444, 448, 452, 462, 463, 464,
   474
   carotid see carotid angioplasty and stenting
   common carotid artery 484–8
   outcomes 486–7
   restenosis 487
   surgical options 487
   technique 484–6, 485, 486
   intracranial stenosis 404–7, 405, 406
   percutaneous transluminal see percutaneous
   transluminal angioplasty
   supra-aortic trunk interventions 474–5, 474,
   475
   ultrasound 67–75
   see also stents/stenting
   anoxic depolarization 78
   anterior cerebral artery 13
   TCD 33, 34, 35
   anterior cerebral artery syndrome 90
   anterior choroidal artery syndrome 90
   anterior communicating artery, TCD 34
   anticoagulants 114–15, 268–9
   periprocedural 120
antihypertensives 113
   periprocedural 120
   vertebrobasilar disease 430
   antioxidants 112–13
   antiplatelet agents 114, 269
   vertebrobasilar disease 429
   Antithrombotic Trialists’ Collaboration 429
   aorta 172
   aortic arch 8, 9
   access 248
   angiography 231, 233
   calcified 268
   distortion 172
   MRA 20
   aortic dissection, MRA 21
   apoptosis 4
   ARCHeR trial 319
   critical review 329
      clinical characteristics 329
      clinical outcome 329
      mortality and stroke rate 323
   RX AccuNet Embolic Protection System 350
   ARMOUR trial 322
   arterial access 230–1
   brachial and radial arteries 230–1
   common carotid artery 211–12, 247, 248, 248
   direct carotid artery puncture 231, 232
   femoral artery 230, 280
   internal carotid artery 247–9, 248–52
   arteriovenous malformations 17
   aspirin 114, 138, 268, 281, 302, 340
   intracranial stenosis 396
   periprocedural 120
   subclavian artery revascularization 446
   vertebral artery revascularization 430, 464
   Aspirin Versus Anticoagulants in Stenosis of the
   MCA (AVASIS) trial 396
   Asymptomatic Carotid Artery Progression Study
      (ACAPS) 5, 28, 53, 113
Index

Asymptomatic Carotid Atherosclerosis Study (ACAS) 101, 141, 147
asymptomatic carotid stenosis 115, 152–8
carotid recanalization 153, 153
with coronary heart disease 166–7
detection 152–3
risk stratification 153–6
age 153–4
anatomic parameters 155–6, 155, 156
carotid stenosis parameters 154
coronary conditions 154
end-organ (brain) parameters 154–5
gender 154
Asymptomatic Carotid Stenosis and Risk of Stroke study 53, 57, 58, 58
atherosclerosis 4–5, 4
fatty streaks 4, 5
necrotic core 4
reversibility of 5
risk factors 5
risk modification 120
atropine 121
autoregulation 76–7, 76, 77
B-mode image normalization 47–50, 48, 49, 50
balloon angioplasty 180, 273
common carotid artery 484–8
kissing technique 444, 448, 452, 462, 463, 464, 474
balloon dilatation 171, 273–4, 281
balloons, occlusive 175–6, 176
Bard Stent 370
baroreceptor reflex 273
Basel Carotid Artery Stenting Study (BACASS) 315, 317
basilar artery, TCD 36–7, 37, 38
BEACH trial 319, 321
critical review 330
clinical characteristics 329
clinical outcome 329
FilterWire EZ 353
mortality and stroke rate 323
Benson-Hanafee catheter 172
Bergen Vitamin Study 112
black blood images 21, 21
Boston Naming Test 92–3
brachial artery access 230–1
brachytherapy 294
bradycardia, periprocedural 121–2, 243
Brain Attack Coalition 387
buddy wires 214
CARABANA registry 322
CARABNET trial 319, 321
critical review 330
clinical characteristics 329
clinical outcome 329
FilterWire EZ 353
mortality and stroke rate 323
calcification 279
aortic arch 268
carotid artery 279
carotid bifurcation 23
fibroatheroma 74, 74
plaque 10
calcium antagonists 113
calcium supplements 112
California Verbal Learning Test 93
CAPTURE registry 136, 149, 211, 313, 319, 320
critical review 330
clinical characteristics 329
clinical outcome 329
mortality and stroke rate 323
RX AccuNet Embolic Protection System 350–1
