

the site and severity of injury. If the underlying arachnoid membrane has been torn, fractures also provide potential pathways for entry of bacteria to the cerebrospinal fluid (CSF) with a risk of meningitis and for leakage of CSF outward through the dura. If there is leakage of CSF, severe orthostatic headache results from lowered pressure in the spinal fluid compartment.

Most fractures are linear and extend from the point of impact toward the base of the skull. Basilar skull fractures are often extensions of adjacent linear fractures over the convexity of the skull but may occur independently owing to stresses on the floor of the middle cranial fossa or occiput. Basilar fractures are usually parallel to the petrous bone or along the sphenoid bone and directed toward the sella turcica and ethmoidal groove. Although most basilar fractures are uncomplicated, they can cause CSF leakage, pneumocephalus, and delayed cavernous-carotid fistulas. Hemotympanum (blood behind the tympanic membrane), ecchymosis over the mastoid process (Battle sign), and periorbital ecchymosis (“raccoon sign”) are clinical signs associated with basilar fractures.

■ EPIDURAL AND SUBDURAL HEMATOMAS

Hemorrhages between the dura and skull (epidural) or beneath the dura (subdural) have characteristic clinical and imaging features. They are sometimes associated with underlying brain contusions and other injuries, often making it difficult to determine the relative contribution of each component to the clinical state. The mass effect of raised intracranial pressure (ICP) caused by these hematomas can be life threatening, making it imperative to identify them rapidly by CT or MRI scan and to surgically remove them when appropriate.

Epidural Hematoma (Fig. 443-1) These highly dangerous lesions usually arise from an injury to a meningeal arterial vessel and evolve rapidly. They are often accompanied by a “lucid interval” of several minutes to hours prior to neurologic deterioration. They occur in up to 10% of cases of severe head injury, but are less often associated with underlying cortical damage compared to subdural hematomas. Rapid surgical evacuation and ligation or cautery of the damaged