## Scenario 1

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| **Patient History:** | 39 year old Mexican male with six month history of right-sided headaches and dizziness. Headaches are worse in the morning and early afternoons. A mild change in the patient’s vision has occurred. He reports “seeing stars”. He explains that he has been experiencing “dizzy spells”. When dizziness does occur he does get double vision. His family history is positive for cancer but site/types are unknown. |
| **Physical Exam:** | The patient is not in any acute distress. He is alert and oriented. He answers questions appropriately, and affect is appropriate. Sensation is intact in bilateral upper and bilateral lower extremities. |
| **Pre-Op Imaging:** | CT BRAIN FINDINGS: There is an 8.5 x 6 cm poorly defined, heterogeneous, lobulated focus of hypoattenuation involving the right frontal, parietal, and temporal lobes with extension into the basal ganglia. This produces 1.1 cm of midline shift. There is local mass effect with effacement of the cortical sulci and effacement of the third and fourth ventricles. There is effacement of the right lateral ventricle. Findings are consistent with a large area of edema. I suspect there may be an underlying mass. Further evaluation with MRI of the brain with contrast is recommended. No intracranial hemorrhage is identified. Cerebellum and brain stem appear intact. The mass does extend into the region of the right cerebellopontine angle. The mass effect does extend into the area of the right cerebellopontine angle. Basilar system is adequately maintained. Bone windows demonstrate no fracture or depression. There are no pathologic intracranial calcifications. Visualized portions of the paranasal sinuses and mastoid air cells are clear.IMPRESSION:1. LARGE 6 X 8.5 CM AREA OF ILL-DEFINED EDEMA INVOLVING THE RIGHT FRONTOPARIETAL AND TEMPORAL LOBES WITH EXTENSION TO THE RIGHT BASAL GANGLIA AND RIGHT CEREBELLOPONTINE ANGLE. FINDINGS ARE CONSISTENTWITH A LARGE AREA OF EDEMA. I SUSPECT THERE IS AN UNDERLYING MASS.2. 1.1 CM MIDLINE SHIFT WITH EFFACEMENT OF THE RIGHT LATERAL VENTRICLE, THIRD AND FOURTH VENTRICLES.3. RECOMMEND FURTHER EVALUATION WITH MRI OF THE BRAIN WITH CONTRAST.MR BRAIN/BRAIN STEM W/O CONTRAST FINDINGS: There is a large amount of mass affect involving the right frontal, parietal and temporal lobes. Overall area of mass affect measures roughly 11.0 x 7.4 x 6.4 cm and causes approximately 10 mm of right to left shift. No ventricular enlargement is identified. Diffusion-weighted imaging shows no significant restricted diffusion. Post-contrast imaging shows minimal enhancement. Findings most likely represent a large low grade glioma or astrocytoma. No evidence of acute stroke is seen. There is mass affect on the pons secondary to the mass. There is no evidence of impending herniation. No other lesions are identified. Other than mass affect, left side of the brain and cerebellar hemispheres are within normal limits. There is no evidence of thrombosis of the right MCA artery. Visualized portions of the skull base are within normal limits.IMPRESSION: THERE IS A LARGE MASS INVOLVING THE RIGHT TEMPORAL LOBE, BUT ALSO EXTENDING INTO THE FRONTAL AND PARIETAL LOBES WITH INVOLVEMENT OF THE RIGHT BASAL GANGLIA. THE MASS SHOWS MINIMAL TO NO ENHANCEMENT AND THERE IS NO EVIDENCE OF ACUTE STROKE. THIS MOST LIKELY REPRESENTS POORLY ENHANCING GLIOMA OR ASTROCYTOMA. THE MASS MEASURES 11.0 X 7.4 X 6.4 CM AND CAUSES 10 MM OF LEFT TO RIGHT SHIFT WITH MASS AFFECT BOTH UPON THE MIDLINE AND INFERIORLY UPON THE PONS. NO VENTRICULAR ENLARGEMENT IS SEEN. THERE IS NO EVIDENCE OF IMPENDING HERNIATION AT THIS TIME. NO EVIDENCE OF ACUTE STROKE IS SEEN. METASTATIC DISEASE IS FELT TO BE UNLIKELY. |
| **Surgery:** | Right temporal craniotomy and temporal lobectomy and partial resection of astrocytoma |
| **Operative Report:** | He was brought to the operating room and anesthetized under general endotracheal tube anesthesia. Head was placed in Mayfield head holder at 80 pounds of pressure. His head was turned 45 degrees to the right with the vertex extended slightly extended and locked to the Mayfield head holder. The MRI Stealth stereotactic fiducials were registered and the preoperative plan was utilized to mark a question mark shaped skin incision in the right temporal region from the root of zygoma posterior to the pinna. Hair was clipped with the operating room clippers. He was prepped and draped in the usual sterile fashion. Incision was anesthetized with 0.5% Marcaine with epinephrine. Incision was made with a 10-blade, and hemostasis was obtained with Bovie and bipolar cautery. Raney clips were placed on the scalp. The temporalis muscle fascia was incised using the Bovie in a straight line from the root of zygoma up and was reflected using the Bovie anteriorly and posteriorly using fish hooks with a scalp roll behind the scalp to a Leyla bar. Once he had appropriate exposure, we marked the bone opening comparing it with the preoperative plan on the MRI Stealth stereotaxis. The Stryker 14 mm bur hole was used to create a bur hole at the keyhole in the temporal fossae anterior and posterior. The bur holes were waxed with bone wax and The skin was closed with staples and dressed with bacitracin. Telfa was stapled over the incision. The patient was taken out of the Mayfield head holder.  |