CAPTURE 2 registry, mortality and stroke rate 323
cardiogenic assessment 101–8
cardiogenic ischemia, periprocedural 122, 122
cardiologic assessment 209
CaRESS study 136, 222
critical review 329
registry data 320, 322
Carotid AccuLink/AccuN Post Approval Trial to Uncover Rare Events (CAPTURE) trial 147
carotid anatomic adversity 247, 249
scoring of 249, 254
scoring of 249, 254, 254
carotid aneurysms 133, 478–83
and carotid dissection 478
endovascular repair 479–82, 480, 481
complications 481–2, 482
stents 480–1
surgical repair 478–9
symptoms 478
coexisting carotid disease 479–82, 480, 481
stenting 101–8
clinical trials 479–82, 480, 481
clinical outcome 323
clinical results 323
stent procedure 286–8, 287–9
balloon angioplasty 180
clinical trials 142–3
carotid dissection 101–8
clinical outcome 329
clinical characteristics 329
clinical trial 329
registry data 320, 322
vascular access site 211
stenting 309–14
see stents/stenting
restenosis 293
success rate 491
tailed approach 257–8
techinique 211–21
access to common carotid artery 211–12
embolic protection devices see embolic protection devices
vascular access site 211
wires see wires
see also angioplasty
carotid artery
anatomy 8
calcification 279
direct puncture 231, 232
endovascular repair see carotid angioplasty and stenting
injury 282, 283, 284
lesions of 474
Carotid Artery Plaque Virtual Histology Evaluation (CAPITAL) study 72, 148
Carotid Artery Stenting with Emboli Protection Surveillance Post-Marketing Study see CASES-PMS
Carotid Atherosclerosis Italian Ultrasound Study (CAIUS) 114
carotid bifurcation 10, 185, 270
calcification 23
CTA 21
carotid body tumors 133, 133
carotid bruises 5, 152
carotid dissection 285–9
aneurysm-induced 478
 imaging 285
periprocedural 286–8, 286–8
symptoms 285
carotid duplex ultrasound 291
see carotid endarterectomy
see carotid endarterectomy 127, 128, 129–30, 179, 268
cognitive outcome 94–5
prediction of 96–7
evension technique 128, 130, 130
external 130, 131
high-risk criteria 161
history 137
referral for 141–4
restenosis see restenosis
results 138–9
safety and efficacy 137–8
vs best medical therapy 138
vs carotid stenosis 137–8
see carotid ostium cannulation 171
Carotid Revascularization with Endarterectomy and Stenting Systems see CaRESS study
Carotid Revascularization Endarterectomy versus Stent Trial see CREST trial
Carotid RX AccuLink/Rx AccuNet Post-Approval Trial to Uncover Unanticipated or Rare Events see CAPTURE
see carotid stenosis 24, 275, 277–84
assessment 160
asymptomatic 115, 152–8
CT angiography 344, 345, 346
primary endpoints 344, 346
results 344, 346
RX AccuNet Embolic Protection System 351
Cristallo Ideale stent 258, 259, 260
registry data 319
CRISTALLO registry 319, 321
critical review 328–9
ongoing trials 330
randomized controlled trials 326–8, 327
registries 329–30, 329
supra-aortic trunk interventions 330–2, 331
CT 15
cerebral ischaemia 16
coronary heart disease 105
curved planar reformat 22, 22
dynamic perfusion 79
intracranial haematoma 16
maximum intensity projection 20, 20
multisplanar reformat 22, 23
neurologic assessment 380–1
preprocedural assessment 210–11
volume-rendered reformat 22, 22
xenon-enhanced 79
see also imaging studies
CT angiography; see CTA
CT perfusion imaging 415–18, 416, 417
CT-PET 23, 24
CTA 21–2
carotid artery occlusion 277, 278
carotid bifurcation 21
follow-up studies 24–5, 25
internal carotid artery stenosis 24
limitations of 23
neurologic assessment 381
restenosis 291
curved planar reformat 22, 22
Dacron stents 262
DAILYS 3, 4
debris 344, 344, 345
analysis 371, 372, 373
flushing 347, 348
retrieval 372–3, 372, 373
Defencer Embolic Protection Filter 352, 352
DESERVE registry 322
diabetes mellitus 113
