

Index

A

Adipose lesions of nerve, surgical management of, 78
 Air embolism, 223
 Anatomical corridors, 263
 Anterior cranial base modules, reconstruction for, 22, 24
 Anterior cranial fossa (ACF), preauricular transzygomatic subtemporal approaches, 261
 operative procedure, 263–268
 anatomical corridors, 263
 combined module, 268
 exposure of osseous framework, 263–266
 glenoid fossa module, 267
 intradural considerations, 266–267
 osseous elements, 263
 patient positioning, 263
 relevant anatomy, 263
 soft tissue and vascular elements, 263
 superolateral orbit module, 266
 transzygomatic module, 267
 patient selection for, 261–262
 postoperative management, 268–269
 preoperative preparation for, 262
 Anterior frontal tumors, 157
 Anterior petrosal bone removal, 182
 Anterior skull base meningioma, expanded endoscopic endonasal resection of, 173
 Anterior skull base tumors, combined craniofacial resection of, 269
 operative procedure
 anesthetic considerations, 271
 endoscopic endonasal reconstruction, 273, 276–277
 facial exposures, 274
 frontal craniotomy, 273–276
 incision, 271–272
 lateral rhinotomy approaches, 274–276
 patient positioning and preparation, 271
 pericranial flap development, 273
 postoperative management, 277
 radiographic evaluation, 270–271
 reconstruction considerations, 277
 tissue diagnosis, 270
 treatment planning, 271
 Anterior transperitoneal lumbar approach, 66–68
 Anterolateral retroperitoneal approach, 68
 Antibiotics, 284
 Arteriovenous malformations, stereotactic radiosurgery of, 134
 Astrocytomas, 83, 86
 Automated probe driver, 104
 Awake craniotomy
 intraoperative speech during, 121
 operative procedure, 122
 cortical and subcortical monitoring for motor mapping, 125
 cortical stimulation for speech mapping, 122–124
 intraoperative neurological decline, 125
 intraoperative seizures, 125
 tumor resection, 125–127
 patient selection for, 121
 postoperative management, 125–126
 preoperative preparation for, 121–122
 sensorimotor mapping during, 121

B

Benign peripheral nerve tumors, surgical management of, 78–79
 Bifrontal biorbital approach, 170–171
 Biopsy procedures
 endoscopic biopsy, 216
 stereotactic needle biopsy, 215
 Cavernous sinus extension, 18
 Cavernous sinus meningiomas, 146–147
 Cerebrospinal fluid leakage and wound healing, 258
 Cholesterol granulomas (CGs), 287
 Clinoidal meningiomas (CMs)
 definitions, 161
 general considerations for removal of, 161–162
 skull base technique for removal of, 162
 alternatives to, 162–163
 closure, 166
 craniotomy, 163
 dural opening, 165
 incision, 163
 patient positioning, 163
 patient selection, 162
 postoperative management, 166–167
 preoperative management, 163
 tumor removal, 165–166
 Clival neoplasms, surgical resection of, 303
 endoscopic endonasal approach, 306–309
 patient selection, 303–305
 postoperative management, 312
 preoperative preparation, 305–306
 transcondylar approach, 310–312
 transtemporal approaches, 309–310
 Clivus
 anatomy, 271
 postoperative care, 284
 preoperative evaluation, 271–272
 transmaxillary approaches to, 271
 endoscopic approaches, 281–284
 labiomandibular glossotomy, 281
 lateral rhinotomy ± medial maxillectomy, 280
 LeFort I osteotomy, 280–281
 maxillotomy, 281
 Combined lateral skull base approach, 253–256
 Combined occipital–suboccipital craniotomy, 194
 Combined supra- and infratentorial petrosal approach scalp incision, 181
 Contralateral transpedicular approach, 96
 Convexity meningiomas (CM)
 clinical presentation of, 155
 definition, 155
 operative procedure, 157–160
 patient selection, 155–156
 postoperative management, 160
 preoperative management, 156–157
 symptoms of, 155
 Cortical and subcortical monitoring for motor mapping, 125
 Cortical stimulation for speech mapping, 122–124
 Costotransversectomy, 94
 Cranial minibolt, 104
 Cranial nerve palsy, 257–258
 Cranial neuropathies, 137