| **Pathology:** | Final Diagnosis: ANAPLASTIC ASTROCYTOMA (WHO GR 3) predominantly fibrillary type. No Co-deletion of 1p & 19q. Results are consistent with an aneuploidy tumor karyotype or additional copies of chromosomes 1 & 19. Similar results have been observed in glioma specimens. Ki-67 is 7%. |
| **Post-Op Imaging:** | CT BRAIN NON CONTRAST FINDINGS: There are postoperative changes of right craniotomy involving the right frontoparietal temporal region. Small amount of acute subarachnoid and extraaxial (likely subdural) hemorrhage is demonstrated deep to the craniotomy site within the right temporal region. There is a persistent large area of decreased attenuation throughout the right temporal region with involvement of the right parietal and posterior frontal region with associated mass effect and swelling, as well as effacement of the sulci in this location. There is moderate right to left midline shift which appears improved since 10/3/2013. No hydrocephalus is demonstrated. A small amount of pneumocephalus is demonstrated along the right lateral temporal region.IMPRESSION:1. POSTOPERATIVE CHANGES OF RIGHT CRANIOTOMY WITH NEW SMALL AMOUNT OF EXTRAAXIAL (LIKELY SUBDURAL) ACUTE HEMORRHAGE AND SMALL AMOUNT OF ACUTE SUBARACHNOID HEMORRHAGE ALONG THE RIGHT TEMPORAL REGION.2. PERSISTENT LARGE AREA OF DECREASED ATTENUATION CENTERED THROUGHOUT THE RIGHT TEMPORAL LOBE, RIGHT POSTERIOR FRONTAL REGION, AND RIGHT PARIETAL REGION CONCERNING FOR LOWER GRADE GLIAL TUMOR, SUCH AS ASTROCYTOMA. CORRELATION WITH RECENT SURGERY IS RECOMMENDED. THERE IS PERSISTENT MODERATE TO LARGE AMOUNT OF MASS EFFECT AND EDEMA ON THE RIGHT WITH MODERATE RIGHT TO LEFT MIDLINE SHIFT, WHICH APPEARS IMPROVED SINCE THE LAST CT.MR BRAIN/BRAIN STEM WITH AND WO CON FINDINGS: Postoperative changes of right craniotomy and tumor resection predominantly involving the right temporal region are again noted. There is stable smooth enhancement deep to the craniotomy site along the right temporal region. Prominent CSF signal within the right anterior temporal region is again noted. No definite intraparenchymal enhancement is demonstrated. There is prominent abnormal increase in T2-weighted and FLAIR-weighted signal throughout the deep right frontal and right temporal region. Mass affect is significantly improved since the prior cranial MRI and CT scan. Minimal right to left midline shift is improved. The previously noted acute intracranial hemorrhage appears resolved. The posterior fossa, visualized vascular flow voids, sellar/parasellar region, pineal region and orbits appear unremarkable. There is mild to moderate bilateral mucosal wall thickening and opacification involving the maxillary sinuses, greater on the right, ethmoid sinuses bilaterally and sphenoid sinuses bilaterally. Nonspecific mild to moderate right mastoid air cell opacification is present.IMPRESSION: SIGNIFICANT IMPROVEMENT IN MASS AFFECT AND RIGHT TO LEFT MIDLINE SHIFT FOLLOWING RIGHT TEMPORAL LOBE TUMOR RESECTION WITH ASSOCIATED ENCEPHALOMALACIC CHANGE. THERE IS A PERSISTENT LARGEAMOUNT OF SIGNAL ABNORMALITY EXTENDING THROUGHOUT THE RESIDUAL RIGHT TEMPORAL LOBE MORE POSTERIORLY AND RIGHT FRONTAL LOBE, WHICH IS CONCERNING FOR RESIDUAL LOW GRADE NEOPLASM, SUCH AS LOW GRADE GLIAL TUMOR. |
| **Radiation:** | The patient was treated with postoperative external beam radiotherapy to the postoperative bed and residual tumor with concurrent TEMODAR.DATES OF RADIOTHERAPY: 11/6/2013 through 12/26/2013.TECHNICAL FACTORS: Radiotherapy was planned using CT simulation with his head immobilized in an Aquaplast mask. The pre and postoperative T1 and T2 weighted imaging MRI to help identify the target volume. Treatment delivered with volumetric modulated arc therapy technique using four 150 degree arcs to treat with 10 MV photons. His target was in close proximity of the optic nerves and chiasm requiring intensity modulated technique. Radiation delivered 180 cGy daily for 25 fractions to 4,500 cGy prescribed to the 100% isodose line to the T2 weighted imaging +2 cm. Treatment boost to the T1 +1.5 pulling off of the optic nerve and chiasm. For the boost portion of this treatment, also used was the volumetric modulated arc therapy with four 150 degree arcs using 6 MV photons at 180 cGy daily. This was boosted to equal 5,940 cGy total. Special consideration was given to sparing his brainstem, normal brain parenchyma, optic nerves, eyes, lenses and chiasm, as well as sellar fossa.RADIATION SUMMARY: Patient tolerated radiotherapy well. He developed no acute toxicity, remained without headache, seizure, focal weakness, numbness, difficulty with speech, swallowing, balance or cognition throughout treatment. He did have injected sclera of the right eye postoperatively and this did not resolve during treatment. He occasionally felt pressure behind the right eye, but had no frank eye pain and no change in vision during his treatment.  |
| **Chemotherapy** | Concurrent chemoradiation with radiosensitizing Temozolomide 11/6/2013 through 12/26/2013 followed by 28 cycles of High-dose Temozolomide 1/30/2014-7/5/2014 |

