the microorganism can adhere to their surface and spread as a biofilm, which allows genotypic and phenotypic alterations in the bacteria that, in turn, make it more difficult to eliminate them from the infected site. When a contaminated implant is diagnosed, it must be removed during the debridement procedure (Conterno and Turchi, 2013; Maffulli et al., 2016; Winkler and Haiden, 2016; Hickok and Shapiro, 2012).

When osteomyelitis is a consequence of a contiguous spread from an adjacent focus of infection, it means that osteomyelitis focus is found in adjacent tissues. It usually occurs after biofilms are established in the infected site, as long as biofilms facilitate bacteria spread into other tissues. Secondary osteomyelitis can also be a consequence of peripheral vascular disease like infections in the teeth, intestines, urinary system and heart, and in diabetic foot ulcers. In general, hematogenous osteomyelitis is predominant in children due to their intensified blood supply, mainly affecting long bones. After being established, the infection leads to an increase in intramedullary pressure as a consequence of the enhanced amount of bacteria, allowing the bacteria to cross the cortex and periosteum. In this last stage, the periosteum has a diminished blood supply, depression of the immunological systems, which favors bone necrosis, and formation of a pus-rich envelope surrounding the necrotized periosteum (also known as sequestrum) (Conterno and Turchi, 2013; Maffulli et al., 2016; Winkler and Haiden, 2016; Ciampolini and Harding, 2000; Schmitt, 2017; Hickok and Shapiro, 2012; Lew and Waldvogel, 2004; Fangous et al., 2016; Mears and Edwards, 2016). Fig. 14.1 didactically shows the pathways in which the bone can be infected.

Besides the above-described classifications, osteomyelitis can also be classified as acute or chronic (Maffulli et al., 2016; Nandi et al., 2016; Schmitt, 2017).

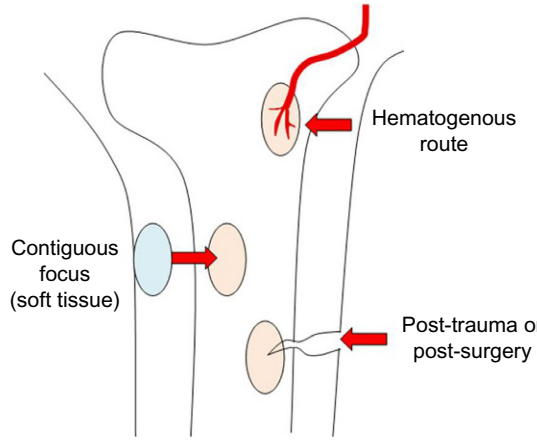

FIG. 14.1 Different pathways in which osteomyelitis pathogens access the bone tissue.