

# PET Skull-Base to Mid-Thigh

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## *Diagnostic Imaging*

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## PET Skull Base to Mid-Thigh

A PET from the skull base to the mid-thigh may be medically appropriate when the medical record demonstrates **ANY** of the following: [1] [2] [3] [8]

- Cancer is suspected or known, in any area from the base of the skull to the mid-thigh, for **ANY** of the following:
  - Cancer screening per the United States Preventative Services Task Force (USPSTF)/National Comprehensive Cancer Network (NCCN) Guidelines
  - Recurrence or metastasis is suspected.
  - Staging evaluation, when prior imaging is nondiagnostic or indeterminate.
  - Surveillance following the NCCN Guidelines recommended schedule
  - Treatment response monitoring appropriate for cancer location and specific treatment administered.
- Periprocedural planning to guide invasive procedure and postoperative follow-up care.

## References

- [1] "Hybrid PET/CT Neoplasm Imaging ." Mettler, F & Guiberteau, M. Essentials of Nuclear Medicine and Molecular Imaging, 7th Edition, 2019. Chapter #: (11); pp: 328-61. Elsevier
- [2] "Imaging in Oncology ." Shetty, A; Raptis, D & Orłowski, H. Gunderson & Tepper's Clinical Radiation Oncology, 5th edition, 2021. Chapter: (11); pp: 197-218e.3. Elsevier
- [3] "Impact of PET/CT for Assessing Response to Immunotherapy—A Clinical Perspective." Lang, D.; Wahl, G.; et. al. Journal of Clinical Medicine. 9(11): pp: 3483-3504. 2020
- [4] "Male Pelvis on FDG PET/CT ." Ulaner, G. Fundamentals of Oncologic PET/CT, 2021. Chapter: (20); pp: 205-10. Elsevier
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- [6] "PET/MR Imaging of the Female Pelvis." Umutlu, L.; Antoch, G.; et. al. Seminars in Nuclear Medicine. 49(6); pp: 512-20. November 2019
- [7] "PET/MR in Head and Neck Cancer – An Update." Huellner, M. Seminars in Nuclear Medicine. 51(1); pp: 26-38. January 2021
- [8] "PET/MRI: The future of cancer restaging." Osturk, H. Cancer Treatment and Research Communications. 25; Article: 100250. 2020

## Procedure Codes

**Table 1. Positron Emission Tomography (PET) Associated Procedure Codes**

<b>CODE</b>	<b>DESCRIPTION</b>
78608	Brain imaging, positron emission tomography (PET); metabolic evaluation
78609	Brain imaging, positron emission tomography (PET); perfusion evaluation
78811	Positron emission tomography (PET) imaging; limited area (eg, chest, head/neck)
78812	Positron emission tomography (PET) imaging; skull base to mid-thigh
78813	Positron emission tomography (PET) imaging; whole body
78814	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; limited area (eg, chest, head/neck)
78815	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; skull base to mid-thigh
78816	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; whole body
G0219	PET imaging whole body; melanoma for noncovered indications
G0235	PET imaging, any site, not otherwise specified
G0252	PET imaging, full and partial-ring PET scanners only, for initial diagnosis of breast cancer and/or surgical planning for breast cancer (e.g., initial staging of axillary lymph nodes)

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## Definitions and Key Terms

**Ablation therapy** is surgical removal or loss of a part by melting or vaporizing.

**Adenopathy** is any disease or enlargement involving glandular tissue.

**Advanced disease** is disease that is far along or progressed in development or course of condition.

**Alpha-fetoprotein (AFP)** is a fetal blood protein present abnormally in adults with some cancers (as of the liver) and normally in the amniotic fluid of pregnant women with high or low levels tending to be associated with certain birth defects (such as spina bifida or Down syndrome).

**Alzheimer's disease** is a degenerative brain disease of unknown cause that is the most common form of dementia, that usually starts in late middle age or in old age, that results in progressive memory loss, impaired thinking, disorientation and changes in personality and mood.