Craniotomy, 158, 163
 and bone flap, 149–150
 and dural opening, 42
 skin incision and, 180–181
 Cribriform plate osteotomy, 294
 CSF leak, 284
 Cyberknife (CK), 130, 131, 137

D

Desmoids, 79, 80
 Devascularization, 20–22
 Diffusion tensor imaging, 103
 Direct endonasal (EN) approach, 3
 closure technique, 7
 instrumentation, 5
 operative technique, 5–7
 patient positioning, 5
 tumor removal, 7
 Dorsal column stimulation, 88
 Dural incision, 182–183
 Dural opening, 22, 42, 151–152, 165
 Dysphagia, 285

E

Electrophysiological mapping technique, 115
 Endonasal (EN) approach, 3
 Endonasal endoscopic approach
 to olfactory groove meningiomas, 171–175
 Endonasal endoscopic transsphenoidal approach, to tuberculum sellae meningiomas
 arterial dissection, 205
 closure, 205
 dural opening, 205
 nasoseptal flap and sphenoid sinus access, 204
 patient positioning, 203
 sellar and planum exposure, 204
 skull base defect reconstruction, 205
 tumor removal, 205
 Endonasal transseptal approach, 3
 Endoscopes, 27–28, 199
 Endoscopic approaches, to clivus, 281–284
 Endoscopic biopsy, 216
 Endoscopic endonasal approach
 to clival neoplasms, 306–309
 to third ventricular tumors
 access to sphenoid sinus, 43
 patient positioning, 43
 reconstruction, 44
 sella and suprasellar compartments, opening, 43–44
 septectomy and sphenoidotomy, 43
 tumor removal, 44
 Endoscopic endonasal approaches (EEA), to ventral skull base lesions
 operative procedure
 extended approaches, 20–22
 general exposure, 16
 hemostatic techniques, 17–18
 intradural endoneurosurgical dissection techniques, 16–17
 sellar approaches, 18–20
 transcribriform approach, 22–24
 patient selection for, 15–16
 postoperative management, 24
 preoperative preparation, 16
 Endoscopic endonasal reconstruction, to anterior skull base tumors, 273, 276–277

Endoscopic resection of intraventricular tumors
 operative procedure, 29–33
 fourth ventricular tumors, 33
 general considerations, 29–30
 third ventricular tumors, 33
 tumor biopsy, 30–31
 tumor resection, 31
 tumors in lateral ventricles, 32
 patient selection for, 27
 postoperative management, 33
 preoperative preparation, 27–29
 determination of approach, 29
 endoscopes, 27–28

Endoscopic transcribriform exposure, 23

Endoscopic transtuberulum/transplanum
 approach, skull base reconstruction after,
 175

Ependymomas, 83, 87

Ethmoidal arteries, 174

Expanded endonasal endoscopic approaches
 to anterior skull base meningioma., 173
 to skull base lesions, 301

Expanded endoscopic endonasal transclival
 approach
 to lower clivus–anterior foramen magnum
 meningiomas, 236–239
 advantages and limitations, 237–239
 anesthesia, 236
 closure, 237
 dural opening, 237
 intraoperative monitoring, 236
 patient positioning, 236
 postoperative management, 237
 tumor resection, 237

Extended approaches, for ventral skull base
 lesions, 20–22
 devascularization, 20–22
 dural opening, 22
 extradural exposure, 20
 intradural dissection, 22