## Scenario 1

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| * **What is the primary site?**

BRAIN TEMPORAL LOBE [C71.2]* **What is the histology?**

ASTROCYTOMA ANAPLASTIC, FIBRILLIARY TYPE [9420/3] (per rule H6) | * **What is the grade/differentiation?**

UNDIFFERENTIATED [4] |
| **Stage/ Prognostic Factors** |
| CS Tumor Size | 110 | CS SSF 9 | 988 |
| CS Extension | 150 | CS SSF 10 | 988 |
| CS Tumor Size/Ext Eval | 9 | CS SSF 11 | 988 |
| CS Lymph Nodes  | 988 | CS SSF 12 | 988 |
| CS Lymph Nodes Eval | 9 | CS SSF 13 | 988 |
| Regional Nodes Positive | 99 | CS SSF 14 | 988 |
| Regional Nodes Examined | 99 | CS SSF 15 | 988 |
| CS Mets at Dx | 00 | CS SSF 16 | 988 |
| CS Mets Eval | 9 | CS SSF 17 | 988 |
| CS SSF 1 | 030 | CS SSF 18 | 988 |
| CS SSF 2 | 007 | CS SSF 19 | 988 |
| CS SSF 3 | 999 | CS SSF 20 | 988 |
| CS SSF 4 | 999 | CS SSF 21 | 988 |
| CS SSF 5 | 020 | CS SSF 22 | 988 |
| CS SSF 6 | 020 | CS SSF 23 | 988 |
| CS SSF 7 | 055 | CS SSF 24 | 988 |
| CS SSF 8 | 001 | CS SSF 25 | 988 |
| **Treatment** |
| Diagnostic Staging Procedure | 00 |  |  |
| **Surgery Codes** |  | **Radiation Codes** |  |
| Surgical Procedure of Primary Site | 55 | Radiation Treatment Volume | 04 |
| Scope of Regional Lymph Node Surgery | 9 | Regional Treatment Modality | 24 |
| Surgical Procedure/ Other Site | 0 | Regional Dose | 04500 |
| **Systemic Therapy Codes** |  | Boost Treatment Modality | 24 |
| Chemotherapy | 02 | Boost Dose | 01440 |
| Hormone Therapy | 00 | Number of Treatments to Volume | 033 |
| Immunotherapy | 00 | Reason No Radiation | 0 |
| Hematologic Transplant/Endocrine Procedure | 00 | Radiation/Surgery Sequence | 3 |
| Systemic/Surgery Sequence | 3 |  |  |

