

Index

- acoustic neuroma
 complications from surgery,
 73–74
 follow-up, 74–75
 radiosurgery outcomes for, 72–73
 radiosurgery treatment
 algorithm, 68–69
 ANSRS (Acoustic Neuroma
 Subtotal Resection Study), 67
 anterior cranial fossa
 interhemispheric approach,
 35–37
 orbitofrontal approach for, 95
 surgical anatomy of, 105
 transbasal (subfrontal) approach,
 35
 transbasal and transfacial
 approach to, 104
 anterior skull base. *see also* skull
 base approaches
 combined endonasal
 transethmoidal
 transcribiform and
 endoscope-assisted
 supraorbital craniotomy, 2
 surgical success in, 1
 arcus marginalis, 20
 arteriovenous malformations,
 206–208
- caruncle, 19
 cavernous hemangiomas
 in endoscopic orbital surgery,
 10–11
 medial transorbital +/- endonasal
 approach (multiportal
 transorbital surgery), 15
 cerebral revascularization
 future directions in, 61–62
 indications for, 51, 55
 for skull base tumors, 51
 cerebral spinal fluid leaks (CSF)
 combined suboccipital
 craniotomy + neck dissection
 approach, 162
 combined transbasal and
 transfacial approach, 107
 lesions addressed through
 transorbital portals, 12
 meningoencephalic herniations
 (MEH) in, 111
 middle ear obliteration for, 113
 skull base approaches, 136–137
 supraorbital approach, 2
 transethmoidal transcribiform
 approach, 1
 cerebral spinal fluid leaks (CSF)
 management
 conservative, 137
 lumbar drain, 137
 postoperative care, 5–6
 surgical revision, 137
 cerebrovascular bypass approach
 (EC-IC)
 bypass outcomes, 58–59
 clinical outcomes, 59–61
 future directions in, 61–62
 history of, 51–53
 indications for, 53–56
 key points, 62
 meningiomas, 59–60
 microanatomical considerations,
 56–57
 patient selection for, 55–56
 surgical techniques, 57–58
 clivus, approaches to, 27
 combined endonasal and transoral
 endoscopic approach to
 craniovertebral junction
 key points, 28
 surgical techniques, 26–27
 combined endonasal
 transethmoidal
 transcribiform and
 endoscope-assisted
 supraorbital craniotomy
 benefits of, 9
 case study, 6–7
 defined, 2
 histology considerations, 3
 key points, 7
 lesion categorization, 9
 limitations of, 2
 operative conditions for, 2
 patient positioning and
 preparation, 3
 portals, 9
 combined endoscopic endnasal and
 transcranial approach to
 complex intracranial lesions
 history of, 41
 operative setup, 43–44
 patient selection for, 42
 postoperative care, 47–48
 reasons for, 41
 surgical considerations, 48
 combined endoscopic endnasal and
 transcranial approach to
 complex intracranial lesions
 surgical techniques
 interhemispheric + endoscopic
 endonasal approach, 46–47
 orbitozygomatic + endoscopic
 endonasal approach, 45–46
 transbasal + endoscopic endnasal
 approach, 44–45
 combined endoscopic endonasal
 and transcervical approach of
 the infratemporal fossa
 key points, 34
 patient selection for, 30
 pre-operative planning, 30
 reasons for, 33–34
 surgical approaches to, 33
 surgical techniques, 30–33
 combined microsurgical and
 endovascular treatment
 background of, 203–204
 skull base tumors, 209–212
 combined microsurgical and
 endovascular treatment
 indications
 arteriovenous malformations,
 206–208
 dural arteriovenous fistula,
 208–210
 intracranial aneurysms, 204–205
 combined multi-portal pull-
 through keyhole surgery
 complication avoidance
 occipital lobectomy, 193
 temporal lobectomy, 193
 combined multi-portal
 pull-through keyhole surgery
 steps
 occipital keyhole craniotomy,
 190–191
 occipital lobectomy, 191–192
 positioning, 188–189
 pull-through, 192
 temporal keyhole craniotomy,
 189
 temporal lobectomy, 189–190