diameter reduction 65
diastolic velocity ratio 64–5, 64
difficult stent delivery 274, 274
Digit Symbol-Coding test 91–2
digital subtractive angiography, neurologic assessment 381
dipyridamole 114, 118
Dirigible Supracore wire 174
disability-adjusted life years see DALYs
dissection 21
aortic 21
carotid see carotid dissection
as complication of stenting 243–4, 244
distal embolization 221–3, 221, 245
asymptomatic 222–3
high-risk patients 221–2
localization of brain embolism 223
low-risk patients 222
standard-risk patients 222
timing of stroke 223
distal occlusion devices 175–80, 191–6, 212–13, 212,
237–8, 270, 271, 356
advantages 194, 212
balloons 175–6, 176
characteristics 241
disadvantages 194–5, 212–13, 212, 213
filters 176–8, 177, 178
Guard Dog 193, 193
PercuSurge GuardWire 192, 192, 212, 237, 271,
339–49
Tir Active FX 192–3, 192
TwinOne 187, 193–4, 194
dog-bone stent 262, 263
dopamine 121
duplex ultrasound
carotid stenosis 28–31
gray-scale/color quantification 28–9, 29, 30
neurologic assessment 380
plaque morphology 30
restenosis 291
surveillance after carotid stenting 30–1
dynamic perfusion CT 79
Ebbinghaus, Hermann 309
ECASS-III trial 412
ECG 103–4
continuous ambulatory 104
exercise tolerance testing 103–4
follow-up assessment 380
echo-Doppler
carotid stenosis 63–5, 64
anatomic quantification 65
hemodynamic quantification 63–5
echo-planar imaging 80
echocardiography 104
stress 104
elucency of plaque 5, 44–5
EC–IC Bypass Study 397
Ehlers-Danlos syndrome 478
electrocardiography see ECG
ELOCAS registry 320, 323
mortality and stroke rate 323
emboli 5
asymptomatic, detection of 38, 38
embolic protection devices 119, 191–207, 212–18,
239
balloons 175–6, 176, 180
carotid stenosis 280–1
characteristics 241
choice of 202–4, 204, 217–18, 218, 219
distal occlusion see distal occlusion devices
filters see filters
outcome 204, 205, 218, 219, 221
proximal protection 178–80, 179, 200–4, 217,
239–40, 356
retrieval of 216
routine use of 223–4, 224
selection of 237–40
subclavian artery revascularization 446, 452–3, 453
vertebral artery revascularization 463–4
see also individual devices
embolization 244–5, 246
distal see distal embolization
impact of 361
EmboSledder 196–7, 196, 214, 239, 318, 352–3, 353
ACT I trial 352–3
crossing profile 370
EXACT trial 352
PROTECT trial 352
EMPIRE trial 322
flow reversal devices 364–5, 364
end-diastolic velocity 28, 63–4
Endarterectomy Versus Stenting in Patients with Symptomatic Severe Carotid Stenosis trial see EVA-3S trial
endovascular therapy, see also revascularization therapy; and individual therapies
EPIC registry 322
epidemiology 3–4
erthrocyte sedimentation rate 473
European Carotid Plaque Study Group 46
European Carotid Surgery Trial (ECST) 53, 54, 101,
160
stroke-free survival rate 56, 57
European Society for Vascular Surgery, guidelines 160
European/Australasian Stroke Prevention in Reversible Ischemia Trial (ESPRIT) 429
EVA-3S trial 136, 142, 222, 312, 317
critical review 328
clinical characteristics 327
clinical outcome 327
mortality and stroke rate 323
revision technique 128, 130, 130
EXACT trial 322
EmboSledder 352
mortality and stroke rate 323
exercise 112
exercise tolerance testing 103–4
Exponent stent 258, 259
external carotid artery 10, 268
external carotid endarterectomy 130, 131
extracranial occlusive disease 38–9, 39
fatty streaks 4, 5
femoral artery access 230, 280
FiberNet filter 199–200, 199, 214, 217, 367–78
crossing profile 370
debris analysis 371, 372, 373
debris retrieval 372–3, 372, 373
description 368–70, 368, 369, 370
lesion characteristics 371
outcomes 371–2
patient characteristics 371, 371
results 371–3, 371, 372, 373
study design 370–1
carotid artery procedure 370