## Scenario 2

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| **Patient History:** | 49 year old Caucasian male with Osgood-Slaughter disease who presenting to the ED with an18 month history of numbness & weakness in his knees which seems to spread to his legs. This is causing significant back pain. Patient has become unstable when walking. Right leg has lost stability more so than left.  |
| **Physical Exam:** | The patient demonstrated rather progressive neurologic deficits. |
| **Pre-Op Imaging:** | OUTSIDE HOSPITAL MRI IMPRESSION:LARGE INTRINSIC INTRAMEDULLARY SPINAL CORD LESION FROM C7 THROUGH T7, INTRAMEDULLARY IN NATURE. |
| **Surgery:** | OPERATION:1. C7 to T7 decompressive laminectomy for intradural intramedullary spinal cord tumor with gross total resection of spinal cord tumor between C7 and T7.2. Posterolateral fusion C7, T1, T2, T3, T4, T5, T6, T7, with bilateral pedicle screws from the Medtronic Vertex Select System.3. Posterolateral fusion C7 through T7, morcellized autograft and allograft. |
| **Operative Report:** | DESCRIPTION OF PROCEDURE: The patient was brought to the operating theater and underwent general endotracheal anesthesia without complications. He had Venodyne's, TED hose, as well as Foley catheter and an arterial line placed. He maintained his MAPs above 80 the entire time, from intubation through the end of the procedure. A pre-baseline "flips" was obtained with neuromonitoring. The patient's head was then placed in the Mayfield head holder device, and he was flipped prone onto the Jackson table, at which point he was fixed to the table in neutral position. Another set of neuromonitoring "flips" was obtained, and were noted to be stable. We then used lateral fluoroscopy and spinal needle to pick our entry point to the C7 through T7 levels. This was marked in the midline, and the area then prepped and draped in the usual sterile surgical fashion. A time out was completed per protocol. The patient received antibiotics within one hour of incision.The incision was infiltrated with Marcaine with epinephrine, and taken down sharply with the scalpel blade. Using the monopolar this was then taken in the midline through the fascia to the spinous processes of C7 through T7. We then dissected in a subperiosteal plane out to the transverse processes of C7 through T7. Deep retractors were placed to maintain our exposure. We confirmed all of these on lateral fluoroscopy. 3-D Stealth Navigation clamp was attached to the spinous process of T7, and we completed a 3-D Stealth Navigation spin. Using 3-D Stealth Navigation we then placed bilateral pedicle screws into C7, T1, T2, T3, T4, T5, T6 and T7. The holes were tapped and screws were placed from the Medtronic Vertex Select System. We completed a 3-D Stealth Navigation spin and had to modify some of our screws for more medial trajectories on the right side, but a final spin intraoperatively demonstrated good placement of the hardware.At this point using the burr tip on the drill bit and Kerrison punches and Leksell rongeur, we completed a C7, T1, T2, T3, T4, T5, T6, T7 decompressive laminectomy. The bone was passed off the field for the posterolateral fusion. At this point we were able to bring the ultrasound to the field to identify the enlargement of the spinal cord within the dura between these levels, to confirm that we were over the right areas of the spinal cord. The microscope was then brought into the field to assist with microscopic dissection and maintain illumination and magnification.The dura was then opened with an 11 blade, and using Potts scissors opened completely from C7 to T7. 