University of Southern California School of Dentistry

Center for Diagnostic Sciences BULLETIN

October 2005 Issue #13

This bulletin focuses on radiographic diagnosis. We thank Dr. Jucheng Chen for his contribution to this issue. As always, we invite your comments, questions, and suggested topics for future bulletins. Please forward your comments to Anisa Marino at anisamar@usc.edu.

Why describe radiographic findings?

Dental radiographs are important tools in modern dentistry. Here at USCSD countless radiographs are taken every day. However, the results of these radiographs are rarely seen in the progress notes of Axium. By contrast, in the medical community, radiographic descriptions or interpretations are routinely recorded in medical records by physicians. As dentists we are also health care professionals, so there is no reason for us not to record radiographic findings in dental progress notes. Radiographs are legal documents, as are progress notes. It is difficult to imagine that the contents of one legal document are not recorded in the other. A legal document cannot be completed without including all information. Thus, it is our professional and legal obligation to describe radiographic findings in the progress notes.

How do we describe radiographic lesions?

Radiographic lesions are easy to describe. In our daily practice, most radiographic lesions are associated with teeth. Therefore, a radiographic description usually includes three components: **(1) location relative to the tooth, (2) size, and (3) configuration of the lesion.**

Location, Location, Location!

Generally speaking, radiographic lesions can be seen in four different locations in relation to the adjacent teeth: periapical, interradicular, edentulous zone, and pericoronal (Figure 1). The most common location is periapical. Naturally, tooth numbers must be included in

Do not forget the size.

The second component is size. This is perhaps the easiest but most often forgotten component in a radiographic description. The size of a lesion is usually expressed in millimeters.

Configuration.

The third component is configuration. This is the most interesting and diversified component in a radiographic description. Radiographic configuration usually includes four elements: **number, border, radiodensity, and altered anatomic structures**.

Number of lesions.

In most situations there is only one lesion, but there can be more than one. Therefore, it is essential to make it clear if the condition is either focal or multifocal (Figure 2).

Borders.

The borders (or margins) can either be well-defined or ill-defined. With a well-defined border there is a clear-cut region where the lesion ends. By contrast, with an ill-defined border it is often difficult to ascertain where margins end. Well-defined borders can be either corticated or non-corticated (Figure 3). With a corticated border there is a dense sclerotic rim around the lesion.

Radiolucent lesions.

The radiodensity of a lesion can be either radiolucent or radiopaque. Descriptive terms for the configuration of radiolucent lesions include unilocular, multilocular (a "soap bubble" or "honey comb" appearance), scalloped, moth-eaten (Figure 4), and irregularly shaped (no illustration). An irregular shape is often confused with an ill-defined border. Irregular shape refers to a

the description.
shape that cannot be otherwise described. Ill-defined border refers to an unclear border. Please note that the terms multifocal and multilocular are not synonymous. Multifocal means there is more than one lesion (Figure 2B), and multilocular refers to a soap-bubble appearance (Figure 4B).

Radiopaque lesions

Descriptive terms for the configuration of radiopaque lesions include focal radiopacity, target lesion, mixed lucent-opaque, ground glass, and cotton-wool (Figure 5). The term "target lesion" refers to a radiopaque core with a radiolucent halo. A ground glass appearance resembles the glass of shower doors. A cotton wool appearance looks like cotton balls sitting in a black background.

Altered Structures

The last element of configuration is altered anatomic structure. When lesions are big enough, they often cause changes of the adjacent anatomic structures, such as cortical expansion with or without perforation, root resorption, and tooth displacement (Figure 6).

Figures 1-4 shown below:

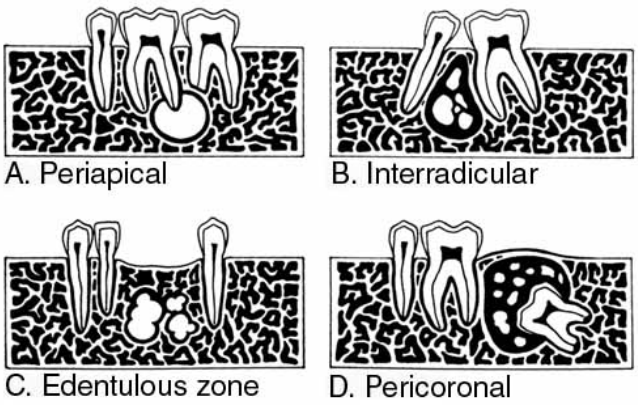


Figure 1. Locations of radiographic lesions in association with teeth.

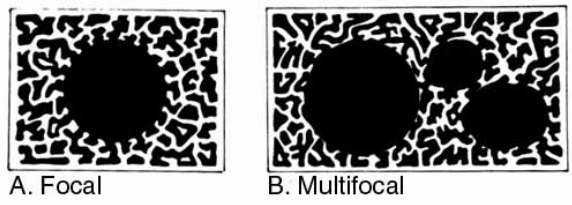


Figure 2. Focal vs. multifocal lesions.