debris analysis 371
fibroatheroma 74, 74
calciﬁed 74, 74
calciﬁed thin-cap 74, 74
thin-cap 74, 74
landing zone 249, 254
language-lexical retrieval 92–3
Lauterbur, Paul 15
learning curves 309–14, 310
evidence for 310–13
case series 310–12, 311
independent registries 312
post-marketing studies 312–13
randomized controlled trials 312
factors affecting 310
step 309
Leicester trial 317

critical review
clinical characteristics 327
clinical outcome 327
mortality and stroke rate 323
letter fluency tests 91–2

lifestyle modification 111–12
correction of obesity and physical inactivity 112
moderation of alcohol consumption 112
potassium, calcium and magnesium supplements 112
reduction in sodium intake 112
smoking cessation 112
limbs, ischemia of 441
LIPID study 5
lipid-lowering agents 113–14
locked-in syndrome 429
Long-term Intervention with Pravastatin in Ischaemic Disease study see LIPID study
Lovastatin 113

low-density lipoprotein 4

Magic Torque wires 174
magnesium supplements 112
magnetic resonance angiography see MRA
magnetic resonance imaging see MRI
major cognitive domain testing 91–4, 92, 93
executive/activation domain 91–2
language-lexical retrieval 92–3
memory domain 93
neuropsychiatric/repressive symptoms domain 94
visuospatial domain 93–4
Mani-Vitek catheter 173
Mansfield, Peter 15
Maffan syndrome 478
MAVERIC II registries 322
critical review 329–30
clinical characteristics 329
clinical outcome 329
maximum intensity projection 20, 22
mean transit time 77
medial lenticulostriate arteries 13
memory testing 93
Merci Retrieval System 389, 413
meta-analyses 328–9
middle cerebral artery 13, 13
stenosis 397–8
TCD 33, 33, 34
middle cerebral artery syndrome 90
Mini Mental State Examination 94
misery perfusion 77
Mo.Ma device 202, 203, 239, 240, 355–60, 356, 357
clinical outcome 356–8
Mo.Ma registry 319, 321–2

Monitored Atherosclerosis Regression Study (MARS) 5, 113
monitoring
periprocedural 120
revascularization therapy 83
mortality from stroke 3, 4, 208, 312
MRA
aortic arch 20
aortic dissection 21
contrast-enhanced 19–21, 20, 21
coronary heart disease 105
neurologic assessment 381
restenosis 291
subclavian stenosis 20
MRI 15, 16, 18
black blood images 21, 21
diffusion-weighted 16, 18
neurologic assessment 381
perfusion-weighted 16–17, 79–80, 80
preprocedural assessment 210–11
susceptibility-weighted 17
see also imaging studies
multiplanar reformat 22, 23
myocardial infarction 342
periprocedural 122, 122

NASCET 28, 53, 54, 54, 101, 132, 137, 141, 147, 159, 267
assessment of carotid stenosis 160
National Institutes of Health Stroke Score 388
natural history of plaque 46–7, 46
necrotic core 4
neuroanatomy 8–14
cervical 8–11, 9–12
cranial 11–13, 12, 14
Neurilink stent 431
neurologic assessment 209, 380–1
cerebral CT 380–1
cerebral MRI 381
CTA 381
digital subtractive angiography 381
duplex ultrasound 380
MRA 381
neurologic complications 221–4
Neuripsychiatric Inventory 94
neuropsychiatric/repressive symptoms tests 94
NeXStent 258, 259
registry data 319
NIH Stroke Scale 120
nitril 176
nitril self-expanding stents 182–3, 183, 256–7
North American Symptomatic Carotid
Endarterectomy Trial see NASCET
obesity, correction of 112
objective performance criteria 318
occlusive devices
balloons 175–6, 176
proximal see proximal protection
oxygen extraction fraction 76
Parodi AntiEmbolic System 179, 179, 239, 240, 362
PASCAL registry 322

pathophysiology 4–5, 4
peak systolic velocity 28, 63–4
peak systolic velocity ratio 28, 64
Penumbra Pivotal Stroke Trial 413
Penumbra system 389, 413, 414
PercuSurge GuardWire 192, 192, 212, 237, 271,
339–49
data collection and statistical methods 342
description of 339
flushing 347, 348
follow-up 342
limitations 345–7, 346, 347