4-0 Nurolon suture dural stitches were placed, and held the dural leaflets out of the way. The cord appeared to be quite enlarged and abnormal between C7 and T6, and tapering down between T6 and T7. At this point we were able to identify the spinal cord had rotated toward the left side. We identified the midline based on the equal distance between the two lateral posterior nerve roots. We made a small myelotomy at T5 with the bipolar and knife and we continued with careful microscopic dissection until we were able to identify grayish appearing tumor, which appeared separate from the normal spinal cord tissue. Small biopsy forceps were utilized to take a small biopsy and send to pathology, which came back consistent with low grade glioma. At this point we continued with the myelotomy all the way between C7 and T7. We used very careful microsurgical technique, and microscopic technique with the Rhoton disc dissectors, and spatula and suction and bipolar, until we resected between C7 and T7 circumferentially and obtained a gross total resection of the mass. We lost our SSEPs and motors during the middle of the case, but maintained his MAPs above 90, and gave him an additional dose of steroids during the procedure. We obtained hemostasis with small pledgets of Surgicel and Gelfoam. Once the tissue appeared to be dry we closed the spinal cord myelotomy site with several interrupted 5-0 Prolene sutures in an interrupted fashion. The dura was then closed with a running Nurolon stitch in a water-tight manner. A small area of Gelfoam was laid over the dorsal aspect of the spinal cord.At this point we placed two rods in the heads of the screws between C7 and T7, and secured them down with cap screws, which were tightened per the manufacturer's setting. We decorticated the bone bilaterally between C7 and T7 with the burr tip on the drill bit, and laid down morcellized autograft and allograft for the posterolateral fusion. A drain was left in the subfascial space, and the wound then closed in multiple layers using Vicryl sutures for the deep layers, and a running nylon stitch for skin. |
| **Pathology:** | Final Diagnosis: Spinal Cord Mass, low grade glial neoplasm, favor Pilocytic Astrocytoma (WHO GRADE 1), Ki-67 2%. |
| **Post-Op Imaging:** | MR SPINE THORACIC WITH AND WO CONTR COMPARISON: Preoperative exam study showed extensive enlargement of the cord in the lower cervical and upper thoracic region, with focal areas of enhancement along the inferior aspect of the cord and expansion.Since the prior study, there has been posterior spinal fusion from C7 through T7. There is normal alignment. There is no subluxation. The marrow signal is within normal limits. The cord is difficult to visualize due to the motion artifact and hardware artifact. There still appears to be some expansion of the cord, particularly from the T1 level through the T6 level. The degree of expansion appears less, as there is now CSF seen along the ventral aspect of the cord, projecting on the sagittal images. No definite enhancement is demonstrated, but sensitivity is felt to be diminished due to the artifact from the hardware and the motion. The thoracic cord below T7 appears normal. Paraspinal tissues are within normal limits, given the postoperative state.IMPRESSION:1. SINCE THE PRIOR STUDY, THERE HAS BEEN SURGERY WITH POSTERIOR FUSION FROM C7 THROUGH T7.2. THE EXAM IS LIMITED BY FAST PROTOCOL SEQUENCING AND ARTIFACT FROM THE SURGICAL HARDWARE.3. THE CORD FROM T1 THROUGH T7 STILL APPEARS TO BE SOMEWHAT ENLARGED, BUT THE DEGREE OF EXPANSION IS LESS THAN ON THE PRIOR STUDY. CSF IS NOW NOTED ALONG THE VENTRAL ASPECT. NO DEFINITE ENHANCEMENT IS IDENTIFIED, BUT SENSITIVITY FOR RESIDUAL NEOPLASM IS DIMINISHED FAIRLY SIGNIFICANTLY DUE TO THE FAST PROTOCOL AND THE ARTIFACT FROM HARDWARE.4. THE CORD BELOW DIFFUSION FROM T8 INFERIORLY APPEARS NORMAL.XR THORACIC SPINE AP AND LAT FINDINGS: Since last imaging, fusion rods and screws in the upper to mid thoracic spine remain well seated and intact. No fracture has developed. There is no bony lesion or erosion.IMPRESSION: UNCOMPLICATED AND UNCHANGED APPEARING FUSION FROM C7 THROUGH THE MID THORACIC SPINE.XR THORACIC SPINE AP AND LAT FINDINGS: There are stable postoperative changes of upper thoracic rod and pedicle screw fusion hardware with apparent anatomic alignment. Mild compression fractures involving the T12 and L1 vertebrae appear similar to the prior study. There is stable mild degenerative spondylosis with marginal osteophyte formation involving the lower thoracic spine.IMPRESSION:1. NO SIGNIFICANT INTERVAL CHANGE IN APPARENT CHRONIC MILD COMPRESSION FRACTURES INVOLVING THE T12 AND L1 VERTEBRAL BODIES WITH ASSOCIATED MILD KYPHOSIS.2. STABLE POSTOPERATIVE CHANGES OF UPPER THORACIC FUSION. |
| **Radiation:** | No Radiation Delivered  |
| **Chemotherapy** | No Chemotherapy Delivered |

