



Evaluating and Managing a Patient with Other Oncological Conditions

Description of the Activity	<p>“Other oncological conditions” is a heterogeneous group of rare malignant tumors that pediatric surgeons may encounter, consisting of lymphoma; sacrococcygeal teratoma (SCT) and other teratomas; chest wall lesions such as Ewing sarcoma, osteosarcoma, and primitive neuroectodermal tumor (PNET); solid or cystic ovarian masses; testicular masses; and metastases to the lung and liver. Hepatoblastomas, mediastinal masses, and sarcomas are other rare diagnoses included in this group. Each of these tumors is treated differently regarding workup and surgical treatment. All pediatric patients with oncological masses need to be treated by a multidisciplinary team that may include clinicians in pediatric surgery, radiation oncology, pathology, interventional radiology, and pediatric oncology. The treatment details of every patient are discussed at a tumor board, with all specialties participating in the care of the patient, depending on the type and location of the tumor. For most pediatric malignant conditions, national protocols are available for treatment, surgery, and follow-up that follow the best available evidence. Optimal assessment, management, and intervention are needed to provide an ideal long-term outcome for the patient.</p>
Functions	<ul style="list-style-type: none">❖ Nonoperative/Preoperative<ul style="list-style-type: none">➤ Obtain a history and physical exam, including prenatal history, family history, and comorbid conditions that portend an increased risk of malignancy.➤ Order initial or advanced imaging.➤ Perform a basic or advanced laboratory workup.➤ Determine if an upfront biopsy should be obtained for diagnosis.➤ Obtain appropriate consults on suspicion of malignancy (oncology).➤ Communicate the clinical workup evaluation and expectations to other health care providers and parents.➤ Discuss the operative plan with parents and consultants.➤ Consider the safety of the surgical plan and alternatives (e.g., lymphoma with a large mediastinal mass and significant airway obstruction).➤ Obtain informed consent, describing the indications, risks, benefits, alternatives, and potential complications of the planned operation, including nuances relevant to the patient’s individual condition and comorbidities, and ensure familial understanding. Document the informed consent discussion in the medical record.➤ Devise an operative plan, and communicate it to the operative team (anesthesia, nursing, techs, assistants), including patient position, anesthesia needs, special instrumentation, and postoperative planning.❖ Intraoperative<ul style="list-style-type: none">➤ Follow oncological principles when performing a tumor biopsy.➤ Choose the biopsy site and approach: laparoscopic, open, or interventional radiology (fine-needle aspiration, core needle biopsy, image-guided biopsy).➤ Obtain adequate tissue sampling in communication with a pathologist.➤ Handle and process the tissue sample with care, obtaining special stains, molecular testing, and genetic analysis when indicated.➤ Minimize complications.



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- Perform ovarian tumor surgery.
- Decide on a laparoscopic versus an open approach.
- If the mass is cystic, avoid contamination and spillage.
- Decide on the feasibility of an ovarian-sparing procedure (e.g., teratoma).
- Decide on the necessity of additional initial ovarian tumor procedures, such as an additional ovarian biopsy, peritoneal sampling, omentectomy, or resection of a fallopian tube.
- Decide on whether the patient is indicated for a testicular biopsy or an orchiectomy.
- Perform inguinal or retroperitoneal lymph node dissection, recognizing the extent of nodal resection.
- Perform SCT excision.
- Choose a surgical approach depending on the type of SCT (laparoscopic vs open abdominoperineal vs perineal).
- For a type 1 SCT, perform surgery via a perineal approach, detecting and sparing the anus, rectum, and gluteal muscles, preserving the cosmesis of the buttocks, and recognizing the importance of the coccyx and middle sacral artery.
- Perform liver resection.
- Review cross-sectional imaging to plan a liver resection, determining whether the tumor is resectable or if the patient needs a transplant. Articulate the criteria for resectable and nonresectable lesions.
- Recognize the need to transfer the patient to a liver transplant center with high-end options for resection or transplant.
- Identify the special anatomy of the liver for standard resections.
- Identify the steps of standard liver resections (nonanatomic wedge, segmentectomy, left and right lobectomy, trisegmentectomy).
- Plan the technical steps of a liver resection and which instruments to use, including staplers, cautery, and electrosurgical devices (LigaSure, Aquamantys, Erbe).
- ❖ Postoperative
 - Plan for ICU management if needed.
 - Recognize the patient's risk for bleeding, and detect a bleed if it occurs.
 - Monitor the patient's phosphorous and magnesium levels following an extensive resection.
 - Observe for wound infections.
 - Discuss next steps with the patient's family and consultants.
 - Construct a timeline for pathology.
 - Articulate commonly used adjuvant therapies and their risks (eg, cisplatin and ototoxicity).
 - Identify long-term outcomes.
 - Discuss possible next treatment steps as well as surgical steps.
 - Present the case at a multispecialty tumor board to discuss treatment, possible additional operations (final resection), and implications and long-term prognosis.
 - Discuss follow-up plans with the family and health care team members.



