



## Surgical Anatomy of Pediatric Solid Tumours and their Embryology

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### Description

Surgical anatomy is the study of the anatomical structures and their relationships that are relevant to surgical procedures. A thorough understanding of surgical anatomy is required for safe and effective surgical interventions. In surgical anatomy, the focus is on the structures that are pertinent to the surgical procedure being performed. For example, in a cardiac surgery, the surgeon must have a detailed knowledge of the anatomy of the heart, its vessels, and the surrounding structures. In a neurosurgery, the surgeon must be familiar with the anatomy of the brain, spinal cord, and peripheral nerves. Surgical anatomy also involves understanding the variations in anatomy that can occur between different patients. Some anatomical variations may be present at birth, while others may develop as a result of injury, disease, or aging. The study of anatomical structures, surgical anatomy also involves the study of the blood supply, lymphatic drainage, and nerve supply of the structures being operated on. These systems are important to consider during surgery to ensure that blood loss is minimized, lymphatic spread is contained, and nerve function is preserved.

Pediatric solid tumors are tumors that develop in children and are typically classified into two main categories embryonal tumors and

non-embryonal tumors. Embryonal tumors arise from embryonic tissue, while non-embryonal tumors develop from mature tissue. Understanding the embryology of these tumors is important in understanding their surgical anatomy.

### Embryonal tumors

**Neuroblastoma:** Neuroblastomas arise from neural crest cells, which are cells that form the peripheral nervous system during embryonic development. These tumors are typically located in the abdomen or pelvis but can occur in other parts of the body.

**Wilms' Tumor:** Wilms' tumors arise from the kidneys and are the most common renal tumor in children. These tumors develop from precursor cells that form the kidneys during fetal development.

**Retinoblastoma:** Retinoblastomas arise from the cells of the retina and can be either hereditary or sporadic. In hereditary cases, the mutation is present in all cells of the body, while in sporadic cases, the mutation occurs only in the affected cells.

**Medulloblastoma:** Medulloblastomas arise from cells in the cerebellum and are the most common malignant brain tumor in children. These tumors develop from cells that normally form the cerebellum during embryonic development.

### Non-embryonal tumors

**Osteosarcoma:** Osteosarcomas are bone tumors that typically occur in the long bones of the body. These tumors arise from osteoblasts, which are cells that form bone tissue.

**Ewing's Sarcoma:** Ewing's sarcomas are bone tumors that typically occur in the pelvis, femur, or tibia. These tumors arise from cells in the bone marrow.

**Rhabdomyosarcoma:** Rhabdomyosarcomas are soft tissue tumors that can occur in any part of the body. These tumors arise from cells that normally form skeletal muscle during embryonic development.

In terms of surgical anatomy, the location of the tumor will dictate the approach used for surgical removal. The type of tumor and its embryonic origin will also play a role in the surgical approach and technique used. The objective of surgery is to remove as much of the tumor as possible while minimizing damage to surrounding healthy tissue.

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