Extended middle fossa approach, 189–192

Extended transbasal approaches, 297

Extradural approach, 22

Extradural exposure, 20

Extradural frontotemporal temporopolar
 approach, 245–246

Extradural subtemporal anterior transpetrosal
 approach, 246–247

Extraneural tumors, surgical management of, 80

Eyebrow orbitotomy
 indications for, 11
 operative technique, 11–14

F

Facetectomies, 94–95

Far-lateral approach, to lower clivus–anterior
 foramen magnum meningiomas, 232–236
 advantages and limitations of, 234, 236
 anesthesia, 232
 bone removal, 233
 closure, 234
 dural opening, 233–234
 intraoperative monitoring, 232
 isolation of vertebral artery, 232
 patient positioning, 232
 postoperative management, 234
 skin incision, 232
 soft tissue dissection, 232
 tumor resection, 233–234

Foramen magnum meningiomas, 231

Fourth ventricular tumors, 33

Frontal craniotomy, to anterior skull base tumors,
 273–276

Frontoparietal or frontotemporal tumors, 157

Functional neurosurgery, 134–135

G

Gamma knife (GK) radiosurgery, 129, 135–136

General exposure, 16

Glenoid fossa module, 267

Glioblastoma, stereotactic radiosurgery of, 135

Glioma deep in motor cortex, stereotactic
 resection of, 119–120

Glioma in Wernicke's area, stereotactic resection
 of, 118–119

Glomus jugulare tumors, surgical management of
 modern-day management, 251
 operative procedure, 253–257
 anesthesia and monitoring, 253
 combined lateral skull base approach,
 253–256
 infratemporal fossa approach, 256–257
 modified lateral skull base approach, 256
 patient positioning, 253
 patient selection, 251
 postoperative management, 257–258
 preoperative preparation, 252–253

H

Hemangioblastomas, 83–84

Hemostatic techniques, for ventral skull base
 lesions, 17–18
 venous and capillary (low-pressure bleeding)
 hemostasis, 17
 venous sinus and arterial (high-pressure
 bleeding) hemostasis, 17–18

Horizontal petrous internal carotid artery,
 exposure of, 267

I

Incidental meningiomas, 155, 197

Infratemporal fossa (ITF), preauricular
 transzygomatic subtemporal approaches
 to, 261
 operative procedure, 263–268
 anatomical corridors, 263
 combined module, 268
 exposure of osseous framework, 263–266
 glenoid fossa module, 267
 intradural considerations, 266–267
 osseous elements, 263
 patient positioning, 263
 relevant anatomy, 263
 soft tissue and vascular elements, 263
 superolateral orbit module, 266
 transzygomatic module, 267
 patient selection for, 261–262
 postoperative management, 268–269
 preoperative preparation for, 262

Infratemporal fossa approach, 256–257

Infratentorial–supracerebellar approach, 213–214

Intracranial lesion, stereotactic radiosurgery of,
 129
 alternatives to, 135
 arteriovenous malformations, 135
 benign tumors
 meningiomas, 132–133
 pituitary adenomas, 133–134
 vestibular schwannomas, 133
 complications of, 137
 cyberknife, 136
 functional neurosurgery, 134–135
 GK radiosurgery, 135–136
 glioblastoma, 135

linear accelerator (LINAC) radiosurgery,
 136–137
 metastatic tumors, 135
 operative procedure, 135–137
 patient selection, 131–132
 postoperative management, 137
 preoperative management, 135–137

Intracranial tumors, laser interstitial thermal
 therapy for, 101, 109
 case studies, 107
 intraoperative thermometry, 106
 operative procedure, 104–106
 patient selection, 102–103
 postoperative management, 106–107
 preoperative preparation, 103–104
 trajectories, 108

Intradural dissection, 22

Intradural endoneurosurgical dissection
 techniques, 16–17

Intramedullary spinal cord tumors
 astrocytomas, 83, 86
 ependymomas, 83, 87
 hemangioblastomas, 83–84
 oligodendrogliomas, 83
 postoperative management, 90
 rare subtypes of, 84
 spinal cord cavernous angiomas, 84
 surgical management
 general operative guidelines, 86–87
 patient selection for, 84
 preoperative preparation, 84–86
 surgical techniques, 87–90