patient selection 339
periprocedural assessment 340–2, 341
results 342–5
cerebral protection technique 342
collected debris 344, 344, 345
follow-up 345
immediate technical success 342, 343, 344
late complications 344–5
lesion characteristics 343
patient characteristics 342, 343
stents implanted 343
tolerance of occlusion balloon 343–4
study end-points 342
technique for use 339–40, 340
toleration of occlusion 347
percutaneous transluminal angioplasty
carotid stenosis 412, 437
subclavian steal 102, 437–57
brachial approach 442, 446
cerebral protection 446, 452–3, 453
complications 448
femoral approach 441–2, 441–5
follow-up 448–9, 451, 452
medications 446
patient population 446–7
restenosis rate 453–4
results 456–8, 449, 450, 450, 454
stenting 444, 446
subclavian artery occlusion 442–4, 449
vertebral stenosis 444, 448, 458–72
complications 464, 468
follow-up 464–5
indications 460
medication 464
patient characteristics 464
procedure 460–3, 461, 462
protection devices 463–4, 465
results 464–5, 465, 465, 467
perforation 244, 245
perfusion-weighted MRI 79–80, 80
Penindopril Protection Against Recurrent Stroke
(PROGRESS) trial 113, 430
peripheral artery disease 152–3
periprocedural management 118–24
anticoagulants 120
antihypertensives 120
assistance 118–19
complications 120–3, 122
bradycardia and hypotension 121–2
seizures 122
stroke 121
monitoring 120
procedure 119
risk modification 120
Index

PET, cerebral perfusion imaging 79
phagocytes 4
pilot exchange catheters 174
plaque 5

calcified 10
characteristics
and carotid stenosis 56–7, 56, 57
and choice of stent 255–6
histological 45–6
and stroke risk 46–7, 46, 53–6, 54–6, 56
ultrasound 44–5, 45
virtual histology IVUS 74, 74
echographic characteristics 210
echolucency 5, 44–5
fibrous caps 44
homogeneity 45
hyperechoic 47
morphology 30, 393
natural history studies 46–7, 46
ultrasound characterization 44–61
B-mode image normalization 47–50, 48, 49, 50
echodensity and structure 50–1
stenosis as confounding factor 52–3, 52, 53
textural features 57–8
ulceration 31–2
vulnerable 8
assessment of 211
polyurethane stents 262
positron emission tomography see PET
post-marketing studies 312–13
posterior cerebral artery 12, 13
TCD 34–5, 36, 37
posterior communicating artery, TCD 35–6, 37
potassium supplements 112
pravastatin 113
Pravastatin, Lipids and Atherosclerosis in the Carotid Arteries (PLAC-II) 92–3
Precise stent 258, 259, 370
registry data 319
premedication 402–3
premorbid cognitive status 94
preprocedural assessment 89–100, 209–11, 230, 231
angiography 210–11
CT/MRI 210
echographic plaque characteristics 210
medical and cardiological 209
neurologic 209
plaque vulnerability 211
risk factors 211
transcranial Doppler 210
PRIASMUS registry 320, 357
PROTECT trial 322
EmboShield 352
SpiderFX 353
Protégé stent 258, 259, 262, 370
registry data 319
characteristics 241
Gore Neuprotective system 200–2, 201
limitations 358–9

Mo.Ma device 202, 203, 239, 240, 355–60, 356, 357
sealball and airbag technique 202
pseudoaneurysms 479
carotid dissection 287
delayed formation 284
PTA see percutaneous transluminal angioplasty
radial artery access 230–1
radiouclide imaging 104–5
randomized controlled trials 312, 315–18, 317
critical review 326–8, 327
meta-analyses 328–9
ongoing 330
see also individual trials
registry data 318–23, 319–20, 323
critical review 329–30, 329
industry-sponsored 318, 321–2
REGRESS 5
Regression Growth Evaluation Statin Study see REGRESS
restenosis 290–9, 300–3
common carotid artery revascularization 487
definition and diagnosis 291–2
angiography 291–2
carotid duplex ultrasonography 291
CTA 291
MRA 291
incidence 290, 291, 300–1
Mirano Public Hospital experience 302–4
outcome 295