## Scenario 2

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| * **What is the primary site?**

SPINAL CORD [C72.0]* **What is the histology?**

PILOCYTIC ASTROCYTOMA [9421/3] | * **What is the grade/differentiation?**

UNKNOWN [9] |
| **Stage/ Prognostic Factors** |
| CS Tumor Size | 999 (The answer on the recording is incorrect) | CS SSF 9 | 988 |
| CS Extension | 100 (The answer on the recording is incorrect) | CS SSF 10 | 988 |
| CS Tumor Size/Ext Eval | 9 | CS SSF 11 | 988 |
| CS Lymph Nodes  | 988 | CS SSF 12 | 988 |
| CS Lymph Nodes Eval | 9 | CS SSF 13 | 988 |
| Regional Nodes Positive | 99 | CS SSF 14 | 988 |
| Regional Nodes Examined | 99 | CS SSF 15 | 988 |
| CS Mets at Dx | 00 | CS SSF 16 | 988 |
| CS Mets Eval | 9 | CS SSF 17 | 988 |
| CS SSF 1 | 010 | CS SSF 18 | 988 |
| CS SSF 2 | 002 | CS SSF 19 | 988 |
| CS SSF 3 | 999 | CS SSF 20 | 988 |
| CS SSF 4 | 999 | CS SSF 21 | 988 |
| CS SSF 5 | 999 (The answer on the recording is incorrect) | CS SSF 22 | 988 |
| CS SSF 6 | 999 (The answer on the recording is incorrect) | CS SSF 23 | 988 |
| CS SSF 7 | 022 | CS SSF 24 | 988 |
| CS SSF 8 | 001 | CS SSF 25 | 988 |
| **Treatment** |
| Diagnostic Staging Procedure | 00 |  |  |
| **Surgery Codes** |  | **Radiation Codes** |  |
| Surgical Procedure of Primary Site | 22 | Radiation Treatment Volume | 00 |
| Scope of Regional Lymph Node Surgery | 9 | Regional Treatment Modality | 00 |
| Surgical Procedure/ Other Site | 0 | Regional Dose | 00000 |
| **Systemic Therapy Codes** |  | Boost Treatment Modality | 00 |
| Chemotherapy | 00 | Boost Dose | 00000 |
| Hormone Therapy | 00 | Number of Treatments to Volume | 000 |
| Immunotherapy | 00 | Reason No Radiation | 0 |
| Hematologic Transplant/Endocrine Procedure | 00 | Radiation/Surgery Sequence | 0 |
| Systemic/Surgery Sequence | 0 |  |  |