Intraneural ganglion cyst, surgical management
 of, 79

Intraneural perineurioma, 78

Intraoperative neurological decline, 125

Intraoperative seizures, 125

Intrasellar dissection, 18

Intraventricular tumors, endoscopic resection of
 operative procedure, 29–33
 fourth ventricular tumors, 33
 general considerations, 29–30
 third ventricular tumors, 33
 tumor biopsy, 30–31
 tumor resection, 31
 tumors in lateral ventricles, 32
 patient selection for, 27
 postoperative management, 33
 preoperative preparation, 27–29
 determination of approach, 29
 endoscopes, 27–28

K

Keyhole supraorbital approach, 11

L

Labiomandibular glossotomy, to clivus, 281

Lamina terminalis
 dissection to, 42
 opening of, 42–43

Laminectomies, 94–95

Laser delivery probe, 101

Laser interstitial thermal therapy
 background of, 101
 basic premise of, 101
 for intracranial tumors, 101, 109
 case studies, 107
 intraoperative thermometry, 106
 operative procedure, 104–106
 patient selection, 102–103
 postoperative management, 106–107
 preoperative preparation, 103–104

trajectories, 108
 NeuroBate system, 101–102
 Laser probe tip, 102
 “Lateral extracavitary approach” (LECA), 93
 operative time for, 97
 patient selection for, 93
 postoperative management and complications, 96
 procedure, 93
 contralateral transpedicular approach, 96
 costotransversectomy, 94
 exposure of lateral vertebral body, 95
 facetectomies, 94–95
 incision and exposure, 94
 laminectomies, 94–95
 OR preparation and setup, 94
 patient positioning, 94
 reconstruction, 96
 transverse processotomies, 95
 vertebral body reconstruction (VBR) cage, 96
 Lateral rhinotomy approaches, 274–276
 Lateral rhinotomy ± medial maxillectomy, 280
 Lateral sphenoid wing meningiomas, 144
 Lateral ventricles, 29
 Lateral ventricular tumors
 anatomy of, 49–51
 differential diagnosis, 47–49
 magnetic resonance imaging, 47–49
 Lateral ventricular tumors, surgical approaches
 to, 32
 patient selection and preoperative preparation, 51
 postoperative management, 55
 temporal approach, 52–55
 transcallosal approach, 51–52
 transcortical approach, 52
 Lateral vertebral body, 95
 LeFort I osteotomy, to clivus, 280–281
 Leksell, Lars, 129
 Leksell gamma knife, 136
 Linear accelerator (LINAC) radiosurgery, 129–130, 136–137
 Longitudinal fasciculus, 103
 Lower clivus–anterior foramen magnum meningiomas
 preoperative preparation, 231–232
 surgical resection of
 expanded endoscopic endonasal transclival approach, 236–239
 far-lateral approach, 232–236
 goal of, 239
 patient selection, 231
 Lumbar drain, 284

M

Malignant brain tumors, stereotactic resection of
 anesthetic considerations, 112
 case studies
 glioma deep in motor cortex, 119–120
 glioma in Wernicke’s area, 118–119
 image acquisition, 112
 patient selection, 111
 postoperative management, 118
 preoperative preparation, 111–112
 surgical procedure, 112–118
 closure techniques, 118
 electrophysiological mapping technique, 115
 operating room configuration, 113
 patient positioning, 113
 patient registration, 114
 resection, 116–118
 skin incision and craniotomy, 114–115
 surgical planning, 114

