INTRODUCTION:

Magnetic resonance imaging (MRI) is used in the evaluation of head and neck region tumors. The soft-tissue contrast among normal and abnormal tissues provided by MRI permits the exact delineation of tumor margins in regions, e.g., the nasopharynx, oropharynx, and skull base regions. MRI is used for therapy planning and follow-up of head and neck neoplasms. It is also used for the evaluation of neck lymphadenopathy, tracheal stenosis, and vocal cord lesions.

INDICATIONS FOR NECK MRI:

For evaluation of known tumor, cancer or mass:
- For evaluation of neck tumor, mass or cancer for patient with history of cancer with suspected recurrence or metastasis [based on symptoms or examination findings (may include new or changing lymph nodes)].
- Evaluation of skull base tumor, mass or cancer.
- Evaluation of tumors of the tongue, larynx, nasopharynx, or salivary glands.
- Evaluation of parathyroid tumor when:
  - CA > normal and PTH > normal WITH
  - Previous nondiagnostic ultrasound or nuclear medicine scan AND
  - Surgery planned.

Indication for combination studies for the initial pre-therapy staging of cancer, OR ongoing tumor/cancer surveillance OR evaluation of suspected metastases:
- ≤ 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.
  - Cancer surveillance excluding small cell lung cancer: Every six (6) months for the first two (2) years then annually thereafter.
  - Cancer surveillance – small cell lung cancer: Up to every 3 months for the first two years then annually thereafter.

For evaluation of suspected tumor, cancer or mass:
- Evaluation of neck tumor, mass or with suspected recurrence or metastasis [based on symptoms or examination findings (may include new or changing lymph nodes)].
- Evaluation of palpable lesions in mouth or throat.
- Evaluation of non-thyroid masses in the neck when persistent, greater than one month, and ≥/≤ to 1 cm or associated with generalized lymphadenopathy.

For evaluation of known or suspected inflammatory disease or infections:
Evaluation of lymphadenopathy in the neck when greater than one month, and >/= to 1 cm or associated with generalized lymphadenopathy.

**Pre-operative evaluation.**

**Post-operative/procedural evaluation (e.g. post neck dissection/exploration):**
- 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.

**Other indications for a Neck MRI:**
- For evaluation of vocal cord lesions or vocal cord paralysis.
- For evaluation of stones of the parotid and submandibular glands and ducts.
- Brachial plexus dysfunction (Brachial plexopathy/Thoracic Outlet Syndrome).

**Combination of studies with Neck MRI:**
- **Abdomen CT/Pelvis CT/Chest CT/Neck MRI/Neck CT with MUGA** – known tumor/cancer for initial staging or evaluation before starting chemotherapy or radiation treatment.

**ADDITIONAL INFORMATION RELATED TO NECK MRI:**

**MRI imaging** – Metal devices or foreign body fragments within the body, such as indwelling pacemakers and intracranial aneurysm surgical clips that are not compatible with the use of MRI, may be contraindicated. Other implanted metal devices in the patient as well as external devices such as portable O2 tanks may also be contraindicated.

**MRI and Brachial Plexus** – MRI is the only diagnostic tool that accurately provides high resolution imaging of the brachial plexus. The brachial plexus is formed by the cervical ventral rami of the lower cervical and upper thoracic nerves which arise from the cervical spinal cord, exit the bony confines of the cervical spine, and traverse along the soft tissues of the neck, upper chest, and course into the arms.

**MRI and Neck Tumors** – MRI plays a positive role in the therapeutic management of neck tumors, both benign and malignant. It is the method of choice for therapy planning as well as follow-up of neck tumors. For skull base tumors, CT is preferred but MRI provides valuable information to support diagnosis of the disease.

**MRI and Vocal Cord Paralysis or Tumors** – MRI helps in the discovery of tumors or in estimating the depth of invasion of a malignant process. It provides a visualization of pathological changes beneath the surface of the larynx. MRI scans may indicate the presence or absence of palsy and possible reasons for it. If one or both vocal cords show no movement during phonation, palsy may be assumed.

**MRI and Cervical Lymphadenopathy** – MRI can show a conglomerate nodal mass that was thought to be a solitary node. It can also help to visualize central nodal necrosis and identify nodes containing metastatic disease. Imaging of the neck is not done just to evaluate lymphadenopathy, but is performed to evaluate a swollen lymph node and an
unknown primary tumor site. Sometimes it is necessary to require a second imaging study
using another imaging modality, e.g., a CT study to provide additional information.

**MRI and Submandibular Stones** – Early diagnosis and intervention are important because
patients with submandibular stones may eventually develop sialadenitis. MRI provides
excellent image contrast and resolution of the submandibular gland and duct and helps in
the evaluation of stones.
REFERENCES


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