

Traumatic rupture of a great vessel from penetrating injury is usually associated with hemothorax and, less often, hemopericardium, both of which are associated with significant mortality. Local hematoma formation may compress adjacent vessels and produce ischemic symptoms, and arteriovenous fistulas may develop, occasionally resulting in high-output heart failure.

Some patients with penetrating chest injuries are hemodynamically stable at presentation and without symptoms to suggest cardiac injury; however, as many as 20% of these patients will have occult penetrating cardiac trauma. As a result, there should always be a high index of suspicion for cardiac injury in any patient with penetrating chest trauma, irrespective of clinical stability. TTE should be performed in all of these patients to assess for the presence of pericardial effusion or hematoma.

Occasionally, patients who survive penetrating cardiac injuries may subsequently present days or weeks later with a new cardiac murmur or heart failure as a result of mitral or tricuspid regurgitation or an intracardiac shunt (i.e., ventricular or atrial septal defect, aortopulmonary fistula, or coronary arteriovenous fistula) that was undetected at the time of the initial injury or developed subsequently (**Fig. 272-1**). Therefore, trauma patients should be examined carefully several weeks after the injury. If a mechanical complication is suspected, it can be confirmed by echocardiography or cardiac catheterization.