Malignant peripheral nerve tumors, 80
 Mastoidectomy, 181–182
 Maxillotomy to clivus, 281
 Medial sphenoid wing meningiomas, 144
 Meningiomas, 59
 classification of, 155
 stereotactic radiosurgery of, 132
 vascular tumors, 158
 Meningiomas of sphenoid wing, surgical management of, 143
 neuroanatomical considerations, 143–146
 cavernous sinus meningiomas, 146–147
 lateral sphenoid wing meningiomas, 144
 medial sphenoid wing meningiomas, 144
 spheno-orbital meningiomas, 144–146
 operative procedure
 closure, 154
 craniotomy and bone flap, 149–150
 dural opening, 151–152
 initial exposure, 149
 orbital decompression and reconstruction, 154
 patient positioning, 149
 tumor resection, 152–154
 patient selection, 147–148
 postoperative management, 154
 preoperative management, 148–149
 Meningitis, 284
 Metastatic tumors, stereotactic radiosurgery of, 135
 Microneurosurgery, 247
 Middle cranial fossa (MCF), preauricular transzygomatic subtemporal approaches, 261 to
 operative procedure, 263–268
 anatomical corridors, 263
 combined module, 268
 exposure of osseous framework, 263–266
 glenoid fossa module, 267
 intradural considerations, 266–267
 osseous elements, 263
 patient positioning, 263
 relevant anatomy, 263
 soft tissue and vascular elements, 263
 superolateral orbit module, 266
 transzygomatic module, 267
 patient selection for, 261–262
 postoperative management, 268–269
 preoperative preparation for, 262
 Middle cranial fossa approach, 228–229
 Minimally invasive craniotomies, 11
 Modified lateral skull base approach, 256
 Motor mapping, cortical and subcortical monitoring for, 125
 M-vision software screenshot, 105

N

Neuroanatomical considerations, 143–146
 cavernous sinus meningiomas, 146–147
 lateral sphenoid wing meningiomas, 144
 medial sphenoid wing meningiomas, 144
 spheno-orbital meningiomas, 144–146
 NeuroBate system, 101–102
 Neurofibromas, 78
 Neurofibromatosis 1 and 2, 72

O

Occipital–transtentorial approach, 214–215
 Olfactory groove meningiomas (OGM), 169
 postoperative complications, 175
 postoperative management, 175
 surgical management of

bifrontal biorbital approach, 170–171
 endonasal endoscopic approach, 171–175
 patient selection, 169
 preoperative preparation, 169–170
 Oligodendrogliomas, 83
 Optic nerves, anatomy of, 174
 Optic radiation, 103
 Orbital decompression and reconstruction, 154
 Orbital roof craniotomy. *see* Eyebrow orbitotomy
 Osseous elements, 263
 Osseous framework, exposure of, 263–266

P

Palatal fistula, 285
 Pancoast tumors, 82
 Parasellar masses, 198
 Pediatric midline posterior fossa tumors
 operative procedure
 anesthesia, 219–220
 brainstem tumors, 222
 cerebellar tumors, 221
 closing, 222
 fourth ventricle tumors, 221–222
 lateral decubitus (“park bench”) position, 220–221
 opening, 221
 operative positioning, 220
 prone position, 220
 seated position, 220
 tumor resection, 221–222
 patient selection, 219
 postoperative management, 222–223
 potential complication, 223
 preoperative preparation, 219
 Pericranial flap development, 273
 Peripheral nerve tumors, classification of, 74
 Peripheral nerve tumors (PNTs), surgical management of
 operative procedure
 adipose lesions of nerve, 78
 extraneural tumors, 80
 intraneural ganglion cyst, 79
 intraneural perineurioma, 78
 malignant peripheral nerve tumors, 80
 neurofibromas, 78
 schwannomas, 76–78
 patient selection, 71
 postoperative management, 80–82
 pancoast tumors, 82
 secondary intraneural metastasis, 80–82
 preoperative preparation, 71–72
 Petroclival meningiomas
 anesthetic techniques for, 179
 definition, 177
 intraoperative monitoring, 179
 petrosal approach to, 177–178
 anterior petrosal bone removal, 182
 complication avoidance, 185
 dural incision, 182–183
 mastoidectomy, 181–182
 patient positioning, 180
 patient selection for, 178
 posterior petrosal bone removal, 181–182
 selection of, 179
 skin incision and craniotomy, 180–181
 tumor removal, 183–184
 variations on, 184
 wound closure, 184
 posterior, 177
 postoperative management, 184–185
 preoperative hearing status, 178–179
 radiographic evaluation, 178
 Petroclival region, 177