Index

- combined multi-portal
 - pull-through keyhole technique
 - alternative approaches, 187–188
 - background of, 187
 - clinical highlights, 194
 - contraindications for, 187
 - indications for, 187
 - key points, 194
 - postoperative care, 193
 - pre-operative planning, 188
- combined orbitofrontal craniotomy
 - and direct orbital compression
 - contraindications for, 96
 - indications for, 95–97
 - key points, 101–102
 - orbital and neurological complications, 100–101
 - postoperative care, 101
 - pre-operative planning, 96–97
- combined orbitofrontal craniotomy
 - and direct orbital compression
 - surgical techniques
 - neurosurgical procedure, 100
 - oculoplastics surgical procedure, 100
- combined orbitozygomatic and retrosigmoid approach (OZ + RS)
 - case study, 145–148
 - indications for, 141
 - key points, 147
 - limitations of, 146–147
 - modification for sequence and timing of two-stage approach, 141
 - transpetrosal versus two-stage approach, 140–141
- combined paramedian supracerebellar-transtentorial approach (SCTT)
 - background of, 182
 - complication avoidance, 183–185
 - contraindications for, 183
 - indications for, 182
 - key points, 185
 - surgical steps, 183
- combined petrosal approach
 - background of, 164–165
 - clinical cases, 177–178
 - indications for, 164
 - key points, 178–179
- combined petrosal surgical techniques
 - dissectin of vascularized galeo-fascial-pericranial flap, 167
 - dural incision and tentorial resection, 174
 - intradural dissection, 174–177
 - mastoidectomy, 169
 - middle fossa extradural dissection and rhomboid drilling, 170–172
 - positioning and incision, 165–167
 - reconstruction and closure, 176–177
 - suboccipital craniotomy, 169–170
 - temporal and suboccipital muscle elevation and outer bony landmarks, 167–168
- combined retrosigmoid craniotomy
 - and petrosectomy
 - advantages of, 150–151
 - clinical highlights, 156–157
 - contraindications for, 151–152
 - key points, 157
 - patient selection for, 151
 - postoperative care, 156
 - preoperative planning, 152–156
- combined suboccipital craniotomy
 - + neck dissection approach
 - background of, 158
 - case study, 159
 - clinical highlights, 163
 - contraindications for, 158–159
 - follow-up, 163
 - indications for, 158
 - postoperative care, 163
 - preoperative planning, 159
- combined suboccipital craniotomy
 - + neck dissection complication avoidance
 - airway management, 161–162
 - cerebral spinal fluid leaks (CSF), 162
 - stroke, 162
 - wound care, 162–163
- combined suboccipital craniotomy
 - + neck dissection surgical steps
 - neck dissection, 161
 - suboccipital craniotomy, 161
 - translabyrinthine approach, 159–160
- combined transbasal and transfacial approach
 - clinical highlights, 108
 - contraindications for, 104–105
 - indications for, 104
 - pre-operative planning, 105
 - surgical anatomy of, 105
- combined transbasal and transfacial surgical technique
 - complication avoidance, 107
 - craniotomy, 105–107
 - dural reconstruction, 106
 - positioning, 105
 - postoperative care, 107
 - transfacial tumor resection, 106–107
- combined transchoroidal and subchoroidal approach (third ventricle lesions), 89, 91–93
- combined transcochlear and Infratemporal fossa fish type B or C approach
 - access to nasopharynx, 132
 - access to the clivus, 132
 - advantages, 131–132
 - disadvantages, 132
 - indications for, 131
 - surgical steps, 132
- combined transmastoid and middle cranial fossa approach
 - clinical highlights, 118–119
 - complication avoidance, 118
 - indications for, 113
 - key points, 119–120
 - postoperative care, 118–119
 - pre-operative planning, 113–115
 - reasons for, 112–113
 - surgical algorithm for, 113
 - surgical anatomy of, 112
 - surgical techniques, 117–118
- craniotomy approaches
 - combined transbasal and transfacial surgical technique, 105–107
 - pterional approach and its variations, 18
 - supraorbital keyhole, 18
 - unilateral frontal/bifrontal, 18
- craniovertebral junction
 - endoscopic surgical techniques, 26–27
 - surgical approaches to, 25–26
- Dandy, Walter, 79
- dural arteriovenous fistula, 208–210
- ELANA technique (excimer laser-assisted nonocclusive anastomosis), 61
- El-Sayed classification of infratemporal fossa, 29–30
- encephalocele
 - meningoencephalic herniations (MEH) in, 111
 - middle ear obliteration for, 113
 - risks from, 111
- endonasal approaches (endoscopic transorbital surgery)
 - Lothrop/Draf-3 procedure, 18
 - transpterygoid, 18
- endonasal approaches to anterior and central skull base
 - popularity of, 35
 - reasons for, 38–39
- endonasal transtentorial
 - transcribriform approach
 - benefits from, 1
 - defined, 1
 - indications, 2
 - limitations of, 1, 2
 - postoperative care, 5–6