**Anaplastic** is reversion of cells to a more primitive or undifferentiated form.

**Androgen therapy** is treatment that decreases androgen levels or blocks androgen action, which can inhibit the growth of such prostate cancers.

**Biochemical** is the chemical characteristics and reactions of a particular living organism or biological substance.

**Biogenic amines** are a set of frequently analyzed solutes in biological matrices, namely blood, urine and the nervous system.

**Bone lesion** is an abnormal change in structure of a bone due to injury or disease.

**Bone scan** is a nuclear imaging test used to diagnose and track several types of bone disease.

**Breast cancer antigen gene (BRCA)** is either of two tumor suppressor genes that in mutated form tend to be associated with an increased risk of certain cancers and especially breast and ovarian cancers.

**Calcitonin** is a polypeptide hormone especially from the thyroid gland that lowers the level of calcium in the blood plasma.

**Capsular** is relating to a membrane or sac enclosing a body part.

**Carcinoembryonic antigen (CEA)** is a glycoprotein present in fetal digestive-tract tissues and in peripheral blood of patients with some forms of cancer.

**Cognitive decline** is a reduction in one or more cognitive abilities, such as memory, awareness, judgment and mental acuity, across the adult lifespan.

**Computed tomography (CT)** is radiography in which a three-dimensional image of a body structure is constructed by computer from a series of plane cross-sectional images made along an axis.

**Curative** is treatment to provide recovery or relief from a disease.

**Cytology** is the study of individual cellular aspects of a phenomenon, process, or structure.

**Dementia** is a usually progressive condition marked by the development of multiple cognitive deficits (such as memory impairment, aphasia and the inability to plan and initiate complex behavior).

**Discrete** is consisting of distinct or unconnected elements.

**Distant Metastases** is a tumor which has spread to areas of the body distant or remote from the primary tumor.

**Endoscopic ultrasound (EUS)** is a minimally invasive procedure to assess digestive (gastrointestinal) and lung diseases.

**Equivocal** is of uncertain nature or classification.

**Extra-thyroidal disease** is an extension of the primary tumor outside of the thyroid capsule and invasion into the surrounding structures.

**Follicular cell cancer** is a type of cancer that is derived from the follicular cells in the thyroid gland, which secrete the iodine-containing thyroid hormones.

**Frontotemporal dementia** is a group of brain disorders caused by degeneration of the frontal and/or temporal lobes of the brain.

**Granulomatosis** is a chronic condition marked by the formation of numerous masses or nodules of chronically inflamed tissue with granulations that is usually associated with an infective process.

**Histology** is tissue structure or organization.

**Histopathology** is the tissue changes that affect a part or accompany a disease.

**Hodgkin lymphoma** is a malignant lymphoma marked by the presence of Reed-Sternberg cells and characterized by progressive enlargement of lymph nodes, spleen and liver and progressive anemia.

**Hurthle cell carcinoma** is a rare cancer that affects the thyroid gland.

**Hypersecretion** is excessive production of material either functionally specialized (such as saliva) or isolated for excretion (such as urine).

**I-131 scan** is a non-invasive radionuclide scan used for imaging of functional thyroid tissue and thyroid cancer remnant/metastasis.

**In-111 pentereotide (Octreoscan)** is a test used to find certain types of neuroendocrine tumors.

**Indeterminate findings** are inconclusive or insufficient for treatment planning.

**Invasive** is reaching or taking over surrounding tissues.

**Lymphadenopathy** is abnormal enlargement of the lymph nodes.

**Lymphoma** is a usually malignant tumor of lymphoid tissue.

**M1 disease** is cancer that has spread to distant organs or tissues.

**Magnetic resonance imaging (MRI)** is a noninvasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves.

**Medullary** is the inside of the thyroid containing the cells that produce and release hormones.

**Melanoma** is a highly malignant tumor that starts in melanocytes of normal skin or moles and metastasizes rapidly and widely.