- Petrosal approach, tentorial meningiomas, 192–194
- Petrosal approach to petroclival meningiomas, 177–178
- anterior petrosal bone removal, 182
 - complication avoidance, 185
 - dural incision, 182–183
 - mastoidectomy, 181–182
 - patient positioning, 180
 - patient selection for, 178
 - posterior petrosal bone removal, 181–182
 - selection of, 179
 - skin incision and craniotomy, 180–181
 - tumor removal, 183–184
 - variations on, 184
 - wound closure, 184
- Petrous apex cholesterol granulomas (PACGs)
- causes of, 287
 - patient selection, 287–288
 - postoperative management, 291
 - preoperative preparation, 289
 - surgical management of, 287, 289–291
- Pial–arachnoid sutures, 89
- Pineal region tumors, 211
- biopsy procedures for
 - endoscopic biopsy, 216
 - stereotactic needle biopsy, 215
 - patient selection, 211–212
 - postoperative management, 216
 - preoperative preparation, 211–212
 - surgical approaches to, 211, 212
 - infratentorial–supracerebellar approach, 213–214
 - occipital–transtentorial approach, 214–215
 - transcallosal–interhemispheric approach, 215
- Pituitary adenomas, stereotactic radiosurgery of, 133–134
- Pneumocephalus, 284
- Posterior petrosal bone removal, 181–182
- Postoperative CSF leak, 223
- Preauricular transzygomatic subtemporal approaches, 261
- operative procedure, 263–268
 - anatomical corridors, 263
 - combined module, 268
 - exposure of osseous framework, 263–266
 - glenoid fossa module, 267
 - intradural considerations, 266–267
 - osseous elements, 263
 - patient positioning, 263
 - relevant anatomy, 263
 - soft tissue and vascular elements, 263
 - superolateral orbit module, 266
 - transzygomatic module, 267
 - patient selection for, 261–262
 - postoperative management, 268–269
 - preoperative preparation for, 262
- Proton-beam therapy, 130–131
- Pterional approach, 11
- Pyramidal tract, 103
- R**
- Radiation-induced neoplasms, 137
- Radiation sources
- cyberknife (CK), 130, 131, 136
 - gamma knife (GK) radiosurgery, 129, 135–136
 - linear accelerator (LINAC) radiosurgery, 129–130, 136–137
 - proton-beam therapy, 130–131
- Radical transbasal approaches, 300–301
- Reconstructive technique, 18–20
- Retrosigmoid–transmeatal approach, to vestibular schwannomas, 227–228
- Right subcortical lesion, 108
- S**
- Schwannomas, surgical management of, 76–78
- Schwannomatosis, clinical diagnostic criteria for, 72
- Secondary intraneural metastasis, 80–82
- Sella and suprasellar compartments, opening, 43–44
- Sellar approaches, for ventral skull base lesions, 18–20
- cavernous sinus extension, 18
 - exposure, 18
 - intrasellar dissection, 18
 - reconstructive technique, 18–20
- Septectomy and sphenoidotomy, 43
- Serous otitis media/eustachian tube dysfunction, 285
- Skin incision and craniotomy, 114–115, 180–181
- Skull base approach, 179–180
- Skull base lesions, transbasal approaches to
- cribriform plate osteotomy, 294
 - expanded endonasal endoscopic approaches, 301
 - extended, 297
 - indications for, 293–294
 - patient selection for, 293
 - postoperative management, 301
 - preoperative preparation, 293
 - radical, 300–301
 - subcranial, 297–300
 - transbasal approach, 296–297
- Skull base reconstruction, 175
- Skull base technique for CMs, 162
- alternatives to, 162–163
 - closure, 166
