

42 Spleen

Three elements are essential for the thorough dissection of the spleen: (1) Be familiar with the patient's clinical history. The dissection of a spleen removed for trauma is very different from the dissection of a spleen removed for a hematopoietic malignancy. (2) Remember that fresh tissue for immunophenotypic and genetic studies may be necessary to classify hematopoietic neoplasms involving the spleen. (3) Sections of the spleen for histology need to be very thinly sliced and well fixed.

Once resected, the spleen should immediately be brought fresh to the surgical pathology laboratory. The spleen should then be weighed and measured. Next, examine the appearance of the splenic capsule. This step is particularly important in cases of trauma. In particular, document whether the capsule is intact or lacerated, and if it is tense or wrinkled. Next, examine splenic hilum for lymph nodes. If any are found, they should be removed and a representative section of each submitted for histology.

Section the spleen in whichever plane you want, just make sure to section it thinly. Use a long sharp blade to cut the spleen into 2- to 3-mm slices. Examine both sides of each slice for any lesions. Carefully document both the white and red pulp. Expansion of the white pulp gives the cut surface the appearance of white nodules on a red background, while expansion of the red pulp gives the cut surface of the spleen a diffuse red appearance. This step is important because some diseases, such as non-Hodgkin's lymphoma, preferentially involve the white pulp,

while others, such as Gaucher's disease, myeloproliferative disorders, and hairy cell leukemia, preferentially involve the red pulp. If nodules are present, count the number of discrete nodules. If the spleen was removed for trauma and if no nodules are found, submit two to four sections of the splenic parenchyma, including a section to demonstrate any parenchymal hemorrhage.

If nodules are present, or if the spleen was removed for a hematopoietic malignancy, then the rest of the approach to the spleen should now follow the approach taken for lymph nodes with suspected hematopoietic malignancies (see Chapter 41). First, prepare touch imprints. Take touch imprints from any discrete nodules. Before preparing these imprints, remove excess blood by blotting the surface of the spleen with a towel. Prepare at least five air-dried and two 95% alcohol-fixed slides.

Next, submit fresh tissue for immunophenotyping. Although the exact techniques vary among laboratories, in general, a representative section should be snap-frozen in optimal controlled temperature embedding medium for frozen tissue specimens (OCT) for immunohistochemical studies, and a separate 0.5- to 0.7-cm cube should be submitted fresh for flow cytometry. Fresh tissue should also be sent for genetic studies such as gene rearrangements and karyotyping; and if clinically indicated, fresh sterile tissue should be submitted for microbiologic studies. If multiple dramatically distinct nodules are present, each type should be separately submitted for these ancillary studies.

Next, tissue should be submitted for light microscopy. Submit thin sections so that they can fix well, and submit at least one section representing each type of lesion seen and one section that includes the splenic capsule. It is not necessary, and in fact not desired, for sections to fill the tissue cassette completely. If multiple small nodules are present, submit two to four representative sections. If both large and small nodules are seen, each must be represented in sampling. If the spleen is enlarged but no lesions are noted, three to four sections are sufficient. As was true for lymph nodes, at least one section should be fixed in B-5 or an equivalent fixative. (If you do submit a section in B-5, remember to notify your tissue processing laboratory because these sections require special processing.) If a storage disease is suspected, tissue should also be fixed in glutaraldehyde for possible electron microscopy.

Important Issues to Address in Your Surgical Pathology Report on Splenectomies

- What procedure was performed, and what structures/organs are present?
- What is the weight of the spleen?
- Is the white pulp architecture normal, more prominent than usual, or obscured (as by a diffuse red pulp infiltrate)?
- In the case of splenic trauma, is the capsule torn, and how much intraparenchymal hemorrhage is present?
- In the case of hematopoietic neoplasm, what type and grade of neoplasm is present, and how many discrete neoplastic nodules are present? Does the neoplasm involve the lymph nodes in the splenic hilum?