



**FIGURE 50-1** **A**, The adhesive interactions that produce stable platelet attachment to subendothelial von Willebrand factor (vWF). The initial attachment between platelet glycoprotein Ib (GPIb) and its binding domain on vWF is rapid but has a short half-life, and the result is a rolling movement caused by torque generated by flowing blood. The vWF-GPIb interaction produces transmembrane signaling that activates the platelet to change shape and simultaneously transforms GPIIb/IIIa into an activated conformation capable of binding to a distinct arginine-glycine-aspartate domain on vWF. This secondary adhesion causes the platelet to firmly adhere to the exposed subendothelial vWF. **B**, The internal and external anatomy of a platelet. The platelet consists of several important external, transmembrane, and internal components that help to promote platelet activation, adhesion, aggregation/agglutination, and general coagulation factor-based hemostasis. The most important and most clinically relevant aspects of platelet anatomy are shown. Details regarding the steps leading to platelet activation and release of granules and cytosolic contents are discussed in the text. A, A subunits of Factor XIII; COX, Cyclooxygenase; EC, Endothelial cell; FXIII, factor XIII; GP, glycoprotein complex.