## Clinical Indicators: Acoustic Neuroma Surgery

### Approach Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>CPT</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infratemporal post-auricular approach to middle cranial fossa</td>
<td>61591</td>
<td>90</td>
</tr>
<tr>
<td>Transtemporal approach to posterior cranial fossa</td>
<td>61595</td>
<td>90</td>
</tr>
<tr>
<td>Transcochlear approach to posterior cranial fossa</td>
<td>61596</td>
<td>90</td>
</tr>
<tr>
<td>Transpetrosal approach to posterior cranial fossa</td>
<td>61598</td>
<td>90</td>
</tr>
<tr>
<td>Craniectomy for cerebellopontine angle tumor</td>
<td>61520</td>
<td>90</td>
</tr>
<tr>
<td>Craniectomy, transtemporal for excision of cerebellopontine angle tumor</td>
<td>61526</td>
<td>90</td>
</tr>
<tr>
<td>Combined with middle/posterior fossa craniotomy/brain craniectomy</td>
<td>61530</td>
<td>90</td>
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</tbody>
</table>

### Definitive Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>CPT</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resection of neoplasm, petrous apex, intradural, including dural repair</td>
<td>61606</td>
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</tr>
<tr>
<td>Resection of neoplasm, posterior cranial fossa, intradural, including dural repair</td>
<td>61616</td>
<td>90</td>
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<tr>
<td>Microdissection, intracranial</td>
<td>61712</td>
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</tr>
<tr>
<td>Stereotactic radiosurgery</td>
<td>61793</td>
<td>90</td>
</tr>
<tr>
<td>Decompression internal auditory canal</td>
<td>69960</td>
<td>90</td>
</tr>
<tr>
<td>Removal of tumor, temporal bone middle fossa approach</td>
<td>69970</td>
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</tbody>
</table>

### Repair Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>CPT</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary repair of dura for CSF leak, posterior fossa, by free tissue graft</td>
<td>61618</td>
<td>90</td>
</tr>
<tr>
<td>Secondary repair of dura for CSF leak, by local or regional flap or myocutaneous flap</td>
<td>61619</td>
<td>90</td>
</tr>
<tr>
<td>Decompression facial nerve, intratemporal; lateral to geniculate ganglion</td>
<td>69720</td>
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</tr>
<tr>
<td>Total facial nerve decompression and/or repair (may include graft)</td>
<td>69955</td>
<td>90</td>
</tr>
<tr>
<td>Abdominal fat graft</td>
<td>20926</td>
<td>90</td>
</tr>
<tr>
<td>Fascia lata graft; by stripper</td>
<td>20920</td>
<td>90</td>
</tr>
<tr>
<td>Fascia lata graft; by incision and area exposure, complex or sheet</td>
<td>20922</td>
<td>90</td>
</tr>
</tbody>
</table>

### Intraoperative Nerve Monitoring Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Auditory nerve monitoring, setup</td>
<td>92585</td>
<td>90</td>
</tr>
</tbody>
</table>

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1 RBRVS Global Days
Indications

1. History
   a) Auditory complaints
      • hearing loss
      • fullness
      • distorted sound perception
   b) Tinnitus
      • ringing
      • humming
      • hissing
      • crickets
   c) Disequilibrium
      • unsteadiness
      • dizziness
      • imbalance
      • vertigo
   d) Headache
   e) Fifth and seventh cranial nerve symptoms
      • facial pain
      • facial tingling, numbness
      • tics
      • weakness
   f) Family history of neurofibromatosis type II
   g) Diplopia
   h) Dysarthria, dysphasia, aspiration, hoarseness

2. Physical Examination
   a) Complete head and neck examination
   b) Cranial nerve examination, in particular:
      • tuning fork lateralization
      • nystagmus
      • facial hypesthesia
      • ear canal hypesthesia
      • corneal reflex
      • facial nerve function
      • extraocular movements
      • papilledema
   c) Cerebellar examination
      • Romberg
• gait
• tandem gait

