

Learning Experience: Surgical Oncology

Learning Experience Leader:

Synopsis of Learning Experience:

PGY I Core Competencies

Medical Knowledge:

1. Describe the AJCC TNM staging system and explain its use in evaluating malignant neoplasms.
2. Outline the appropriate usage of tumor markers (carcinoembryonic antigen, cancer antigen 19-9, alpha-fetal protein) in the management of patient follow-up.
3. Summarize current indications for genetic screening in cancer.
4. Describe the anatomy of the breast.
5. Explain the hormonal regulation of the breast.
6. Summarize the incidence, epidemiology, and genetic/environmental risk factors associated with breast cancer.
7. Distinguish between these common entities in the differential diagnosis of breast masses:
 - a. Fibroadenomas
 - b. Cysts
 - c. Abscess
 - d. Fibrocystic disease
 - e. Fat necrosis
 - f. Cancer
8. Explain the general indications, uses, and limitations of mammography. Define the importance and impact of screening mammography.
9. Discuss the principles and historic context of the basic options available for the treatment of breast cancer such as:
 - a. Radical mastectomy
 - b. Modified radical mastectomy
 - c. Lumpectomy and sentinel node biopsy
 - d. Axillary lymph node dissection
10. Describe the following pathological types of breast cancer, including the biology, natural history, and prognosis of each:
 - a. Infiltrating ductal carcinoma
 - b. Ductal carcinoma in situ (DCIS)
 - c. Infiltrating lobular carcinoma
 - d. Lobular carcinoma in situ (LCIS)

11. Describe the presentation, natural history, pathology, and treatment of the following benign breast diseases:
 - a. Lactational breast abscess
 - b. Chronic recurring subareolar abscess
 - c. Intraductal papilloma
 - d. Atypical epithelial hyperplasia
 - e. Fibroadenoma
12. Demonstrate knowledge of the anatomy, physiology, and neoplastic diseases of the gastrointestinal tract, hepatobiliary and pancreatic organ systems.
13. Discuss frequency/death rates of breast cancer, colorectal cancer, gastric cancer, esophageal cancer, hepatocellular cancer, pancreatic cancer and malignant melanoma in the United States over the past 5 years.
14. Explain the role of neoadjuvant and adjuvant chemoradiation in the treatment of GI malignancies.

Patient Care:

1. Perform a complete history and physical examination on patients with cancer.
2. Formulate an appropriate differential cancer diagnosis, and record an independent, written diagnosis for each cancer patient assigned.
3. Take an appropriate history to evaluate patients with complaints of the breast to include:
 - a. Pertinent risk factors
 - b. Previous history of breast problems
 - c. Current breast symptoms
4. Demonstrate an increasing level of skill in the physical examination of the breast, including recognition of the range of variation in the normal breast.
5. Identify common lesions such as fibroadenomas, cysts, mastitis, and cancer.
6. Interpret signs suspicious for malignancy on mammogram such as stellate masses or suspicious microcalcifications.
7. The resident should be able to perform the following procedures under appropriate supervision
 - a. Tube thoracostomy insertion
 - b. Tube thoracostomy removal
 - c. Central venous lines
 - i. Internal jugular
 - ii. Subclavian
8. Jackson-Pratt drain removal
9. Nasogastric tube placement

10. Urinary catheter placement

Practice Based Learning:

Familiarity with the literature regarding surgical management of malignancy including areas of controversy is expected.

Interpersonal and Communication Skills:

1. The PGY 1 resident should instruct students about the preoperative and postoperative care of surgical patients and the principles of surgery.
2. Residents should develop good interpersonal skills with nurses, patients, and families.

Professionalism:

1. Demonstrate commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a PGY I resident.
2. They are expected to attend surgical oncology and breast clinics as assigned the equivalent of at least one full day a week, as well as the WFUBMC Multidisciplinary Solid Tumor Conference and the Breast Conference as assigned weekly.