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Scope

❖ In scope

- Diagnoses
 - Chest wall lesion (PNET, osteosarcoma)
 - Germ cell tumor
 - Lung or liver tumor
 - Lymphoma
 - Metastasis
 - Ovarian mass (solid/cystic)
 - SCT
 - Teratoma
 - Testicular mass
- Procedures
 - Biopsy (oncological principles)
 - Liver resection
 - Oophorectomy and ovarian-sparing surgery
 - SCT excision
 - Testicular biopsy/removal
- Special populations
 - Anterior mediastinal mass
 - Fertility preservation
 - Hereditary oncologic conditions
- Special skills
 - Communication (“the non-urgent difficult conversation”)
 - Multidisciplinary care (tumor board)
 - Palliative decision-making

❖ Out of scope

- Diagnoses/procedures
 - Wilms tumor/neuroblastoma (covered in a separate EPA)
 - Breast lesion/melanoma sentinel lymph node biopsy



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1 <u>Framework:</u> The learner demonstrates understanding of information and has basic skills What a new pediatric surgery fellow should know <u>Entrustment:</u> The attending will show and tell or the learner acts as first assistant.	<ul style="list-style-type: none">With active guidance, performs a detailed H&P for a patient with a suspected oncological condition or mass, including prenatal history, family history, comorbid conditions, and anatomic locations that portend increased risk of malignancyWith active guidance, recognizes the need for an oncological condition to be evaluated and treated within a multidisciplinary team (tumor board)With active guidance, organizes an operative plan across the spectrum of rare malignancies, including proper selection of studies in the preop period, optimal surgical approach, and preparation of postop care if neededWith active assistance, communicates basic facts about findings such as initial imaging to the family and the interprofessional care teamWith active assistance, describes treatment options, including surgical options, and recognizes potentially dangerous findings (e.g., compression of the airway in a case of mediastinal mass)	<ul style="list-style-type: none">With active guidance, performs surgical positioning and preparation of the patient, including the availability of blood productsDemonstrates basic knowledge of oncological principles of straight-forward tumor biopsy or resection, including choice of biopsy site and approach (lap vs. open vs. IR), adequate tissue sampling, avoidance of tumor rupture, and surgical approachWith active guidance, describes the essential steps of basic tumor operationsWith active guidance, performs critical portions of basic tumor resectionsWith active guidance, identifies intraop complications for basic tumor operationsActs as first assistant for critical portions of rare or very complex oncologic operations	<ul style="list-style-type: none">With active guidance, recognizes and manages a general postop problem, demonstrating a basic understanding of oncological-specific complications (e.g., recurrence, metastasis)With active guidance, identifies the rationale for a long-term management plan, including follow-up and imaging depending on patient stagingWith direct supervision, manages a patient's postop course following tumor resection, including implementation of an effective pain-control strategyWith direct supervision, communicates basic aspects of the operative procedure, expected outcomes, and subsequent postoperative surgical plan to the family and the interprofessional teamDemonstrates basic knowledge of neoadjuvant or adjuvant therapies for more common tumors
2 <u>Framework:</u> The learner demonstrates understanding of the steps of the operation but	<ul style="list-style-type: none">With direct supervision, performs a detailed H&P for a patient with a suspected oncological condition or mass, including prenatal history, family history, comorbid	<ul style="list-style-type: none">With indirect supervision, performs surgical positioning and preparation of a patient with a complex or rare tumor, including the availability of blood products	<ul style="list-style-type: none">With indirect supervision, recognizes and manages a general postoperative problem, demonstrating basic understanding of oncological-specific



