

and their recanalization is significantly better if the occlusion is recent (within 3 months) or there are favorable anatomic features. Improvements in equipment and complex antegrade and retrograde techniques have increased the success rates of recanalization of chronic total occlusions to 70–80%.

Serious complications are rare but include a mortality rate of 0.1–0.3% for elective cases, a large myocardial infarction in <3%, and stroke in 0.1–0.4%. Patients who are older (>65 years), undergoing an emergent or urgent procedure, have chronic kidney disease, present with STEMI, or are in shock have significantly higher risk. Scoring systems can help to estimate the risk of the procedure. Myocardial infarction during PCI can occur for multiple reasons including an acute occluding thrombus, severe coronary dissection, embolization of thrombus or atherosclerotic material, or closure of a side branch vessel at the site of angioplasty or stent placement. Most myocardial infarctions are small and only detected by a rise in the creatine phosphokinase (CPK) or troponin level after the procedure. Only those with significant enzyme elevations (>10 times the upper limit of normal) are associated with a less favorable long-term outcome. Coronary stents have largely prevented occlusive coronary dissections due to the scaffolding effect of the stent.

All types of stents are prone to stent thrombosis (1–3%), either acute (<24 h) or subacute (1–30 days), which can be ameliorated by greater attention to full initial stent deployment and the use of dual antiplatelet therapy (DAPT) (aspirin, plus a platelet P2Y₁₂ receptor blocker [clopidogrel, prasugrel, or ticagrelor]). Late (30 days–1 year) and very late (>1 year) stent thromboses occur very infrequently with stents but are slightly more common with first-generation drug-eluting stents, necessitating DAPT for up to 1 year or longer. Use of the second-generation stents is associated with lower rates of late and very late stent thromboses, and shorter durations of DAPT (6 months) are recommended for the stent, although longer durations may be useful depending on the underlying atherothrombotic and bleeding risks. Premature discontinuation of DAPT, particularly in the first month after implantation, is associated with a significantly increased risk for stent thrombosis (three- to ninefold greater). Stent thrombosis results in death in 10–20% and myocardial infarction in