Systems-Based Practice:

1. The resident is expected to develop an appreciation of multi-disciplinary approaches to patients with cancer including adjuvant therapies, and cancer rehabilitation by participating in multi-disciplinary outpatient and inpatient activities.
2. PGY I residents are required to present patients with cancer in multidisciplinary tumor boards.
3. Residents are required to learn the role of palliative surgical treatment and pain control in cancer patients that are seen and followed in both inpatient and outpatient settings.

PGY II Core Competencies

Medical Knowledge:

1. Understand the advances of minimally invasive and conservative breast therapy.
2. Explain the steps in the clinical decision tree that are involved in the work-up of a breast mass.
3. Discuss the role of mammography, needle aspiration, fine-needle biopsy, open biopsy, and mammographic needle localization and biopsy.
4. Explain the mechanics and potential value of the stereotactic needle biopsy.

5. Outline the diagnostic work-up and the differential diagnosis of various forms of nipple discharge.
6. Explain the use of tumor, nodes, and metastases (TNM) staging in the treatment of breast cancer.
7. Summarize the rationale for using a team approach to facilitate the complex discussions and explanation of options for the newly diagnosed breast cancer patient prior to definitive treatment (e.g., team of oncologist, surgeon, plastic surgeon, and radiation therapist).
8. Explain the role of reduction and augmentation mammoplasty.
9. Discuss several causes of gynecomastia and outline an appropriate work-up.
10. Describe the characteristics, diagnosis, and therapy of less common lesions of the breast such as:
 - a. Inflammatory carcinoma
 - b. Paget's Disease
 - c. Lactiferous duct fistula
 - d. Mondor's Disease
 - e. Cystosarcoma phylloides
 - f. Bilateral breast carcinoma
 - g. Male breast carcinoma
11. Define appropriate breast conservation therapies, their benefits, and comparative outcomes, and compare them with modified radical mastectomy.
12. Summarize the role of adjuvant chemotherapy and radiation therapy for the treatment of primary breast carcinoma.
13. Outline the importance of estrogen and progesterone receptors in the prognosis and treatment of breast cancer.
14. Describe the basic issues in the staging and treatment of metastatic breast cancer, including the role of:
 - a. Chemotherapy
 - b. Radiation therapy
 - c. Hormonal therapy
15. Summarize the physiologic changes associated with pregnancy, including breast problems peculiar to pregnancy. Describe the appropriate management of breast cancer diagnosed during pregnancy.
16. Summarize the major considerations for post-mastectomy breast reconstruction.
17. Identify and analyze the data addressing controversial areas of breast disease, such as:
 - a. Current concepts in the management of cancer
 - b. Cancer prevention techniques, such as tamoxifen and raloxifene
 - c. Role of various adjuvant therapy programs.
 - d. Biological behavior of lesions such as lobular carcinoma in situ
 - e. Benefit and frequency of screening mammograms

- f. Relationship of mammographic parenchymal patterns to the risk of subsequent malignancy
18. Review and evaluate the following areas of research in breast disease:
 - a. Role of breast cancer susceptibility genes
 - b. Monoclonal antibodies
 - c. Other breast markers, including Her-2/neu and flow cytometry with chromosomal analysis
 19. Explain the role of sentinel lymph node biopsy for breast cancer
 - a. Sensitivity and specificity
 - b. Indication and contraindications
 - c. Technique
 - d. Treatment plan based on findings
 20. Explain the gross and histological appearance of malignant melanoma.
 21. List the pathological sub-types of malignant melanoma and their characteristics.
 22. Report the routes of spread of malignant melanoma.
 23. Report Clarks, Breslows and the TMN staging systems as well as the prognostic significance of each and how treatment is determined based on this information.
 24. Outline the appropriate pre-operative work-up of patients with malignant melanoma.
 25. Explain the role of sentinel lymph node biopsy for malignant melanoma
 - a. Sensitivity and specificity
 - b. Indication and contraindications
 - c. Technique
 - d. Treatment plan based on findings
 26. Classify soft tissue sarcomas.
 27. Describe the clinical presentation of the patients with extremity and retroperitoneal soft tissue sarcomas.
 28. Outline the appropriate pre-operative work-up of patients with soft tissue sarcomas.
 29. Classify the sarcomas that occur in the retroperitoneum.
 30. Participate in the history and physical of a patient with retroperitoneal sarcoma.