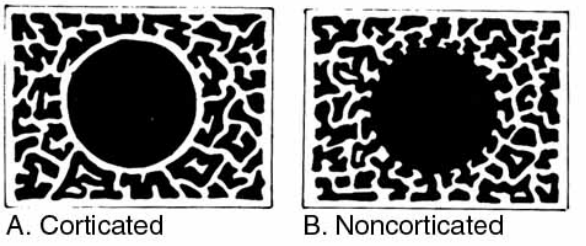


Figure 3. Corticated vs. non-corticated lesions.

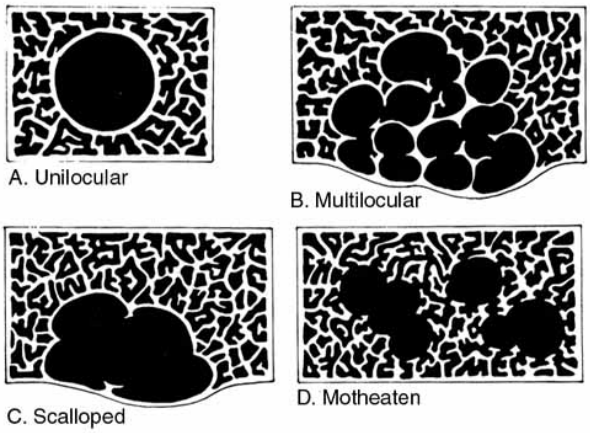


Figure 4. Configuration of radiolucent lesions.

Figures 5-7 shown below:

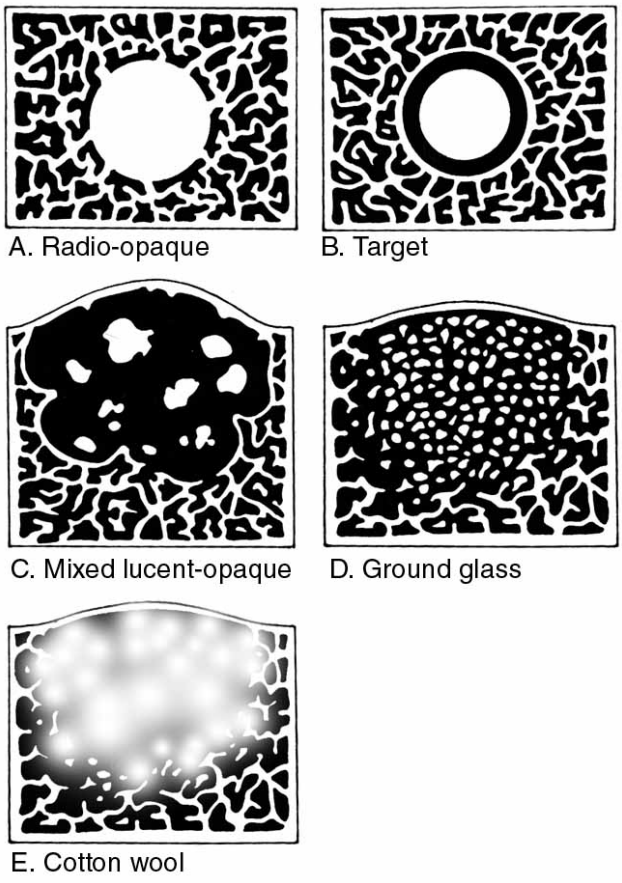


Figure 5. Configuration of radiopaque lesions.

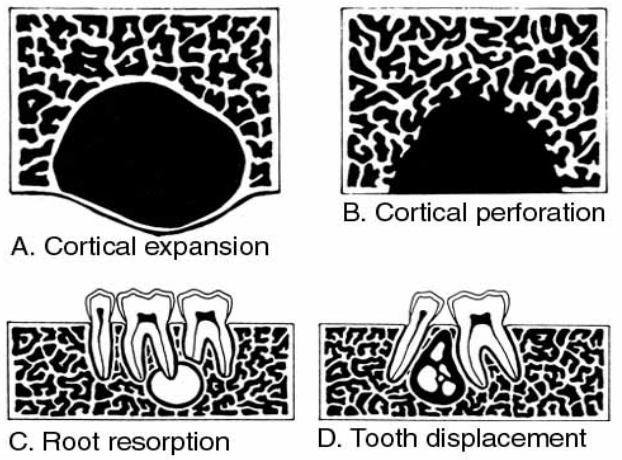


Figure 6. Commonly seen altered anatomic structures.