### Scenario 3

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| **Patient History:** | 79 year old white female with mild dementia who was in a car accident in 1999, and developed partial paraplegia as a result. She now requires The use of a wheelchair. Six months ago she noted increased weakness and more difficulty with standing and transfers. She also began to notice nausea, vomiting, decreased p.o. intake, and mild headaches.  |
| **Physical Exam:** | The patient has difficulty with ambulation as well as worsening cognitive function. She has problems with memory but is able to converse normally. Normal Karnofsky performance status: 60%- Requires occasional assistance but is able to take care of most personal needs. |
| **Pre-Op Imaging:** | CT HEAD IMPRESSION: LARGE HYPERDENSE LEFT CEREBELLAR MASS 5.1CM POSSIBLY REPRESENTING A MENINGIOMA AT THE CEREBELLOPONTINE ANGLE.MRI BRAIN IMPRESSION: LARGE POSTERIOR FOSSA MASS HAS IMAGING CHARACTERISTICS HIGHLY SUGGESTIVE OF MENINGIOMA. 5.2CM MRI BRAIN IMPRESSION: LEFT SIDED POSTERIOR FOSSA EXTRAAXIAL, 5.1CM SUSPICIOUS FOR MENINGIOMA W/ POSSIBLE INVASION OF LEFT TRANSVERSE SINUS AND LEFT SIDE OF TENTORIUM.  |
| **Surgery:** | Surgery completed at outside institution: Left subtotal resection |
| **Operative Report:** | Surgery completed at outside institution: Operative report not available. |
| **Pathology:** | Final Diagnosis: WHO grade 1 meningioma of the left posterior fossa (leptomeninges) with a positive margin at the venous sinus. Ki-67 1%. |
| **Post-Op Imaging:** | MRI BRAIN IMPRESSION: RESIDUAL 3.5 x 1.8 x 2.6 CM ENHANCING MASS SEEN ALONG LATERAL TRANSVERSE SINUS AND JUNCTION OF SIGMOID SINUS AND TENTORIUM AS WELL AS POSSIBLE ADJACENT BONE INVASION.MRI BRAIN IMPRESSION: Subgaleal fluid measuring 3.7 x 1.1 cm, which is stable as well as adjacent 3.2 cm surgical cavity site with residual gliosis. On the lateral aspect of the left posterior fossa adjacent to the postsurgical site, there is a 2.7 x 1.9 x 3.1 lateral mass extending from the lateral tentorium to the left infratemporal lobe region. This has slightly increased in size from the MRI of 4/30/14, at which point it measured 2.7 x 1.8 x 3.5 cm. No new enhancing lesions were noted.MR BRAIN/BRAIN STEM WITH AND WO CONFINDINGS: There is mild apparent increase in size of a lobulated enhancing extraaxial lesion along the lateral aspect of the left tentorium deep to the left occipitoparietal craniotomy site. This area of enhancement measures 3.1 cm in anterior posterior dimension x 2.0 cm in transverse dimension x 3.1 cm in superior dimension (previous 2.9 cm x 1.8 cm x 3.0 cm). There is new indistinct and somewhat serpiginous enhancement extending superior to this extraaxial mass within the left posterior inferior temporal region. While this enhancement may be related to meningeal enhancement along the sulci, developing parenchymal enhancement such as may be seen with more aggressive atypical meningioma (reported history of meningioma) is possible. There is additional increase in mildly thickened enhancement extending throughout the left tentorium and dura along the inferior left temporal and lateral left posterior fossa region. There are stable postoperative changes of tumor resection involving the left posterior fossa with partial resection of the left lateral aspect of the left cerebellar hemisphere and prominence of the CSF space along the left posterior fossa. There is no other evidence of abnormal enhancement. No acute intracranial hemorrhage or abnormal restricted diffusion is demonstrated. There is stable mild diffuse prominence of the cerebral and cerebellar sulci with stable mild prominence of the lateral and third ventricles. Moderate deep, periventricular and subcortical cerebral white matter signal abnormality.IMPRESSION:1. MINIMAL APPARENT INCREASE IN SIZE OF LOBULATED EXTRAAXIAL ENHANCING MASS INVOLVING THE LEFT LATERAL ASPECT OF THE LEFT POSTERIOR FOSSA, TENTORIUM AND INFERIOR LEFT TEMPORAL REGION. THE PATIENT HAS A REPORTED HISTORY OF MENINGIOMA IN THIS LOCATION. THERE IS NEW SERPIGINOUS ENHANCEMENT WITHIN AN APPROXIMATELY 15 MM DIAMETER AREA EXTENDING INTO THE LEFT INFERIOR TEMPORAL REGION. WHILE THIS MAY BE RELATED TO MENINGEAL ENHANCEMENT, DEVELOPING PARENCHYMAL ENHANCEMENT SUCH AS MAY BE SEEN WITH MORE AGGRESSIVE NEOPLASM OR ATYPICAL MENINGIOMA IS POSSIBLE.2. STABLE POSTOPERATIVE CHANGES.3. STABLE MILD DIFFUSE BRAIN VOLUME LOSS WITH MILD PROMINENCE OF THE LATERAL AND THIRD VENTRICLES.4. STABLE MILD TO MODERATE NONSPECIFIC WHITE MATTER SIGNAL ABNORMALITY WHICH IS MOST LIKELY RELATED TO CHRONIC SMALL VESSEL ISCHEMIC CHANGE.MR BRAIN/BRAIN STEM WITH AND W/O CONTRASTFINDINGS: A left occipital craniotomy and partial resection of the left lateral cerebellar hemisphere are unchanged, with focal fluid at that site. There is no enhancement in the adjacent cerebellum. A lobulated enhancing mass continues to involve the left side of the tentorium and left sigmoid sinus. There does not appear to be a significant change in size with the mass measuring 2.7 cm cranial caudally and up to 2.0 x 1.4 cm in its axial dimensions. No other intracranial masses or enhancing lesions are demonstrated. Mild cerebral volume loss is unchanged. Foci of chronic small vessel ischemic disease are again demonstrated in the cerebral white matter.IMPRESSION:1. NO SIGNIFICANT CHANGE IN LOBULATED ENHANCING MASS INVOLVING THE LEFT LATERAL ASPECT OF THE TENTORIUM AND LEFT SIGMOID SINUS. THIS INDICATES NO SIGNIFICANT TREATMENT RESPONSE.2. UNCHANGED ADJACENT LEFT OCCIPITAL CRANIOTOMY AND PARTIAL LEFT CEREBELLAR HEMISPHERE RESECTION.3. STABLE MILD CEREBRAL ATROPHY AND CHRONIC SMALL VESSEL ISCHEMIC DISEASE. |
| **Radiation:** | Patient had a residual 3.5 x 1.8 x 2.6-cm enhancing meningioma in the left lateral posterior fossa with persistent, stable, mild, diffuse, bilateral leptomeningeal enhancement by follow-up MRI. Patient elected to proceed with fractionated stereotactic radiotherapy to this large meningioma.DATES OF RADIOTHERAPY: 10/20/2014 - 10/23/2014TECHNICAL FACTORS: Radiotherapy was planned with CT simulation per stereotactic protocol, with the patient in the supine position with her head immobilized in an open-face Aquaplast mask so that vision RT could be used during treatment. Image fusion with Stealth MRI was used to help identify this target. The patient was treated with four arcs using volumetric-modulated arc therapy to treat the meningioma. Delivered treatment was 6-MV flattening filter-free photons to deliver 900 cGy daily for three fractions, to 2700 cGy prescribed to the 93% isodose line. Special consideration was given to sparing of normal brain stem, optic nerves, optic chiasm, eyes, and normal brain parenchyma. |
| **Chemotherapy** | No Chemotherapy Delivered |