 - craniotomy, 163
 - dural opening, 165
 - incision, 163
 - patient positioning, 163
 - patient selection, 162
 - postoperative management, 166–167
 - preoperative management, 163
 - tumor removal, 165–166
- Small subchiasmatic tumors, 11
- Soft tissue and vascular elements, 263
- Speech mapping, cortical stimulation for, 122–124
- Sphenoid sinus, access to, 43
- Spheno-orbital meningiomas, 144–146
- Spinal cord cavernous angiomas, 84
- Spinal meningiomas, 59
- dural treatment, 63
 - operative procedure for, 60–63
 - patient selection, 59–60
 - postoperative management, 63–64
 - preoperative preparation, 60
- Spinal metastatic tumors, surgical management of
- anterior retroperitoneal approach, 68–69
 - anterior transperitoneal lumbar approach, 66–68
 - anterolateral retroperitoneal approach, 68
 - goal of, 65
 - patient selection, 65
 - postoperative management, 69–70
 - preoperative preparation, 65–66
- Spine, tumors of, 83
- Stereotactic needle biopsy, 215
- Stereotactic radiosurgery, 247–248
- Stereotactic radiosurgery of intracranial lesion, 129
- alternatives to, 135
 - arteriovenous malformations, 135
 - benign tumors
 - meningiomas, 132–133
 - pituitary adenomas, 133–134
 - vestibular schwannomas, 133
 - complications of, 137
 - cyberknife (CK), 130, 131, 136
 - functional neurosurgery, 134–135
 - gamma knife (GK) radiosurgery, 129, 135–136
 - glioblastoma, 135
 - linear accelerator (LINAC) radiosurgery, 129–130, 136–137
 - metastatic tumors, 135
 - operative procedure, 135–137
 - patient selection, 131–132
 - postoperative management, 137
 - preoperative management, 135–137
 - proton-beam therapy, 130–131
- Stereotactic resection of malignant brain tumors
- anesthetic considerations, 112
 - case studies
 - glioma deep in motor cortex, 119–120
 - glioma in Wernicke's area, 118–119
 - image acquisition, 112
 - patient selection, 111
 - postoperative management, 118
 - preoperative preparation, 111–112
 - surgical procedure, 112–118
 - closure techniques, 118
 - electrophysiological mapping technique, 115
 - operating room configuration, 113
 - patient positioning, 113
 - patient registration, 114
 - resection, 116–118
 - skin incision and craniotomy, 114–115
 - surgical planning, 114
- Subcortical monitoring for motor mapping, 125
- Subfrontal craniotomy, 11
- Sublabial (SL) approach, 3, 7–8
- Superolateral orbit module, 266
- Supraorbital eyebrow craniotomy, for tuberculum sellae meningiomas
- bone flap, 200
 - closure, 203
 - patient positioning, 199–200
 - skin incision and pericranial flap, 200
 - tumor resection, 200–201
- T**
- T1 lesions, surgical approaches to, 189
- T2 and T7 lesions, surgical approaches to, 192
- T3–T6 lesions, surgical approaches to, 194
- Temperature monitoring region, at laser probe tip, 105
- Temporal approach, to lateral ventricular tumors, 52–55
- Tentorial meningiomas
- classifications, 187
 - clinical presentation, 188–189
 - definition, 187
 - preoperative evaluation, 189
 - surgical approaches to
 - combined occipital–suboccipital craniotomy, 194
 - complications of, 195
 - extended middle fossa approach, 189–192
 - petrosal approach, 192–194
 - T1 lesions, 189
 - T2 and T7 lesions, 192
 - T3–T6 lesions, 194
 - tumor resection, 194–195
- Third ventricle, 29, 35–36