preoperative assessment 296
pathophysiology 292–3
definitive treatment 293–5
results 297
mortality and stroke rate 298
preoperative assessment 299
conditioning 299
assessments 300
risk factors 301
subclavian artery revascularization 453–4
treatment 293–5, 301–2, 302
endoavascular 293
postradiation/post-carotid endarterectomy restenosis 293–4, 295, 296
results 304
surgical 293, 294
retinal artery ischemia 89
retrieval sheaths 119
revascularization 388–9
common carotid stenosis 153, 153
abortion of procedure 281
arterial access and approach 280
asymptomatic patients 153, 153
balloon dilatation 281
baseline diagnostic images 280
embolic protection devices see embolic protection devices
equipment set-up 279
exchange of wires 280
final angiograms 281
stent deployment 281
techniques 279–81, 280
wiring process 280
intracranial stenosis 392–411
anesthesia 403
with craniotomy 399–402, 400
endoavascular revasculardization 400–1
guide catheter 403–4
lesion navigation and angioplasty 404–7, 405, 406
patient selection 402
post-procedure management 407
stent-assisted angioplasty 401–2
monitoring of 83
subclavian artery 102, 439–57
brachial approach 442, 446
cerebral protection 446, 452–3, 453
complications 448
femoral approach 441–2, 441–5
follow-up 448–9, 451, 452
results 446–8, 449, 450, 450, 454
vertebral artery 427–36
baseline cerebral angiography 430
complications 431–2
indications 430
medications 430
outcomes 432–3, 433
procedure 430–1, 431
see also individual techniques
Rey Complex Figure test 93–4
risk assessment 141–4
Roadrunner 0.018 inch wire 175
Rubicon Filter 198, 198, 239
RX AccuNet Embolic Protection System 195–6, 196, 203, 214, 239, 350–1, 351
ARCHer trial 350
CAPTURE registry 350–1
CHOICE trial 351
CREST trial 351
crossing profile 370
SAPPHIRE trial 136, 142, 149, 166, 313, 316, 317
Angioguard RX 351
critical review 327–8
clinical characteristics 327
critical outcome 327
mortality and stroke rate 323
SAPPHIRE WW registry 319, 320–1
Angioguard RX 352
SCAI/SVMB/SVS guidelines 161
Scandinavian Simvastatin Survival Study 113
sealbelt and airbag technique 202
SECURITY registry 322
critical review 329
clinical characteristics 329
critical outcome 329
seizures, periprocedural 122
self-expanding stents 181–2, 182, 256–7, 257
nitiol 182–3, 183, 256–7
structural/functional characteristics 256–7, 256, 257
semantic fluency tests 91–2
shear 421
sheaths 174–5
SHELTER registry 322
silent cerebral infarcts 154
Index

Simons/sidewinder catheters  173, 173
simvastatin  113
single photon emission computed tomography see SPECT
Sinus Carotid stent  258, 259
smoking cessation  111–12
Society for Coronary Angiography and Interventions (SOCIACI)  388
sodium intake, reduction in  112
SONOMA registry  322
SPACE trial  96, 136, 142, 149, 222, 312, 316, 317
critical review  328
clinical characteristics  327
clinical outcome  327
mortality and stroke rate  323
spasms  245
SPECT
cerebral perfusion imaging  79
coronary heart disease  104–5
SpiderFX  353–4, 355
CREATE trial  353–4
PROTECT trial  355
SpiderRX  197, 197, 214, 239
crossing profile  370
registry data  319
spiral CT  65
SYLVIA trial  468
statin  5, 113–14
vertebrobasilar disease  429–30
steerable extra support guidewires  174
Stent-supported Percutaneous Angioplasty of the Carotid artery versus Endarterectomy trial see SPACE trial
Stenting and Angioplasty with Protection in Patients and High Risk for Endarterectomy trial see SAPHIRE trial
Stenting of Symptomatic Atherosclerotic Lesions in the Vertebral or Intracranial Arteries (SYLVIA) trial  401
stents/stenting  67–75, 136, 180–3, 241
access  235–7, 237, 235
bovine origin of left common carotid artery  236, 237
common carotid sheath technique  235–6, 235, 239