**Metastases** is the spread of a disease-producing agency (such as cancer cells) from the initial or primary site of disease to another part of the body.

**Multifocal thyroidal disease** is cancer within two or more individual locations within the thyroid gland.

**Multiple myeloma** is a disease of bone marrow that is characterized by the presence of numerous primary tumors of the bone marrow in various bones of the body.

**Neuroendocrine tumor/carcinoma** are cancers that begin in specialized cells called neuroendocrine cells, which have traits similar to those of nerve cells and hormone-producing cells, are rare and can occur anywhere in the body.

**Neuropsychological** is the science concerned with the integration of psychological observations on behavior and the mind with neurological observations on the brain and nervous system.

**Non-fertility sparing** is a procedure that does not preserve the capability of breeding or reproducing.

**Non-Hodgkin lymphoma** is any of various malignant lymphomas that are not classified as Hodgkin's lymphoma, have malignant cells derived from B cells, T cells or natural killer cells characterized especially by enlarged lymph nodes, fever, night sweats, fatigue and weight loss.

**Obstruction** is a blockage of a passageway.

**Pathology** is the study of the essential nature of diseases and especially of the structural and functional changes produced by them.

**Peri-procedural** is the time soon before, during or soon after the performance of a medical procedure.

**Polypeptide hormones** is a class of proteins which are bound by receptor proteins and enable or disable a biological pathway.

**Poorly differentiated papillary cancer** is an aggressive form of follicular cell derived thyroid carcinoma with a prognosis intermediate between the indolent well differentiated thyroid carcinomas and the rapidly growing often fatal anaplastic carcinoma.

**Positron emission tomography (PET) scan** is a test in which a cross-sectional image of regional metabolism is obtained by a usually color-coded representation of the distribution of gamma radiation given off in the collision of electrons in cells with positrons emitted by radionuclides incorporated into metabolic substances that have been administered (as by injection).

**Progression** is the course of a disease, such as cancer, as it becomes worse or spreads in the body.

**Prostate Specific Antigen (PSA)** is a protease (an enzyme that hydrolyze proteins) secreted by epithelial cells of the prostate gland that is used in the diagnosis of prostate cancer since its concentration in blood serum tends to be proportional to the clinical stage of the disease.

**Pulmonary nodule** is abnormal growth that forms in the lung, most of which are noncancerous and usually do not require treatment.

**Radical prostatectomy** is a surgical procedure for the partial or complete removal of the prostate.

**Radioactive iodine** is a treatment used to treat thyroid cancer where the radiation can destroy the thyroid gland and any other thyroid cells (including cancer cells) that take up iodine, with little effect on the rest of your body.

**Radioactive iodine scan** is a radiologic diagnostic tool used to determine the thyroid function and pathologies.

**Radiotherapy** is the treatment of disease with radiation.

**Recurrence** is a new occurrence of something that happened or appeared before.

**Refractory** is resistance to treatment or cure.

**Renal cell cancer** is a disease in which malignant (cancer) cells form in tubules of the kidney.

**Resection** is the surgical removal of part of an organ or structure.

**Residual** is a disability remaining from a disease or operation.

**Staging (cancer)** is the extent of cancer, such as tumor size and if it has metastasized.

**Stromal tumor** are tumors originating in, or relating to, the supporting tissue (stroma) of an organ.

**Surveillance (cancer)** is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.

**Systemic** is affecting the body generally.

**Thyroglobulin** is an iodine-containing protein of the thyroid gland that is the precursor of thyroxine and triiodothyronine (thyroid hormones).

**Thyroidectomy** is surgical removal of thyroid gland tissue.

**TNM staging system** is a system to describe the amount and spread of cancer in a patient's body, using TNM. T describes the size of the tumor and any spread of cancer into nearby tissue; N describes spread of cancer to nearby lymph nodes; and M describes metastasis (spread of cancer to other parts of the body).

**Unresectable initial disease** is cancer that is not capable of being surgically removed.





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