The operation

Anthony Dobell, MD

It took place on May 6, 1953, in an ancient white-tiled operating room across a hallway from the men's surgical ward that then existed in Jefferson Hospital, Philadelphia. The patient was 18 years old and the preoperative diagnosis was interventricular defect?, interatrial defect?, the uncertainty arising because the heart catheterization done by a surgical resident had shown the step-up in oxygen saturation to be at the ventricular level. The assistants were Frank F. Allbritten, Bernard J. Miller, and Thomas F. Nealon, and the surgeon was John H. Gibbon, Jr. Anesthesia was induced with thiopental sodium (Pentothal), and one of the surgeons inserted an endotracheal tube before the maintenance of anesthesia was turned over to a nurse-anesthetist, there being no MD-anesthetists at Jefferson at that time. What follows is abridged from Dr Gibbon's Operative Report:

A needle was inserted into the right radial artery by Dr Robert Finley and attached to a mercury manometer to permit observation of the blood pressure during the nonpulsatile phase of the procedure. The chest was opened by a transverse incision into both pleural cavities, giving excellent exposure, and a large flap of pericardium was cut, leaving the base attached with a view to using the patch to close an atrial defect. The defect was palpated with a finger inserted through the right atrial appendage and it was judged to be the size of a silver dollar.

The vertical screen oxygenator containing 8 screens 23 inches in height was primed with heparinized cross-matched donor blood, and the blood was recirculated over the artificial lung to maintain a thin film of blood on each side of each screen. A serious problem later arose because only 10 mg of heparin was added to each pint of donor blood.

The left subclavian artery was cannulated with considerable difficulty and not until the artery had been divided to obtain a proper angle to insert the plastic cannula. The inferior vena cava was cannulated with a large plastic tube passed through the base of the auricular appendage and the superior cava was cannulated through the atrial wall.

After partial circulation had been started, some difficulty was encountered in leakage of blood from the large lung. It appeared that there had been some deposition of fibrin in the upper part of the lung with a partial loss of film on some of the screens, due to the inadequate heparinization of donor blood. It was a rather crucial point but Dr Allbritten and I decided to go ahead with the insertion of the plastic vent in the left ventricle and to proceed rapidly with the closure of the interatrial defect.

The caval blood was totally diverted to the pump-oxygenator, the right atrium was widely opened, and coronary venous blood was aspirated, defoamed, and returned to the extracorporeal apparatus. A suture was placed in the pericardial patch, but this was abandoned and the defect was securely closed with a running suture. The atrial wall was then rapidly closed as there was a progressive decline in the oxygen saturation of the arterial blood during the 26 minutes of cardiopulmonary bypass.

The chest was closed with pericostal sutures of catgut and interrupted cotton sutures. An hour after the operation she was returned to her bed in the women's ward and could talk and recognize people. "At no time during her convalescence from her operation did she show any signs of cerebral anoxia or central nervous system injury, or any evidence of intravascular clotting or embolism." There was a slight rise in serum bilirubin on the first postoperative day but her convalescence was really uneventful. The murmur had disappeared.

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