- Third ventricular tumors, surgical approaches to, 33, 34
 choice of, 36–39
 endoscopic endonasal approach
 access to sphenoid sinus, 43
 patient positioning, 43
 reconstruction, 44
 sella and suprasellar compartments, opening, 43–44
 septectomy and sphenoidotomy, 43
 tumor removal, 44
 patient selection for, 36–39
 postoperative management, 44–45
 transforaminal and transchoroidal approaches
 closure, 41
 patient position and skin incision, 40–41
 tumor resection, 41
 translamina terminalis approach
 closure, 43
 craniotomy and dural opening, 42
 dissection to lamina terminalis, 42
 opening of lamina terminalis, 42–43
 patient positioning and skin incision, 41–42
 tumor removal, 43
 Tracheostomy, 284
 Transbasal approaches to skull base lesions
 cribriform plate osteotomy, 294
 expanded endonasal endoscopic approaches, 301
 extended, 297
 indications for, 293–294
 operating procedure, 296–297
 patient selection for, 293
 postoperative management, 301
 preoperative preparation, 293
 radical, 300–301
 subcranial, 297–300
 Transcallosal approach, to lateral ventricular tumors, 51–52
 Transcallosal–interhemispheric approach, 215
 Transcondylar approach, to clival neoplasms, 310–312
 Transcortical approach, to lateral ventricular tumors, 52
 Transcribriform approach, for ventral skull base lesions, 22–24
 extradural approach, 22
 intradural dissection, 22
 reconstruction for anterior cranial base modules, 22, 24
 Transdural ultrasonic navigation, 87
 Transforaminal and transchoroidal approaches
 closure, 41
 patient position and skin incision, 40–41
 tumor resection, 41
 Translabyrinthine approach, to vestibular schwannomas, 225–227
 Translamina terminalis approach, to third ventricular tumors
 closure, 43
 craniotomy and dural opening, 42
 dissection to lamina terminalis, 42
 opening of lamina terminalis, 42–43
 patient positioning and skin incision, 41–42
 tumor removal, 43
 Transmaxillary approaches to clivus, 271
 endoscopic approaches, 281–284
 labiomandibular glossotomy, 281
 lateral rhinotomy ± medial maxillectomy, 280
 LeFort I osteotomy, 280–281
 maxillotomy, 281
 Transsphenoidal (TS) approach to sella
 direct endonasal (EN) approach, 3
 closure technique, 7
 instrumentation, 5
 operative technique, 5–7
 patient positioning, 5
 tumor removal, 7
 endonasal transseptal approach, 3
 postoperative care, 8
 preoperative evaluation, 4–5
 sublabial (SL) approach, 3, 7–8
 Transtemporal approaches, to clival neoplasms, 309–310
 Transtuberculum/transplanum approach, 20–22
 Transverse processotomies, 95
 Transzygomatic module, 267
 Trigeminal schwannomas
 classification of, 241
 patient selection, 241–244
 postoperative management, 247–248
 preoperative preparation, 244–245
 surgical removal of, 245
 extradural frontotemporal temporopolar approach to, 245–246
 extradural subtemporal anterior transpetrosal approach, 246–247
 microneurosurgery, 247
 outcomes of, 247
 stereotactic radiosurgery, 247–248
 Tuberculum sellae meningiomas (TSMs), 206–207
 differential diagnosis for, 198
 operative procedure for
 choice of operative approach, 198
 endonasal endoscopic transsphenoidal approach, 203–205
 microscope vs. endoscope, 199
 supraorbital eyebrow craniotomy, 199–203
 patient selection, 197
 postoperative management, 205
 preoperative preparation, 198
 Tumor biopsy, 30–31
 Tumor removal, 43
 Tumor resection, 31, 125–127, 152–154
 Tumors in lateral ventricles, 32
- V**
- Vascular injury, 258
 Venous and capillary (low-pressure bleeding)
 hemostasis, 17
 Venous sinus and arterial (high-pressure bleeding)
 hemostasis, 17–18
 Venous sinus injury, 223
 Ventral skull base lesions, endoscopic endonasal approaches (EEA) to
 operative procedure
 extended approaches, 20–22
 general exposure, 16
 hemostatic techniques, 17–18
 intradural endoneurosurgical dissection techniques, 16–17
 sellar approaches, 18–20
 transcribriform approach, 22–24
 patient selection for, 15–16
 postoperative management, 24
 preoperative preparation, 16
 Vertebral body reconstruction (VBR) cage, 96
 Vestibular schwannomas
 middle cranial fossa approach to, 228–229
 retrosigmoid–transmeatal approach to, 227–228
 stereotactic radiosurgery of, 133
 symptoms and signs, 225
 translabyrinthine approach to, 225–227
- W**
- Wound infection, 285