device advancing problems  236, 238, 239
guide catheter approach  236–7
adverse events  260
angiography
aortic arch  231, 233
cervical carotid  231–2, 234
intracranial  232, 234, 234
arterial access  230–1
brachial and radial  230–1
direct carotid artery puncture  231, 232
femoral  230
carotid aneurysm repair  480–1
carotid artery see carotid angioplasty and stenting
carotid dissection  286–8, 286–8
cerebral protection  171, 185–90
choice of stent  119, 218–19, 235–61, 256, 259
intrinsic antiembolic concept  256
plaque characteristics  255–6
vascular anatomy  255–6
see also individual stent types
carotid artery  484–8
complications  219–21, 220, 221, 242–5, 243
dissections  243–4, 244
embozation  244–5, 246
perforation  244, 245
periprocedural medical management  243, 244
spasms  245
covered  262–6, 267–9
deployment  240–1, 241, 242, 243
design and distal embolization  183
developments in  141–2, 142
difficult stent delivery  274, 274
duplex ultrasound surveillance  30–1
embolic protection devices see embolic protection devices
guidelines  159–63, 160
hybrid  260
indications  143, 148–9, 148
intracranial stents  413–15
nitinol self-expanding stents  182–3, 183
placement  219
postdeployment angioplasty  241–2
postdilatation  219
predilatation  240
preprocedural evaluation  230, 231
restenosis see restenosis
retrieval sheaths  119
self-expanding stents  181–2, 182, 256–7
thin-cap fibroatheroma  182
nitinol  182–3
structural/functional characteristics  256–7, 256, 257
stent characteristics  242, 242
subclavian steal syndrome  444, 446
supra-aortic trunk interventions  474–5, 474, 475
technique  230–46
tips  260
tubular, balloon-expandable stents  181, 181
ultrasound  67–75
vertebral artery  427–36
Stork wires  173
stress echocardiography  104
string sign lesions  230
stroke  44, 136
DAI’s  3, 4
endovascular therapy  412–19
clinical trials  412–13
imaging requirements  415–18, 416, 417
intracranial stents  413–15, 414
mechanical thrombectomy  413
epidemiology  3–4, 4
imaging studies, cerebral perfusion imaging  80–2, 81, 82
incidence  3
intracranial stenosis  393–5, 394
local thrombosis  394–5
occlusion of small penetrating arteries 395
perfusion failure  393–4, 394
major  342
minor  342
mortality  3, 4, 208, 312
pathophysiology  4–5, 4
periprocedural  121
stroke centers  387–8
imaging requirements  415–18, 416, 417
Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) trial  430
Stroke Prevention and Education Awareness Diffusion (SPREAD) guidelines  161
Stroke Prevention in Reversible Ischemia Trial (SPRIT)  114
stroke programs  387–91
initiation of  389–90
stroke risk, and plaque type  46–7, 46, 50, 53–6, 54–6, 56
subclavian artery  8, 10
lesions of  474
occlusion  442–4, 449
stenosis  20
subclavian steal syndrome  40, 439, 440
diagnosis  440
indications for intervention  440–1
percutaneous transluminal angioplasty  439–57
supra-aortic trunk interventions  330–2, 331
angioplasty and stenting  474–5, 474, 475
carotid artery lesions  474
inflammatory arteritis  473–7
results  475–6
subclavian artery lesions  474
embolic protection devices see embolic protection devices
technique  473–4
surface reduction  65
surgical repair
carotid aneurysms  478–9
carotid stenosis  127–35
anesthesia for  133
carotid-carotid artery bypass  132, 132
carotid-subclavian bypass  130–2, 131, 132
dermatectomy see carotic dermatectomy as gold standard  136–40
history  127
restenosis  293, 294
results  132–3
common carotid artery lesions  487
SVS registry  320
mortality and stroke rate  323
Takayasu’s disease see inflammatory arteritis tandem lesions  281, 282
TARGET-CAS registry  320, 322–3
task-related learning  309, 310