- surgical techniques, 3
- endoscopic endonasal approaches (EEA) to anterior and central skull base
 - outcomes and consequences of, 41
 - pre-operative planning, 40
 - pros and cons of, 40–41
 - surgical considerations, 39–40
- endoscopic multiportal transorbital surgery
 - complete resection requirement, 13
 - operative conditions for, 12–13
- endoscopic multiportal transorbital surgery examples
 - inferior transorbital +/- unilateral endonasal approach, 14
 - medial transorbital +/- endonasal approach, 14–15
 - superior eyelid +/- endonasal approach, 13–14
 - superolateral transorbital + endonasal approach, 15–16
- endoscopic orbital surgery,
 - intraconal and extraconal cavernous hemangiomas, 10–11
 - indications, 9–11
 - multiportal approach, 10
 - nasal morbidity avoidance, 11
- endoscopic transorbital surgery
 - avoiding complications, 23
 - clinical presentation, 17
 - contra-indications, 17
 - indications for, 9–16
 - key points, 24
 - operative decision making
 - algorithm, 16–17
 - patient positioning for, 20
 - patient selection for, 16
 - pertinent surface anatomy, 19–20
 - post-operative care, 23
 - post-operative follow-up, 23–24
 - preoperative planning, 18–19
 - surgery suggestions, 24
- endoscopic transorbital surgery
 - alternative approaches
 - craniotomy, 18
 - endonasal approaches, 18
 - lateral orbitotomy, 17
 - endoscopic transorbital surgery, extradural and intradural
 - indications, 11–12
 - lesions addressed through transorbital portals, 12
 - transorbital neuro endoscopic surgery (TONES), 12
- endoscopic transorbital surgery incisions
 - inferior transconjunctival, 22
 - pre and transcaruncular, 20–21
- superior lid crease with lateral extension, 21–22
- endovascular therapy, 203
- esthesioneuroblastoma, 2
- extended endonasal approach, 1
- extreme lateral approach
 - advantages, 135
 - disadvantages, 135
 - indications for, 135
 - postoperative care, 136
 - surgical steps, 135–136
- frontal transcortical approach (third ventricle lesions), 86
- Graves' orbitopathy, 95–97
- inferior transorbital +/- unilateral endonasal approach (multiportal transorbital surgery), 14
- infratemporal fossa (ITF)
 - anatomy of, 29
 - difficult surgical access to, 29
 - lesion classification, 29–30
- infratemporal fossa (ITF) lesion
 - management
 - biopsy, 30
 - imaging, 30
 - initial evaluation, 30
 - interhemispheric anterior transcallosal approach (third ventricle lesions), 86–87
- intracranial aneurysms, 204–205
- keyhole technique
 - multiple keyhole craniotomies approach, 196
 - multi-portal pull-through technique, 187
- occipital keyhole craniotomy, 190–191
- paramedian
 - supracerebellar-transstentorial approach, 182
- lacrimal puncti, 19
- lacrimal sac, 19
- lateral canthal tendon, 20
- lateral canthus, 20
- lateral orbitotomy, 17
- levator aponeurosis, 20
- levator palpebrae muscle, 20
- Lothrop/Draf-3 procedure, 18
- medial canthus, 19
- medial transorbital +/- endonasal approach (multiportal transorbital surgery), 14–15
- meningiomas
 - olfactory groove, 6
 - approaches for, 59–60
- meningoencephalic herniations (MEH), 111
- middle cranial fossa approach (MCF)
 - background of, 112
 - indications for, 113
 - surgical techniques, 116–117
- middle cranial fossa endoscopic approaches
 - pterional/orbitozygomatic approach, 37–38
 - subtemporal/anterior petrosal approach, 38
- middle ear obliteration, 113
- multiple keyhole craniotomies approach
 - background of, 196
 - clinical highlights, 200
 - complication avoidance, 199–200
 - contraindications for, 197–198
 - indications for, 196–197
 - key points, 200–201
 - postoperative care, 200
 - pre-operative planning, 198–199
 - surgical techniques, 199
- occipital keyhole craniotomy, 190–191
- occipital lobectomy, 193
- open surgical approaches to third ventricle
 - anterior interhemispheric transcallosal approach, 80–81
 - frontal transcortical approach, 81
 - lateral trajectory to, 81
 - operative procedure for, 85–89
 - pertinent anatomy of, 82–84
 - posterior trajectory to, 81
 - subfrontal approach, 81
 - transsphenoidal approach, 81
- orbital decompression, 95–97
- orbitofrontal craniotomy
 - history of, 95
 - surgical anatomy of, 97–99
- orbitozygomatic approach (OZ)
 - closure, 143
 - patient positioning for, 141
 - surgical steps, 141–143
 - technical nuances, 143
 - versatility of, 140–141
- parapharyngeal space (PPS)
 - anatomy of, 29
 - biopsy, 30
 - difficult surgical access to, 29
 - imaging, 30
 - initial evaluation, 30
- parapharyngeal space (PPS) approaches, 33
- petro-occipital transsigmoid approach (POTS)
 - advantages, 134

