

Coronary artery anatomy

Coronary artery anatomy

The coronary arteries are branches of the ascending aorta, arising from ostia in the aortic sinuses above the aortic valve, the right from the anterior sinus and the left from the left posterior sinus (Figure 59.2).

Summary box 59.3 Coronary artery bypass surgery

Left coronary artery
The left main coronary artery, which arises from the aortic root, can be the site of significant stenosis ('left main stem disease') and carries the worst prognosis in terms of survival without surgery. The artery is inaccessible at its origin and therefore grafts are anastomosed to its branches, the left anterior descending (LAD) artery or anterior interventricular artery and obtuse/marginal (OM) branches of the circumflex artery. The LAD artery is the most frequently diseased coronary artery and most often bypassed during CABG surgery.

Right coronary artery
The right coronary artery (RCA) passes from its origin anteriorly between the right atrial appendage and the pulmonary trunk and courses in the atrioventricular groove around the margin of the right ventricle. It usually forms an anastomosis with the circumflex artery at the junction of the right and left atria and the interventricular septum (the crux) on the back of the heart. It continues as the posterior descending artery or interventricular artery. Common sites of stenosis of the RCA are in its proximal portion or at the bifurcation or crux. In the presence of disease at the bifurcation, a graft can be anastomosed distally to the posterior descending artery. Anatomical dominance is determined by the artery that supplies the posterior descending artery. In approximately 90% of cases the posterior descending artery arises from the RCA, a pattern referred to as right dominance. The posterior descending artery can also arise from the circumflex artery, a pattern referred to as left dominance, which occurs in approximately 10% of cases. Codominance describes the situation in which there are two posterior descending arteries, one each arising from the right coronary and circumflex arteries; the incidence is around 5%.

Randomised controlled trials have confirmed improvement in survival following CABG for certain groups of patients

Randomised controlled trials have confirmed

symptomatic bene /f_i ts (relief of
angina) following CABG Left atrium
Circum /f_l ex branch of left
coronary artery Pulmonary cum /f_l
ex veins Posterior ventricular
branches Inferior vena cava Right
coronary artery Posterior
Atrioventricular descending node
artery artery (b) (a) Anterior
surface of the heart; (b) base and
diaphrag

Revision #1

Created 2025-12-31 15:22:08 UTC by Omar Ayman

Updated 2025-12-31 15:22:08 UTC by Omar Ayman