3. Preoperative Tests

a) Imaging (one is required demonstrating tumor)
   • MRI with gadolinium
   • CT scan, contrast-enhanced

b) Audiologic
   • audiogram (pure-tone and speech discrimination)
   • ABR (auditory brainstem response)

c) Vestibular
   • ENG (electronystagmography)

d) Facial Nerve
   • EEMG (evoked electromyography)

Postoperative Observations

a) Neurological and/or mental status changes suggestive of cerebral edema.

b) Cerebrospinal fluid leaks—pressure dressings, bed rest, elevated head-of-bed, lumbar catheter (monitor output).

c) Hematoma (cerebellopontine angle, epidural)—drainage, pressure dressings, neurological checks.

d) Headache, nuchal rigidity, or fever—suggestive of meningitis.

e) Tuning fork test to evaluate hearing.

f) Facial paresis—protect cornea.

g) Monitor intake and output to detect inappropriate antidiuretic hormone syndrome.

h) Bleeding at wound sites—reinforce dressings.

Outcome Review

1. One Week

a) dizziness and unsteadiness

b) hearing level—audiogram when able

c) facial function—House-Brackmann Grade

d) wound healing

e) donor site, if appropriate

2. Beyond One Month

a) headache
b) hearing level—audiometric documentation

c) facial function—House-Brackmann Grade

d) MRI for residual tumor

e) Follow up MRI after subtotal resection, as indicated

**Associated ICD-9 Diagnostic Codes** (Representative, but not all inclusive codes)

225.1 Benign neoplasm of cranial nerve
237.72 Neurofibromatosis, type 2
379.50 Nystagmus, unspecified
386 Vertiginous syndrome and other disorders of the vestibular system
386.10 Other unspecified peripheral vertigo
388.31 Subjective tinnitus
388.41 Diplacusis
388.42 Hypercusis
388.43 Impairment of auditory discrimination
388.44 Recruitment
388.7 Otalgia
389.12 Neural hearing loss
350.1 Trigeminal neuralgia
351.0 Facial paresis/paralysis
368.2 Diplopia
780.4 Dizziness and giddiness
781.3 Lack of coordination
784.0 Headache
784.49 Hoarseness
784.5 Dysarthria, dysphasia
787.2 Dysphagia

**Additional Information**

Co-Surgeon -- Neurosurgeon as needed
Assistant Surgeon -- Varies by procedure
Supply Charges -- N
Anesthesia Code(s)--00120, 00210
Acoustic neuroma is a benign tumor involving the hearing and balance nerve at the base of the brain. Its incidence is about 1 per 100,000 people per year. Acoustic neuromas do not spread throughout the body, but can cause significant disability, even death, by local growth into nearby important brain structures.

Early symptoms of an acoustic neuroma include hearing loss, distorted sound perception, tinnitus, dizziness, and disequilibrium. Later symptoms include headache, unsteadiness, facial pain, tingling, or numbness, facial tics or weakness, double vision, and difficulty in swallowing or talking. There are a number of tests that can be utilized to diagnose acoustic neuromas, the utility of which should be based upon a complete history and physical by an experienced physician. The definitive diagnostic test is an MRI with gadolinium enhancement. However, this is a very expensive examination that should not be used as a screening test, bypassing appropriate clinical evaluation, hearing, and balance testing.

Treatment options include observation with serial MRIs, partial or total surgical removal, and radiation therapy. The treatment depends upon the patient's symptoms, hearing level, health status, age, and the growth rate of the tumor.

Surgery is the treatment of choice for the majority of acoustic neuromas requiring intervention. There are three basic approaches: (1) through the temple, (2) through the ear, and (3) through the back of the head. The approach used depends upon the size and location of the tumor, the status of the preoperative hearing, and the experience and preference of the surgeon. The optimal treatment goal is removal of the tumor while maintaining existing hearing and facial function. In many cases, hearing in the affected ear cannot be preserved. Since acoustic neuromas are usually slow growing, partial tumor removal may be elected by the surgeon to reduce surgical time and preserve facial function. For those patients unable or unwilling to undergo surgery, radiation therapy or observation with yearly MRI scans may be alternatives.

Possible complications that may require further medical and/or surgical rehabilitation include: hearing loss, dizziness, facial weakness or paralysis, prolonged headaches, fluid leak from around the brain, and tumor recurrence.

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