Patient Care:

1. Demonstrate the ability to surgically manage diseases of the breast.

2. Perform open breast biopsies and other operative procedures such as simple mastectomy and excision of intraductal papillomas, under direct supervision.
3. Educate patients to perform breast self-examination.
4. Demonstrate familiarity with male breast problems, including gynecomastia and male breast cancer.
 - a. Discuss risk factors
 - b. Outline appropriate work-up and management
5. Perform, under direct supervision, more advanced procedures on the breast such as:
 - a. Radical mastectomy
 - b. Modified mastectomy
 - c. Lumpectomy and axillary dissection
 - d. Sentinel lymph node biopsy
 - e. Excision of lactiferous duct fistula
 - f. Needle-localized breast biopsy
 - g. Simple mastectomy for gynecomastia
6. Acquire basic experience with breast reconstruction and cosmetic surgical techniques.
7. Evaluate the physical status of patients who report for evaluation of augmentation and reduction mammoplasties.
8. Prescribe various types of adjuvant therapy such as:
 - a. Chemotherapy
 - b. Hormonal therapy
 - c. Radiation therapy
 - d. Biologic response modifiers
9. Manage unusual breast diseases such as:
 - a. Inflammatory carcinoma
 - b. Paget's Disease
 - c. Lactiferous duct fistula
 - d. Mondor's Disease
 - e. Bilateral breast cancer
 - f. Male breast cancer
 - g. Cystosarcoma phylloides
10. Outline an appropriate follow-up schedule for patients who have undergone:
 - a. Treatment of breast cancer with curative intent
 - b. Treatment of DCIS
 - c. Biopsy which revealed fibroadenoma, benign epithelial hyperplasia, or fibrocystic disease with atypia
11. Explain and perform the appropriate surgical treatment for malignant melanoma including excision of the primary lesion with appropriate margins.
12. Participate in the history and physical of a patient with soft tissue sarcoma.
13. Devise and execute treatment plans for patients with soft tissue sarcoma under appropriate supervision.

Practice Based Learning:

The resident should be familiar with the literature regarding surgical management of breast cancer, soft tissue sarcoma, and malignant melanoma including areas of controversy.

Interpersonal and Communication Skills:

The PGY II resident should instruct students and PGY I residents about the preoperative and postoperative care of surgical patients and the principles of surgery.

Professionalism:

1. The house officer must demonstrate a commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of the PGY II resident.
2. PGY II residents are expected to attend surgical oncology and breast clinics as assigned the equivalent of at least one full day a week, as well as the WFUBMC Multidisciplinary Solid Tumor Conference and the Breast Conference as assigned weekly.

Systems-Based Practice:

1. PGY II residents are expected to consult and interact with other members of the professional cancer team in explaining options to patients with newly diagnosed breast cancer, sarcoma, and malignant melanoma.
2. Residents are expected to develop an appreciation of multi-disciplinary approaches to patients with cancer including adjuvant therapies, and cancer rehabilitation by participating in multi-disciplinary outpatient and inpatient activities.
3. PGY II residents are expected to present patients with cancer in multidisciplinary tumor boards.
4. Residents are required to learn the role of palliative surgical treatment and pain control in cancer patients that are seen and followed in both inpatient and outpatient settings.

PGY III Core Competencies**Medical Knowledge:**

1. Demonstrate normal thyroid anatomy in the operating room, including the thyroid gland, its vascular supply and venous drainage, the parathyroid glands, recurrent laryngeal nerves, strap muscles and platysma.
2. Describe normal variants in recurrent laryngeal nerve anatomy including frequency.
3. Describe normal thyroid and parathyroid embryogenesis.
4. Outline the normal thyroid hormone synthetic pathway including iodine metabolism and feedback mechanisms.