Index

- POTS (cont.)
indications for, 134
surgical steps, 134–135
petrosectomy, 150
pterional approach (craniotomy), 18
- radiosurgery
acoustic neuroma, 68–69
outcomes for acoustic neuromas, 72–73
vestibular schwannomas, 68
retrosigmoid approach (RS)
closure, 145
patient positioning for, 143–144
surgical steps, 144–145
technical nuances, 145
versatility of, 140–141
retrosigmoid craniotomy. *see*
combined retrosigmoid
craniotomy and petrosectomy
reverse petrosectomy, 150
- sinonasal cavity anatomy, 105
skull base approach complications
cerebral spinal fluid leaks (CSF), 136–137
cranial nerve dysfunction, 138
facial nerve dysfunction, 137–138
temporomandibular joint
dysfunction, 138
venous infarction, 138
wound infection, 137
skull base approaches. *see also*
anterior skull base
combined microsurgical and
endovascular treatment,
203–204
combined retrosigmoid
craniotomy and petrosectomy,
150
contraindications for, 122
paramedian supracerebellar-
transtentorial approach, 182
patient selection for, 122
pre-operative planning, 122–123
types of, 122–123
skull base tumors
cerebral revascularization for, 51
combined microsurgical and
endovascular treatment,
209–212
indications for vascular bypass,
54
squamous cell carcinoma
approaches, 2
subchoroidal approach (third
ventricle lesions), 87–89
subtemporal exposure approach
advantages, 133
disadvantages, 133
indications for, 132
surgical steps, 133
superior eyelid +/- endonasal
approach (multiportal
transorbital surgery), 13–14
superior orbitotomy anatomy,
98–100
superolateral transorbital +
endonasal approach
(multiportal transorbital
surgery), 15–16
supraorbital approach
indications, 2
limitation of, 2
postoperative care, 5–6
surgical techniques, 4–5
supraorbital keyhole craniotomy, 18
- temporal keyhole craniotomy, 189
temporal lobectomy, 193
transbasal approach (TBA),
108–109
transchoroidal approach (third
ventricle lesions), 87–88
transcoallal approach (third
ventricle lesions), 87–88
transcochlear approach
advantages, 124
background of, 123–124
disadvantages, 124
indications for, 124
transcochlear approach surgical
steps
clinical highlights, 130–131
cochlear drilling, 130
defect reconstruction and closure,
130
facial nerve mobilization,
128–129
internal acoustic meatus (IAM),
127
labyrinthectomy, 126
mastoidectomy, 125–126
pre-operative planning, 124
soft tissue dissection, 125
transcranial approaches (TCA) to
anterior and central skull base
anterior cranial fossa, 35–37
middle cranial fossa, 37–38
outcomes and consequences of,
41
popularity of, 35
pre-operative planning, 40
pros and cons of, 40–41
surgical considerations, 39–40
transfacial approach variations, 109
transmastoid approach (TM)
background of, 112
indications for, 113
surgical techniques, 115–116
transnasal endoscopic surgery
indications for, 25–26
popularity of, 25
- transoral approach to
craniovertebral junction, 25
transorbital neuro endoscopic
surgery (TONES)
background of, 12
indications for, 12
transpetrosal approach, 140
transpterygoid approach, 18
- unilateral frontal/bifrontal
craniotomy, 18
upper eyelid crease, 20
- ventricular lesion history, 79
ventricular lesions, third ventricle
alternative approaches, 82
combined transchoroidal and
subchoroidal approach, 89
differential diagnosis of, 79–80
falx cerebri and, 85
indications for, 81–83
lesion resection, 89–90
open surgical approaches to,
79–82
operative procedure for, 85–89
pertinent anatomy of, 82–84
postoperative care, 90
preoperative planning, 85
subchoroidal approach, 87–89
transchoroidal approach, 84–85,
87–88
transcoallal approach to, 85,
86–87
- vestibular schwannomas
ANSRS (Acoustic Neuroma
Subtotal Resection Study), 67
hybrid treatment strategies for
large tumors, 67
radiosurgery and, 68
vestibular schwannomas, hybrid/
combined treatment strategies
for
algorithm for, 68
alternative approaches, 82
case study, 91–93
clinical highlights, 75
complications from surgery,
73–74, 90–91
follow-up, 74–75
indications for, 68, 81–83
key points, 76, 91
lesion resection, 89–90
postoperative care, 90
preoperative planning, 69–70
surgical techniques, 70–72
treatment limitations, 75–76
vestibular schwannomas resection
outcomes and consequences of,
67–68
popularity of, 67
- Whitnall's ligament, 20