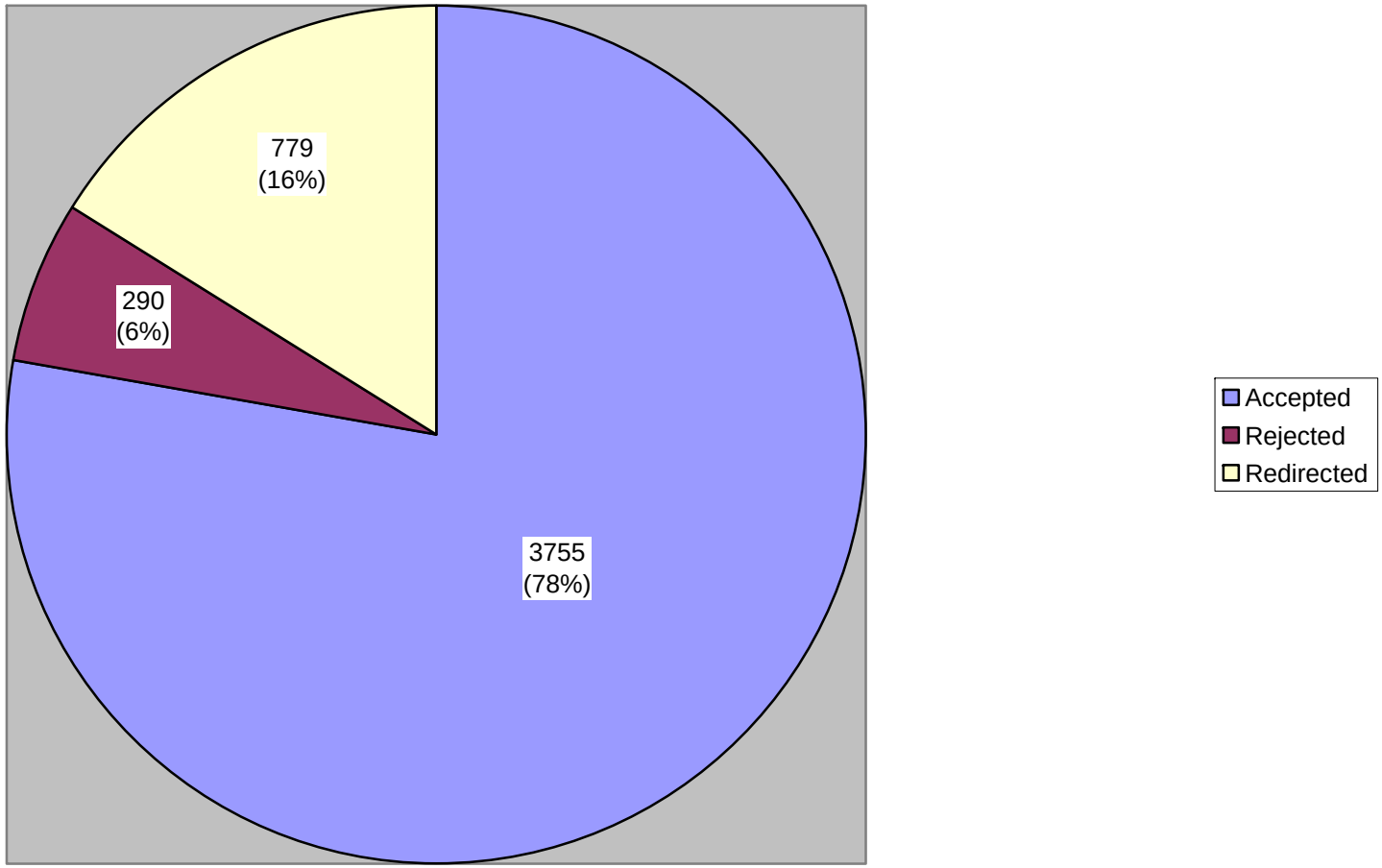
It sounds simple; how would we describe the lesion in the radiograph below?

The lesion can be described easily using the formula discussed above: location, size, and configuration. The description would read: *This radiograph shows a 20x30 mm interradicular scalloped radiolucent lesion between teeth #21 and #22. This lesion is locally corticated and associated with displacement of teeth #21 and #22. Tooth #20 is endodontically treated with no evidence of a periapical lesion. Teeth #18, #19, and #20 have coronal restorations.*

It is not the intention of this bulletin to cover all possible radiographic changes. Instead, this bulletin provides some simple guidelines to describe the most common radiographic lesions. Obviously, there are lesions such as alveolar bone loss, a widened periodontal ligament, and lesions involving the mandibular ramus, the inferior alveolar canal, and the maxillary sinus that are not discussed in the bulletin. Yet, as we strive to make radiographic descriptions second nature, any radiographic change can be described easily.

Did you know?

Number of Patients Screened, Accepted, Rejected & Redirected in the Center for Diagnostic Sciences from September 29,2004 through September 28, 2005



Did you also know?

Number of Patients Screened, Accepted, Rejected & Redirected in the Center for Diagnostic Sciences from September 29, 2003 through September 28, 2004