

associated soft-tissue injury, and the presence of other symptoms related to OI help to determine the diagnosis.

## Acquired Defects

### Legg-Calvé-Perthes Disease

Legg-Calvé-Perthes disease is a self-limiting disorder in which there is avascular necrosis of the femoral head. The disease affects children 2 to 12 years old, but most cases occur as an isolated event in boys between 4 and 8 years old with a male-to-female ratio of 4 : 1. In approximately 10% of cases, the involvement is bilateral; most of the affected children have a skeletal age significantly below their chronologic age. Caucasian children are affected 10 times more frequently than African-American children ([Loder and Skopelja, 2011b](#)).

### Pathophysiology

The cause of the disease is unknown, but a temporary disturbance of circulation or vascular supply to the femoral capital epiphysis produces an ischemic avascular necrosis of the femoral head. During middle childhood, circulation to the femoral epiphysis is more tenuous than at other ages and can become obstructed by trauma, inflammation, coagulation defects, and a variety of other causes. The pathologic events seem to take place in four stages ([Box 29-7](#)). The entire disease process may encompass as little as 18 months or continue for several years. The reformed femoral head may be severely altered or minimally impacted.

#### **Box 29-7**

### **Radiographic Stages of Legg-Calvé-Perthes Disease**

**Stage I: Initial, or avascular, stage:** Avascular necrosis or infarction of the proximal femoral epiphysis with degenerative changes producing flattening of the upper surface of the femoral head or a decrease in femoral head height