8 Complex Specimens

Treat nature in terms of the cylinder, the sphere, and the cone, all in perspective.

Cézanne

While we have attempted to illustrate the dissection of the majority of the standard head and neck specimens received in the surgical pathology laboratory, you will occasionally be faced with a complex specimen that we have not illustrated. Without a game plan, these specimens can be overwhelming.

Our approach is a simple one based on four steps. First, identify the various components of the specimen (epithelium, bone, soft tissue, etc.). Second, think of each component as a geometric shape. Third, approach each component separately. Fourth, look for the relationships between any lesions and each component. This approach is illustrated below with the dissection of a portion of the tongue and mandible (partial glossectomy with partial mandibulectomy) resected for cancer.

Step 1. Identify the Various Components of the Specimen

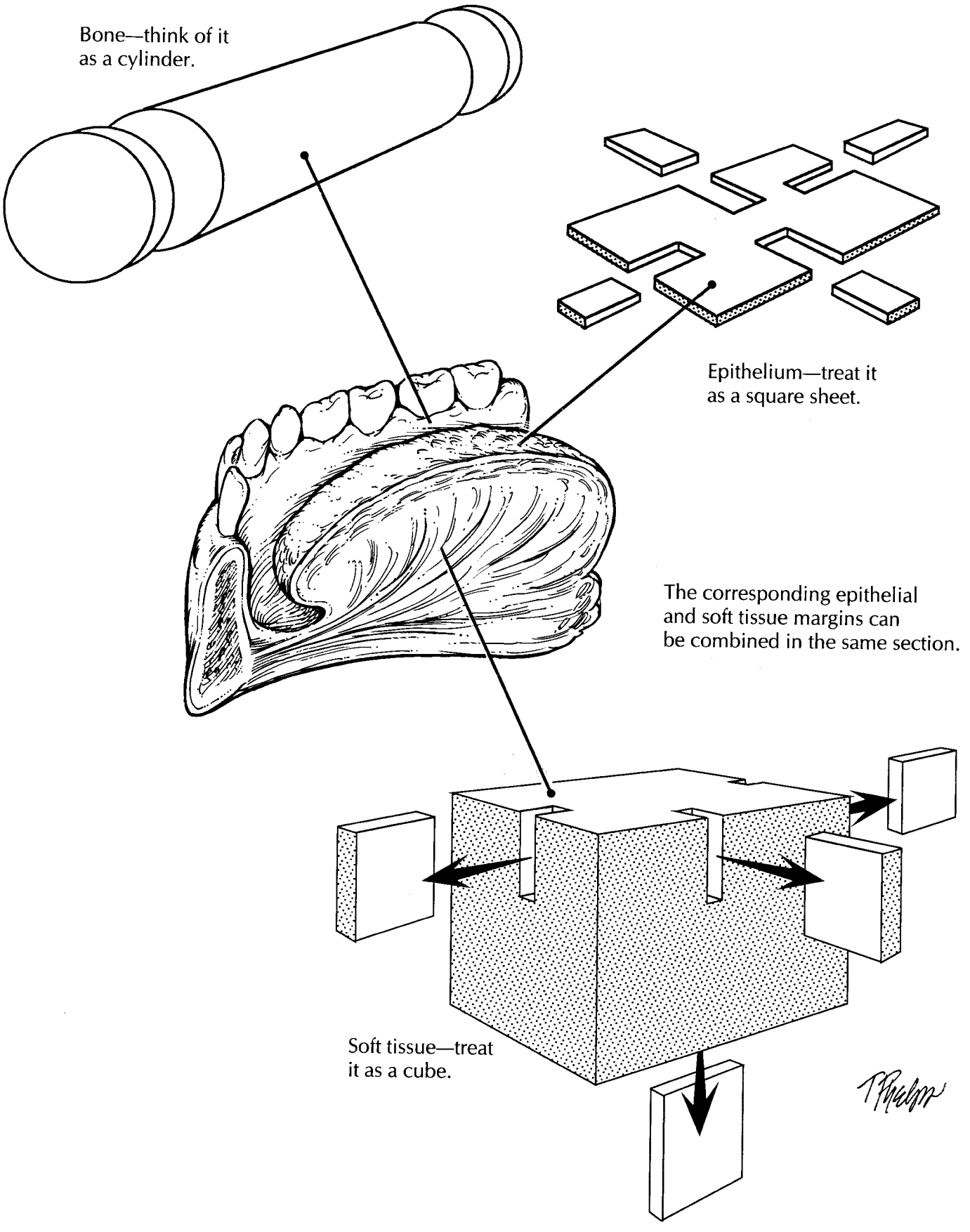
In this case, the components include the soft tissue and muscle of the tongue, the epithelium of the oral cavity, and the bone of the mandible. This step helps ensure that important components of the specimen are not left out of the dissection, gross description, and tissue sampled for histology.

Step 2. Think of Each Component as a Geometric Shape

For example, as illustrated for the partial glossectomy with partial mandibulectomy specimen, the muscle of the tongue can be thought of as a cube, the bone of the mandible as a cylinder, and the epithelium as a flat two-dimensional square sheet.

Step 3. Approach Each Component Separately

The goal here is to take sections that will demonstrate each margin. The margins are easily remembered using the geometric shapes visualized for each component. For example, the muscle is thought of as a cube. You should therefore take perpendicular margins from each face of the cube. As illustrated, these include the anterior, posterior, medial, lateral, and inferior surfaces. The sixth surface, the superior surface, is covered by the epithelium, so this is not a margin. Similarly, the epithelium is thought of as a square sheet. Take perpendicular margins from the posterior, anterior, medial, and lateral edges of this square. Finally, the bone is thought of as a cylinder. Shave sections of the two ends of the cylinder—the anterior and posterior bone margins—should be submitted. Thus, in the case illustrated, the margins taken include anterior, posterior, medial, lateral, and inferior soft tissue margins; anterior, posterior, medial, and lateral epithelial margins; and anterior and posterior bone margins. Obviously, corresponding epithelial and soft tissue margins can be—and, indeed, usually are—included in the same section.


Bone—think of it as a cylinder.
Epithelium—treat it as a square sheet.
The corresponding epithelial and soft tissue margins can be combined in the same section.
Soft tissue—treat it as a cube.

Step 4. Document the Relationship Between Any Lesions and Each Component of the Specimen

All lesions, as well as sections demonstrating the relationship of each lesion to each of the various components of the specimen, should be sampled. For example, in the specimen illustrated, sections should be taken showing the relationship of the tumor to the bone, of the tumor to the surface of the epithelium, and of the tumor to the muscle.

While we find this geometric approach to specimens helpful, you may wish to develop your own system for complex specimens. Whatever approach you choose, remember that your ultimate goal is to provide the clinician with the information needed for the appropriate management of the patient.