## Scenario 3

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| * **What is the primary site?**

CRANIAL MENINGES [C70.0] * **What is the histology?**

MENINGIOMA NOS [9530/0] | * **What is the grade/differentiation?**

UNKNOWN [9] |
| **Stage/ Prognostic Factors** |
| CS Tumor Size | 052 | CS SSF 9 | 988 |
| CS Extension | 050 | CS SSF 10 | 988 |
| CS Tumor Size/Ext Eval | 9 | CS SSF 11 | 988 |
| CS Lymph Nodes  | 988 | CS SSF 12 | 988 |
| CS Lymph Nodes Eval | 9 | CS SSF 13 | 988 |
| Regional Nodes Positive | 99 | CS SSF 14 | 988 |
| Regional Nodes Examined | 99 | CS SSF 15 | 988 |
| CS Mets at Dx | 00 | CS SSF 16 | 988 |
| CS Mets Eval | 9 | CS SSF 17 | 988 |
| CS SSF 1 | 010 | CS SSF 18 | 988 |
| CS SSF 2 | 001 | CS SSF 19 | 988 |
| CS SSF 3 | 060 | CS SSF 20 | 988 |
| CS SSF 4 | 999 | CS SSF 21 | 988 |
| CS SSF 5 | 998 | CS SSF 22 | 988 |
| CS SSF 6 | 998 | CS SSF 23 | 988 |
| CS SSF 7 | 021 | CS SSF 24 | 988 |
| CS SSF 8 | 001 | CS SSF 25 | 988 |
| **Treatment** |
| Diagnostic Staging Procedure | 00 |  |  |
| **Surgery Codes** |  | **Radiation Codes** |  |
| Surgical Procedure of Primary Site | 21 | Radiation Treatment Volume | 04 |
| Scope of Regional Lymph Node Surgery | 9 | Regional Treatment Modality | 24 |
| Surgical Procedure/ Other Site | 0 | Regional Dose | 02700 |
| **Systemic Therapy Codes** |  | Boost Treatment Modality | 00 |
| Chemotherapy | 00 | Boost Dose | 00000 |
| Hormone Therapy | 00 | Number of Treatments to Volume | 003 |
| Immunotherapy | 00 | Reason No Radiation | 0 |
| Hematologic Transplant/Endocrine Procedure | 00 | Radiation/Surgery Sequence | 3 |
| Systemic/Surgery Sequence | 0 |  |  |