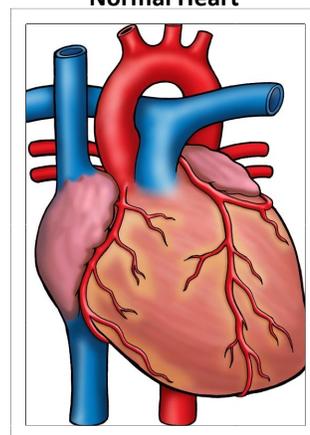




Nikaidoh Procedure

NOTES:

Normal Heart



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Nikaidoh Procedure

The Nikaidoh procedure is a surgery that can be used to correct congenital heart defects, such as double outlet right ventricle (DORV) or transposition of the great arteries (TGA) with narrowing of the pulmonary valve (stenosis). This surgery involves “translocation” of the transposed aorta over the correct, left, ventricle. The outflow of the right ventricle is then reconstructed with either a right ventricle to pulmonary artery (RV-PA) conduit or patch made of bovine (cow) pericardium (sac surrounding the heart). There are many types of materials used for RV-PA conduits. Depending on the surgical plan and patient’s anatomy, conduits made of Gore-tex® (Gore), homograft (cadaver valved tissue), Contegra® conduits (Medtronic) (valved bovine jugular vein), or Hancock® conduits (Medtronic) (Dacron tube graft containing a porcine (pig) valve) can be used.

During surgery, a median sternotomy (incision through the middle of the chest) is done through the patient’s prior incision, if present. The patient is placed on cardiopulmonary bypass (heart–lung machine). The aortic root and valve is removed as one piece from its location over the right ventricle. When removing the aortic root, a cuff of muscle is left surrounding the aortic valve to preserve the leaflets and the coronary arteries are kept in their original positions. The pulmonary valve is excised and removed. The excised aortic root is then slid back so that it is sitting over the left ventricle. The cuff of muscle in the aortic root is then sewn to the muscle of the left ventricle. Often, a longer flap of muscle is left on the front of the aortic root, so that it can be used to fill the space where the ventricular septal defect (VSD) is. If the VSD is very large, occasionally a Dacron® patch can be used to close the space of the VSD. Once the neo-aorta is sewn over the left ventricle, the outflow tract of the right ventricle must be reconstructed. If a RV-PA conduit is used, an appropriate sized prosthesis is selected. One end of the conduit is sewn onto the incision on the pulmonary artery and the other end is sewn onto the incision on the right ventricle. If the right ventricle outflow tract is planned to be reconstructed, a patch of bovine pericardium is cut to the appropriate size. The patch is sutured to the pulmonary artery and right ventricle to create a “baffle” or “tunnel” for blood to travel to the lungs in. The patch is often sutured to the aorta & heart muscle, which creates the back wall of the new outflow tract. After completion of the Nikaidoh procedure, “blue,” deoxygenated blood can travel from the right ventricle to the lungs and “red,” oxygenated blood can travel from the left ventricle to the body, similar to a normal heart’s circulation.

Typical Post-Operative Course:

- Surgery Length: 6 hours
- Typical Lines: Most patients will return to the Cardiovascular Care Center after surgery with a breathing tube, an arterial line to monitor blood pressure, a central venous line (for giving IV medicines and drawing labs), a peripheral IV, chest tubes to drain fluid, a foley catheter to drain urine, and temporary pacing wires.
- Typical Post-Operative Recovery: The breathing tube is generally removed within 24-48 hours after surgery. The arterial line is usually removed within a few days, once most IV medicines are stopped. The central venous line is removed once most IV medicines are stopped and labs no longer need to be drawn. Chest tubes are usually removed 24-48 hours following surgery, once the output of fluid is minimal. Depending on the type of conduit placed and surgical plan, the patient may be placed on aspirin for a period of time after surgery.
- Typical Length of Stay: A patient usually stays in the hospital for 8 days following a Nikaidoh procedure.

Typical Home Medications: Children will require one or more medications at home following a Nikaidoh procedure such as:

- Diuretics (Lasix) to control fluid
- Anticoagulation (Aspirin) to prevent clotting
- Afterload reducing agent (Enalapril, Captopril)
- Bacterial endocarditis prophylaxis may be required.