TCD see transcranial Doppler
teflon-coated steerable wires  173–4
thin-cap fibroatheroma  74, 74
thrombus formation  5
ticlopidine  114, 340, 407
subclavian artery revascularization  446
vertebral artery revascularization  464
tissue acidosis  78
tissue plasminogen activator  412
top-of-the-basilar syndrome  429
TrackBack device  72
Trail Making tests  92
Transatlantic Asymptomatic Carotid Intervention Trial (TACIT)  316, 318
critical review  331
transcranial Doppler 32–43, 33
  after procedures 42
  before procedures 38–42
  carotid stenosis/occlusion 39–40, 39, 40
collateral pathways 40
cross-flow through circle of Willis 42
detection of asymptomtic emboli 38, 38
extracranial occlusive disease 38–9, 39
intracranial stenosis/occlusion 41–2, 41
periprocedural 42
preprocedural 210
suboccipital approach 36–7
basilar artery 36–7, 37, 38
vertebral artery 36, 37, 38
transorbital approach 37–8
transtemporal approach 32–6, 33
anterior cerebral artery 33, 34, 35
anterior communicating artery 34
internal carotid artery 34, 35, 36
middle cerebral artery 33, 33, 34
posterior cerebral artery 34–5, 36, 37
posterior communicating artery 35–6, 37
vertebrobasilar system 40
transforming growth factor-beta 4
transient ischemic attacks 17, 28, 44, 77, 78, 152, 427
definition of 89, 342
and plaque type 50, 55
screening 89
Tri Active FX 192–3, 192
Tromso study 51
tubular, balloon-expandable stents 181, 181
tumor necrosis factor-alpha 4
TwinOne 187, 193–4, 194
ulcerated plaque 51–2
ultrasound
angioplasty and stenting 67–75
carotid 101
duplex see duplex ultrasound
intravascular see intravascular ultrasound
plaque characterization 44–61
  B-mode image normalization 47–50, 48, 49,
echodensity and structure 50–1
stenosis as confounding factor 52–3, 52, 53
textural features 57–8
ulceration 51–2
vs histology 45–6
vascular access site 211
vertebral artery 8, 11
anatomy 427–8, 428
revascularization 427–36
  baseline cerebral angiography 430
  complications 431–2
  indications 430
  medications 430
  outcomes 432–3, 432
  procedure 430–1, 431
  see also vertebral stenosis, PTA
TCD 36, 37, 38
Vertebral Artery Stenting Trial (VAST) 332, 433
vertebral stenosis
clinical findings 459–60
diagnostic imaging 460
location of 459
PTA 444, 448, 458–72
  complications 468
  follow-up 464–5
  indications 460
  procedure 460–3, 461, 462
  results 464–5, 465, 465, 467
vertebrobasilar disease 429
medical therapy 429–30
anti hypertensives 430
antiplatelet agents 429
statins 429–30
vertebrobasilar insufficiency 440, 458
vertebrobasilar stenosis 398–9
vertebrobasilar system 429
TCD 40
Viabahn stent 262
VIENNA trial 316, 318
virtual histology IVUS 67, 69–70, 70, 72, 72
amplitude envelope 69
color coding 70
image interpretation 70, 72
plaque classification 74, 74
pullback 70, 72, 73
visceral adiposity 112
visuospatial domain testing 93–4
vitamin supplements 112–13
VITATOPS 112
VIVA registry 322
Vivexx stent 258, 259, 260, 322
volume-rendered reformat 22, 22
vulnerable plaque 8
assessment of 211
Wallstent stent 262, 263
Wallstent trial 315, 317
critical review 326–7
clinical characteristics 327
clinical outcome 327
mortality and stroke rate 323
registry data 319
Warfarin Aspirin Recurrent Stroke Study (WARSS) 114, 429
Warfarin Aspirin Symptomatic Intracranial Diseases trial (WASID) 396, 398, 429
Wholey Hi-Torque wires 173
Willis, Thomas 127
WingSpan stent 431
wire/angiographic catheter/guiding catheter or long/sheath systems 175
wires
0.035 inch extra support 174
angioplasty 175
carotid artery occlusion 280
positioning 171, 270
steerable 173–4
extra support 174
hydrophilic-coated 174
teflon-coated 173–4
X-act Carotid Stent System 258, 259, 262, 318
xenon-enhanced CT 79
Zilver stent 258, 259