

# Cardioplegia

**Cardioplegia** is a planned, temporary cessation of cardiac activity using cardioplegic solution during cardiac surgery.

In most of the cardiac surgeries performed in the extracorporeal circulation, it is necessary to load the clamp on the ascending aorta, but this interrupts the flow of blood through the coronary arteries with the risk of ischemic damage to the myocardium.

**Hypothermic cardioplegia** is the most commonly used perioperative (extracorporeal circulation surgery) method of protecting the myocardium from ischemia. Cardioplegic arrest allows to operate in a calm and bloodless operating field and significantly reduces oxygen consumption.<sup>[1]</sup> Its principle is the application of 500-1500 ml (10 ml / kg) of **cardioplegic solution** at a temperature of 4-10 ° C within 1-2 minutes, which due to the supraphysiological concentration of **potassium** induces asystole in diastole and cooling of the myocardium to 8-10 ° C. (hyperkalemia disables repolarization of the cardiomyocyte membranes, cardiomyocytes remain depolarized, and the heart is stopped in diastole).<sup>[1]</sup> <sup>[2]</sup>

The cardioplegic solution can be applied:<sup>[3]</sup>

1. into the clamped ascending aorta, coronary arteries orifice or the orifice of the aortocoronary bypass - **antegrade cardioplegia** ;
2. cannula through the right atrium to the coronary sinus - **retrograde cardioplegia**;
3. antegrade and retrograde.

According to the type of the cardioplegic solution we distinguish:

- **crystalloid hypothermic cardioplegia** (crystalloid cardioplegic solution) - a cold solution is always applied;
- **blood cardioplegia** (oxygenated blood enriched with cardioplegic solution) - blood can be applied cold or warm ("warm heart surgery").<sup>[2]</sup>

## References

### Reference

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