INTRODUCTION:

Computed tomography (CT) is performed for the evaluation of the cervical spine. CT may be used as the primary imaging modality or it may complement other modalities. Primary indications for CT include conditions, e.g., traumatic, neoplastic, and infectious. CT is often used to study the cervical spine for conditions such as degenerative disc disease when MRI is contraindicated. CT provides excellent depiction of bone detail and is used in the evaluation of known fractures of the cervical spine and for evaluation of postoperative patients.

INDICATIONS FOR CERVICAL SPINE CT:

For evaluation of known fracture:
- To assess union of a fracture when physical examination or plain radiographs suggest delayed or non-healing.
- To determine the position of fracture fragments.

For evaluation of neurologic deficits:
- With any of the following new neurological deficits: extremity weakness; abnormal reflexes; or abnormal sensory changes along a particular dermatome (nerve distribution) as documented on exam.

For evaluation of suspected myelopathy when MRI is contraindicated:
- Progressive symptoms including hand clumsiness, worsening handwriting, difficulty with grasping and holding objects, diffuse numbness in the hands, pins and needles sensation, increasing difficulty with balance and ambulation (unsteadiness, broad-based gait), increased muscle tone, weakness and wasting of the upper and lower limbs; diminished sensation to light touch, temperature, proprioception, vibration; bowel and bladder dysfunction in more severe cases.

For evaluation of chronic or degenerative changes, e.g., osteoarthritis, degenerative disc disease when Cervical Spine MRI is contraindicated:
- Failure of conservative treatment* for at least six (6) weeks within the last six (6) months.
- With progression or worsening of symptoms during the course of conservative treatment*.
- With an abnormal electromyography (EMG) or nerve conduction study if radicular symptoms are present.

For evaluation of new onset of neck pain when Cervical Spine MRI is contraindicated:
• Failure of conservative treatment*, for at least six (6) weeks.
• With progression or worsening of symptoms during the course of conservative treatment*.
• With an abnormal electromyography (EMG) or nerve conduction study if radicular symptoms are present.

**For evaluation of trauma or acute injury within past 72 hour:**
• Presents with radiculopathy, muscle weakness, abnormal reflexes, and/or sensory changes along a particular dermatome (nerve distribution).
• With progression or worsening of symptoms during the course of conservative treatment*.

**For evaluation of known tumor, cancer, or evidence of metastasis:**
• For staging of known tumor.
• For follow-up evaluation of patient undergoing active treatment.
• Presents with new signs (e.g., laboratory and/or imaging findings) of new tumor or change in tumor.
• Presents with radiculopathy, muscle weakness, abnormal reflexes, and/or sensory changes along a particular dermatome (nerve distribution).
• With an abnormal electromyography (EMG) or nerve conduction study if radicular symptoms are present.
• With evidence of metastasis on bone scan or previous imaging study.
• With no imaging/restaging within the past ten (10) months.

**For evaluation of suspected tumor:**
• Prior abnormal or indeterminate imaging that requires further clarification.

**Indication for combination studies for the initial pre-therapy staging of cancer, OR ongoing tumor/cancer surveillance OR evaluation of suspected metastases:**
• \( \leq 5 \) concurrent studies to include CT or MRI of any of the following areas as appropriate depending on the cancer: Neck, Abdomen, Pelvis, Chest, Brain, Cervical Spine, Thoracic Spine or Lumbar Spine.
  o Cancer surveillance excluding small cell lung cancer: Every six (6) months for the first two (2) years then annually thereafter.
  o Cancer surveillance – small cell lung cancer: Up to every 3 months for the first two years then annually thereafter.

**For evaluation of known or suspected infection, abscess, or inflammatory disease when Cervical Spine MRI is contraindicated:**
• As evidenced by signs/symptoms, laboratory or prior imaging findings.

**For evaluation of immune system suppression, e.g., HIV, chemotherapy, leukemia, lymphoma when Cervical Spine MRI is contraindicated:**
• As evidenced by signs/symptoms, laboratory or prior imaging findings.
• For post-operative / procedural evaluation: A follow-up study may be needed to help evaluate a patient’s progress after treatment, procedure, intervention or surgery.
Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.

- Changing neurologic status post-operatively.
- With an abnormal electromyography (EMG) or nerve conduction study if radicular symptoms are present.
- Surgical infection as evidence by signs/symptoms, laboratory or prior imaging findings.
- Delayed or non-healing as evidence by signs/symptoms, laboratory or prior imaging findings.
- Continuing or recurring symptoms of any of the following neurological deficits: Lower extremity weakness, lower extremity asymmetric reflexes.

For post-operative / procedural evaluation for surgery or fracture occurring within the past six (6) months:

- A follow-up study may be needed to help evaluate a patient’s progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.
- Changing neurologic status post-operatively.
- With an abnormal electromyography (EMG) or nerve conduction study if radicular symptoms are present.
- Surgical infection as evidence by signs/symptoms, laboratory or prior imaging findings.
- Delayed or non-healing as evidence by signs/symptoms, laboratory or prior imaging findings.
- Continuing or recurring symptoms of any of the following neurological deficits: Lower extremity weakness, lower extremity asymmetric reflexes.

Other indications for a Cervical Spine CT:

- For preoperative evaluation and Cervical Spine MRI is contraindicated
- CT myelogram or discogram.
- Suspected cord compression with any of the following neurologic deficits, e.g., extremity weakness, abnormal gait, asymmetric reflexes.
- Known Arnold-Chiari syndrome and Cervical Spine MRI is contraindicated.
- Syringomyelia or syringomyelia and Cervical Spine MRI is contraindicated.

FOR COMBINATION OF STUDIES WITH CERVICAL SPINE CT:

Cervical/Thoracic/Lumbar CTs:
- CT myelogram or discogram.
- Any combination of these for spinal survey in patient with metastases.

Cervical MRI/CT : unstable craniocervical junction.

Brain CT/Cervical CT – for evaluation of Arnold Chiari Malformation.

ADDITIONAL INFORMATION RELATED TO CERVICAL SPINE CT:

*Conservative Therapy: (spine) should include a multimodality approach consisting of a combination of active and inactive components. Inactive components, such as rest, ice, heat, modified activities, medical devices, acupuncture and/or stimulators, medications, injections (epidural, facet, bursal, and/or joint, not including trigger point), and diathermy
can be utilized. Active modalities may consist of physical therapy, a physician supervised home exercise program**, and/or chiropractic care.

**Home Exercise Program** - (HEP) – the following two elements are required to meet guidelines for completion of conservative therapy:
- Information provided on exercise prescription/plan AND
- Follow up with member with documentation provided regarding completion of HEP (after suitable 6 week period), or inability to complete HEP due to physical reason - i.e. increased pain, inability to physically perform exercises. (Patient inconvenience or noncompliance without explanation does not constitute “inability to complete” HEP).

Cervical myelopathy: Symptom severity varies and a high index of suspicion is essential for making the proper diagnosis in early cases. Symptoms of pain and radiculopathy may not be present. The natural history of myelopathy is characterized by neurological deterioration. The most frequently encountered symptom is gait abnormality (86%) followed by increased muscular reflexes (79.1%), pathological reflexes (65.1%), paresthesia of upper limb (69.8%) and pain (67.4%) Vitzthum, Hans-Ekkehart, Dalitz, Kristina
REFERENCES