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<p>requires direction through principles and does not know the nuances of a basic case</p> <p>Entrustment: The learner can use the tools but may not know exactly what, where, or how to do it. The attending gives active help throughout the case to maintain forward progression or may need to take over the case at a certain point</p>	<p>conditions, and anatomic locations that portend increased risk of malignancy</p> <ul style="list-style-type: none">• With direct supervision, recognizes the need for an oncological condition to be evaluated and treated within a multidisciplinary team (tumor board)• With direct supervision, organizes an operative plan across the spectrum of rare malignancies, including proper selection of studies in the preop period, optimal surgical approach, and preparation of postop care if needed• With passive assistance, communicates basic facts about findings such as initial imaging to the family and interprofessional care team• With passive assistance, describes treatment options, including surgical options, and recognizes potentially dangerous findings (eg, compression of airway in a case of mediastinal mass)	<ul style="list-style-type: none">• Demonstrates thorough knowledge of and describes oncological principles of straight-forward tumor biopsy or resection, including choice of biopsy site and approach (lap vs open vs IR), adequate tissue sampling, avoidance of tumor rupture, and surgical approach• Describes essential steps of complex oncologic operations, and, with direct supervision organizes an operative plan across the spectrum of rare malignancies, and recognizes the need for surgical assistance from other disciplines (e.g., cardiac surgery, neurosurgery, urology)• With indirect supervision, performs critical portions of basic tumor resections• With direct supervision, recognizes, manages, anticipates, and prevents unexpected intraop findings and complications and implements modifications to the operative plan in real time, which may include intravascular extension of a tumor, bilateral adnexal involvement, or intraop hemorrhage• With direct supervision, performs critical portions of rare or very complex oncologic operations and implements modifications to the operative plan as appropriate	<p>complications (eg, recurrence, metastasis)</p> <ul style="list-style-type: none">• With direct supervision, identifies the rationale for a long-term management plan of a basic tumor, including follow-up and imaging depending on patient staging• With indirect supervision, manages a patient's postop course following tumor resection, including implementation of an effective pain-control strategy• With indirect supervision, communicates basic aspects of the operative procedure, expected outcomes, and subsequent postoperative surgical plan to the family and the interprofessional team• Demonstrates understanding of and describes neoadjuvant or adjuvant therapies for common tumors



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<p>3</p> <p>Framework: The learner has a good understanding of surgical options and techniques but does not recognize abnormalities and does not understand the nuances of a complicated case</p> <p>Entrustment: The learner can perform the operation/task independently in the uncomplicated patient or</p> <p>The attending provides passive/indirect supervision/suggestions in the complicated patient but still allows the learner to perform the operation/task themselves</p>	<ul style="list-style-type: none">• With indirect supervision, assesses and performs a comprehensive H&P, interprets diagnostic images, reviews reports, and initiates an individualized initial surgical management plan across the spectrum of rare oncological conditions• With indirect supervision, participates in multidisciplinary meetings (tumor board) and workup and communicates to appropriate consultants• With indirect supervision, assesses and organizes an operative plan across the spectrum of rare and complex malignancies, including proper selection of studies in the preop period, optimal surgical approach, and preparation of postop care if needed• With indirect supervision, conducts meetings with the family and the oncological care team to define expectations and goals of care for a pediatric surgical oncology patient, which may include informed consent for a surgical procedure• With indirect supervision, recognizes limitations and discusses additional resources required for the care of rare and complex conditions (eg, liver transplant/HIPEC center)	<ul style="list-style-type: none">• With indirect supervision, performs surgical positioning and preparation of a patient with a complex or rare tumor, including the availability of blood products• Demonstrates knowledge of oncological principles of complex tumor biopsy or resection, including choice of biopsy site and approach (lap vs open vs IR), adequate tissue sampling, avoidance of tumor rupture, and surgical approach• Thoroughly describes the steps of complex oncologic operations and, with indirect supervision organizes an operative plan across the spectrum of rare malignancies, and recognizes the need for surgical assistance from other disciplines (e.g., cardiac surgery, neurosurgery, urology)• Independently performs critical portions of basic tumor resections; requires indirect supervision for complex resections• With indirect supervision, recognizes, manages, anticipates, and prevents unexpected intraop findings and complications and implements modifications to the operative plan in real time, which may include intravascular extension of a tumor, bilateral adnexal involvement, or intraop hemorrhage	<ul style="list-style-type: none">• With indirect supervision, recognizes and manages a general postop problem, demonstrating advanced understanding of oncological-specific complications (eg, recurrence, metastasis)• With indirect supervision, identifies the rationale for a long-term management plan of more complex or rare tumor, including follow-up and imaging depending on patient staging• With indirect supervision, manages a patient's postop course following complex tumor resection, including implementation of an effective pain-control strategy• With indirect supervision, communicates complex aspects of the operative procedure, expected outcomes, and subsequent postoperative surgical plan to the family and interprofessional team• With indirect supervision, demonstrates advanced understanding of neoadjuvant or adjuvant therapies for tumors