5. Outline the normal calcium and parathyroid hormone pathway.
6. Outline appropriate lab testing for the following clinical scenarios, including interpretation of predicted test results:
 - a) Thyroid nodule
 - b) Goiter
 - c) Hyperthyroidism
 - d) Hypothyroidism
 - e) Hypercalcemia
7. Develop an algorithm that includes pertinent history, examination findings and diagnostic evaluation of:
 - a) A palpable thyroid nodule
 - b) A nonpalpable nodule discovered on ultrasound performed for non thyroid pathology
 - c) Hypercalcemia
8. Recognition and treatment of common postoperative complications:
 - a) Hematoma
 - b) Hypocalcemia
 - c) Thyroid storm
 - d) Voice changes
9. Outline algorithms for the evaluation and treatment of:
 - a) Well-differentiated thyroid cancer
 - b) Medullary thyroid cancer
 - c) Thyroid lymphoma
 - d) Anaplastic thyroid cancer
10. Describe risk factors for well-differentiated thyroid cancer, medullary thyroid cancer and anaplastic thyroid cancer.
11. Outline the staging and prognosis in thyroid cancer.
12. Outline the complete evaluation and management of nontoxic multinodular goiter and substernal goiter.
13. Describe the management of intraoperative recurrent nerve injury.
14. Describe the approach for reoperative thyroid and parathyroid surgery.
15. Demonstrate knowledge of the surgical anatomy, physiology, and neoplastic diseases of the gastrointestinal tract, hepatobiliary and pancreatic organ systems.

Patient Care:

1. Obtain a focused history, perform an examination and institute the diagnostic evaluation of a patient with the following conditions:
 - a) Thyroid nodule

- b) Goiter
 - c) Hyperthyroidism
 - d) Hypercalcemia
2. Palpate and describe a thyroid nodule
 3. Palpate and describe a goiter
 4. Identify exophthalmos
 5. Perform a fine needle aspiration biopsy of a palpable thyroid nodule
 6. Perform the initial steps in thyroid surgery, including
 - a) Patient positioning and marking
 - b) Skin incision and raising subplatysmal flaps
 - c) Opening strap muscles
 - d) Identification of recurrent laryngeal nerve
 - e) Ligation of the superior and inferior pole vessels
 - f) Mobilization of thyroid lobe
 - g) Close strap muscles, platysma and skin
 7. Interpret thyroid ultrasound and parathyroid scan -Interpret intra-op intact PTH values
 8. Close wounds following major resections.
 9. Manage colostomies and ileostomies.
 10. Design an appropriate nutritional support program for a cancer patient both pre- and post- operatively.
 11. First assist on all major GI and liver resections.
 12. Perform nutritional assessments and plan nutritional support programs.
 13. Perform feeding gastrostomies and tube jejunostomies.
 14. Record clinical and pathological correlations by presenting the clinical picture and operative findings on each assigned cancer patient.
 15. Perform axillary and ileo-inguinal node dissection for malignant melanoma.

Practice Based Learning:

Familiarity with the literature regarding surgical management of malignancy including areas of controversy is also expected.

Interpersonal and Communication Skills:

The resident should instruct medical students and residents about the preoperative and postoperative care of surgical patients and the principles of surgery. They should also

demonstrate the ability to teach junior house staff basic surgical skills and assist them with introductory level cases. The PGY III resident must display leadership skills and the ability to run an effective multi-level service with numerous residents and medical students on the service. Organization, time management and administrative skills for managing a team of residents and students should be demonstrated.

Professionalism:

1. The resident must demonstrate a commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of the PGY III.
2. PGY III residents are expected to attend surgical oncology and breast clinics as assigned the equivalent of at least one full day a week, as well as the Multidisciplinary Solid Tumor Conference and the Breast Conference as assigned weekly.

Systems-Based Practice:

1. The resident is expected to consult and interact with other members of the professional cancer team in explaining options to the newly diagnosed patients with cancer.
2. The residents are required to develop an appreciation of multi-disciplinary approaches to cancer patients including adjuvant therapies, and cancer rehabilitation by participating in multi-disciplinary outpatient and inpatient activities.
3. The PGY III resident is expected to present patients with cancer in multidisciplinary tumor boards.
4. The PGY III resident is required to demonstrate an understanding of the role of palliative surgical treatment and pain control in cancer patients that are seen and followed in both inpatient and outpatient settings.

