

■ FROSTBITE

In this condition, tissue damage results from severe environmental cold exposure or from direct contact with a very cold object. Tissue injury results from both freezing and vasoconstriction. Frostbite usually affects the distal aspects of the extremities or exposed parts of the face, such as the ears, nose, chin, and cheeks. Superficial frostbite involves the skin and subcutaneous tissue. Patients experience pain or paresthesia, and the skin appears white and waxy. After rewarming, there is cyanosis and erythema, wheal-and-flare formation, edema, and superficial blisters. Deep frostbite involves muscle, nerves, and deeper blood vessels. It may result in edema of the hand or foot, vesicles and bullae, tissue necrosis, and gangrene (**Fig. 281-3F**).

Initial treatment is rewarming, performed in an environment where reexposure to freezing conditions will not occur. Rewarming is accomplished by immersion of the affected part in a water bath at temperatures of 40°–44°C (104°–111°F). Massage, application of ice water, and extreme heat are contraindicated. The injured area should be cleansed with soap or antiseptic, and sterile dressings should be applied. Analgesics are often required during rewarming. Antibiotics are used if there is evidence of infection. The efficacy of sympathetic blocking drugs is not established. After recovery, the affected extremity may exhibit increased sensitivity to cold.

■ FURTHER READING

- ABOYANS V, CRIQUI MH: The epidemiology of peripheral artery disease, in *Vascular Medicine: A Companion to Braunwald's Heart Disease*, 3rd ed. MA Creager et al (eds). Philadelphia, Elsevier, 2020, pp 212-230.
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- CONTE MS et al: Global vascular guidelines on the management of chronic limb-threatening ischemia. *J Vasc Surg* 69:3S-125S e40, 2019.
- GERHARD-HERMAN MD et al: 2016 AHA/ACC guideline on the management of patients with lower extremity peripheral artery