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		<ul style="list-style-type: none">With indirect supervision performs critical portions of rare or very complex oncologic operations and implements modifications to the operative plan as appropriate	
<p>4</p> <p><u>Framework:</u></p> <p>The learner has a strong and in-depth understanding of surgical options and techniques.</p> <p><u>Entrustment:</u></p> <p>Can perform the operation/task independently in complicated cases</p> <p>or</p> <p>The attending may need to provide indirect supervision or suggestions in the context of extremely rare or severely complicated cases</p>	<ul style="list-style-type: none">Independently assesses and performs a comprehensive H&P, interprets diagnostic images, reviews reports, and initiates an individualized initial surgical management plan across the spectrum of rare oncological conditionsIndependently participates in multidisciplinary meetings (tumor board) and workup and communicates to appropriate consultantsIndependently assesses and organizes an operative plan across the spectrum of rare malignancies, including proper selection of studies in the preop period, optimal surgical approach, and preparation of postop care if neededIndependently conducts meetings with the family and the oncological care team to define expectations and goals of care for an oncological pediatric surgical patient, which may include informed consent for a surgical procedureIndependently recognizes limitations and discusses additional resources required for the care of a rare or complex condition (eg, liver transplant/HIPEC center)	<ul style="list-style-type: none">Independently performs surgical positioning and preparation of a patient with a complex or rare tumor, including the availability of blood productsDemonstrates thorough knowledge of oncological principles of complex tumor biopsy or resection, including choice of biopsy site and approach (lap vs open vs IR), adequate tissue sampling, avoidance of tumor rupture, and surgical approachDemonstrates in-depth understanding of the operative approach for complex oncologic operations and independently organizes an operative plan across the spectrum of rare malignancies, considering the need for surgical assistance from other disciplines (e.g., cardiac surgery, neurosurgery, urology)Independently performs all steps of the operation and moves fluidly through the course of a complicated oncological procedureIndependently recognizes, manages, anticipates, and prevents unexpected intraop findings and complications and implements modifications to the	<ul style="list-style-type: none">Independently implements a succinct strategy for postop complications such as bleeding, bile leak, chylous ascites, and missed or delayed bowel injuryIndependently identifies the rationale for a long-term management plan of more complex and or rare tumors, including follow-up and imaging depending on patient stagingIndependently manages the postop course of a complex oncological patient and directs strategy for pain managementIndependently articulates expectations and postoperative surgical plan, incorporating factors that portend positive and negative long-term outcomes with families and other providersIndependently articulates the neoadjuvant and adjuvant therapies for rare pediatric tumors (eg, hepatoblastoma, germ cell tumors)



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		<p>operative plan in real time, which may include intravascular extension of a tumor, bilateral adnexal involvement, or intraop hemorrhage</p> <ul style="list-style-type: none">Independently performs critical portions of rare or very complex oncologic operations and implements modifications to the operative plan as appropriate	