PGY IV and V Core Competencies

Medical Knowledge:

1. Demonstrate knowledge of the anatomy, physiology, and neoplastic diseases of the gastrointestinal tract, hepatobiliary and pancreatic organ systems.
2. Apply clinical screening for common malignancies. Recognize typical presentations and clinical manifestations for GI/hepatobiliary/pancreatic neoplasms.
3. Stage specific neoplasms both clinically and pathologically, including the tumor, nodes, and metastasis system (TNM).
4. Relate tumor staging to prognosis.
5. Describe differences in presentation, treatment, and outcomes for GI/hepatobiliary/pancreatic malignancies.

6. Compare each applicable treatment modality to the prognosis for tumors within the scope of general surgery.
7. Describe a diagnostic approach with a patient with a retroperitoneal mass including clinical exam, radiological exam, and other diagnostic measures.
8. Describe the natural history of retroperitoneal sarcomas with various modalities of treatment including surgery only, surgery plus radiotherapy, radiotherapy only.
9. Describe the natural course of recurrence of this disease and strategies for management.
10. Describe the role of adjuvant radiotherapy and chemotherapy for retroperitoneal sarcoma.
11. Describe the approaches for palliation of this disease with surgery and other therapeutic modalities.
12. Be able to discuss the potential for recurrence and palliative support for patients with retroperitoneal sarcoma
13. Be able to identify the issues around transperitoneal biopsy of retroperitoneal sarcoma and the spread of this disease secondary to surgical maneuvers.
14. Discuss the management of metastatic disease to the liver.
- 15.

Patient Care:

1. Demonstrate the ability to surgically manage malignant or premalignant diseases of the gastrointestinal tract, liver, biliary tract, and pancreas.
2. Demonstrate the capability for independent function in all aspects of cancer patient management, including palliative care planning.
3. Prepare and defend the preoperative assessment plan for the elderly patient in preparation for:
 - a. Gastric resection
 - b. Colon resection
 - c. Pancreatic resection
 - d. Liver resection
 - e. Esophageal resection
4. Prepare patients medically for cancer surgery, including correction of nutritional and metabolic deficits.
5. Assess the need and institute appropriate monitoring both pre- and post-operatively.

6. Use appropriate support from pharmacologic agents.
7. Prepare an operative plan for treatment of malignant disease and act as the operating surgeon for resective procedures of the gastrointestinal tract, hepatobiliary and pancreatic organ systems, with attending surgeon supervision.
8. Perform colostomies, colostomy closures, and bowel resections and anastomoses of all types.
9. Perform radical resection of retroperitoneal sarcoma with enbloc removal of affected organs under attending supervision.

Practice Based Learning:

Familiarity with the literature regarding surgical management of malignancy including areas of controversy is also expected.

Interpersonal and Communication Skills:

The resident should instruct medical students and residents about the preoperative and postoperative care of surgical patients and the principles of surgery. They should also demonstrate the ability to teach junior house staff basic surgical skills and assist them with introductory level cases. The Chief resident must display leadership skills and the ability to run an effective multi-level service with numerous residents and medical students on the service. Organization, time management and administrative skills for managing a team of residents and students should be demonstrated.

Professionalism:

1. The PGY IV and V house officers must demonstrate a commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a senior resident.
2. Senior residents are expected to attend surgical oncology and breast clinics as assigned the equivalent of at least one full day a week, as well as the Multidisciplinary Solid Tumor Conference and the Breast Conference as assigned weekly.

Systems-Based Practice:

1. The senior resident is expected to consult and interact with other members of the professional cancer team in explaining options to the newly diagnosed patients with cancer.
2. The senior residents are required to develop an appreciation of multi-disciplinary approaches to cancer patients including adjuvant therapies, and cancer rehabilitation by participating in multi-disciplinary outpatient and inpatient activities.

3. The senior resident is expected to present patients with cancer in multidisciplinary tumor boards.
4. The senior resident is required to demonstrate an understanding of the role of palliative surgical treatment and pain control in cancer patients that are seen and followed in both inpatient and outpatient settings.