

SURGICAL APPROACH TO 100 CASES OF CONGENITAL HEART DISEASE AT HACETTEPE HOSPITAL

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During the two and a half years between January 1960 and June 1962, 100 patients with congenital heart defects were operated on at Hacettepe Medical Center. The first 50 operations were performed within the first two years, and the second 50 were performed in the last six months of the period. Only six deaths occurred: five during the first series of 50 operations and only one in the last series.

Fifty - six per cent of the patients were female and 44 per cent were male. Their ages ranged from seven months to 28 years. Sixty - four per cent of the cases were of the tetralogic type ;14 per cent were cases of patent ductus arteriosus ; and nine per cent were cases of ventricular septal defect.

Of the 64 patients with tetralogy of Fallot, Blalock surgery was performed on 63. In eight per cent of these cases the aortic arch was on the right and the original Blalock-Taussig method was applied. In one case involving pseudo-truncus and hypoplastic pulmonary arteries, anastomosis was not performed. In this case too, the aortic arch was on the right. In another similar case, the left subclavian artery was too short, and although the inferior pulmonary ligament was cut, the pulmonary and subclavian arteries could not be brought together. Anastomosis was attained by using a graft, with satisfactory results. Patients with right aortic arch composed only 12.8 per cent of the total.

In four cases (6.2 per cent of those with tetralogy of Fallot) left persistent vena cava was present. In two cases (3.1 per cent) there was dextrocardi, and in one case (1.5 per cent) there was an interatrial septal defect and pentalogy had occurred. The operations were performed from the left in all cases. The thorax was entered

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at the fourth intercostal space by a posterolateral incision, without removing the rib. All of the patients were checked at regular intervals following the operation. In only one case was the shunt not functioning.

Eight of the 64 tetralogy cases were in critical condition with a high degree of cyanosis, and mental and physical retardation. In one instance, the patient was rushed directly to the operating room after he had lapsed into a coma from which he could not be roused. Three patients (4.6 per cent), all considered to be in critical condition, died. The rest of the children who were operated on improved clinically, and the results of laboratory examinations indicated improvement. Cyanosis decreased, the hematocrit level showed an immediate and marked decrease and continued to fall for three to six months after the operation. The average pre-operative hematocrit level was 60, whereas the postoperative level averaged 41. The highest level encountered in any of our patients was 85.

The Blalock surgical technique is invaluable. In some cases, almost complete recovery occurs. In others, the technique serves to prolong the life of the patient and prepare him for total correction.

There were 14 cases of patent ductus arteriosus among our 100 patients, and all survived the operation. In each case the thorax was entered by a posterolateral incision at the fourth intercostal space on the left without removing the rib. The left laryngeal recurrent nerve was also protected. In nine of these cases, the patent ductus arteriosus was bound with a double ligature and a transfixing suture was used. In one case, only the double ligature was used and in the other four cases, the patent ductus arteriosus was cut and sutured. A test occlusion was applied in each case to the patent ductus arteriosus and the heart movement was watched for three minutes to be sure that heart movements did not change. Only after these precautions had been taken was the patent ductus arteriosus occluded.

Pre-occlusion and postocclusion pulmonary artery pressures were measured when necessary. It is necessary to measure pulmonary artery pressure after application of the occlusion test, especially in cases where pre-operative pulmonary pressures are close to or equal to systemic pressure. The opinion that those patients whose pre-operative pulmonary pressure is equal to systemic pressure (balanced shunt) should not be operated upon, is not well-founded, if not completely incorrect. If pressure in the pulmonary artery

drops after the occlusion test, it does not mean that irreversible pulmonary arteriosclerosis has occurred. The operation can be successful and the patient can recover completely. If pulmonary artery pressure drops below normal after the occlusion test, this indicates that there may be narrowing of the pulmonary artery, as seen for example in acyanotic tetralogy.

If pressure in the pulmonary artery increases following the occlusion test, this means that the patient has developed irreversible pulmonary arteriosclerosis and the patent ductus arteriosus serves as a safety valve, shunting from right to left. If the duct is closed death will follow as a result of an insufficiency of the right side of the heart. Therefore, in these patients, the patent ductus arteriosus should not be occluded.

Perhaps the most difficult situation arises after the occlusion test, when there is no change in pulmonary artery pressure, and if this pressure is the same as systemic pressure. Many doctors are of the opinion that the patent ductus arteriosus should not be closed under such conditions, as a closed duct may limit the patient's life. In our opinion however, surgical intervention may be beneficial for patients in this group. The operation may result in a complete cure, and we feel the risk is worth taking.

We had nine cases involving ventricular septal defects in the total group of 100, only one of which resulted in death. In this case, an autopsy revealed canalis atrioventricularis and a hypoplastic aorta. In the eight remaining cases, rings were applied to the pulmonary artery. We did not operate on patients whose right ventricular pressure as measured immediately prior to the operation was below 50 mm. Hg.

Four cases of pulmonary stenosis were of the purely valvular type and no deaths occurred in this group. In one case the heart-lung machine was employed and in the other three we induced hypothermia in performing the open heart operation, using the inflow stasis technique.

We had three cases of interatrial septal defect and one death occurred. In two of these cases, the openheart method (one using hypothermia, the other with the heart-lung machine) was employed. In the third case, the closed method was used. In the case of the patient who died, it was discovered at autopsy that other defects such as abnormal pulmonary venous return and coronary sinus had

caused fatal complications. The other two operations were entirely successful.

Out of three cases of aorta coarctation, we had satisfactory results in two. In the third case, the operation was apparently successful, but the child had to be moved to another hospital as a result of a fire and was found dead the following day.

In one case involving truncus, the pulmonary aorta was opened and, when the truncus was found, the artery was closed as it had been. In this case, only pressures were measured.

One of our cases was that of a patient who had difficulty swallowing because of a vascular ring. At the time of the operation, it was found that the aorta, the left subclavian artery and ligamentum arteriosum had formed a ring and exerted pressure on the esophagus. The ligament was cut out to free the esophagus and the child was relieved of all symptoms.

Surgical intervention in cases of congenital heart defects is increasing in Turkey. At present two or three such operations are performed weekly at Hacettepe Medical Center alone. The development of teamwork, so essential in cardiac surgery, has enabled us to perform this surgery successfully in a majority of cases. The mortality rate has decreased from ten per cent in the first series of 50 patients two per cent in the second series of 50. We used the open heart technique in five out of these 100 cases.

Summary

One hundred cases of congenital heart defects were studied between January 1960 and June 1962 at Hacettepe Medical Center. A comparison is made between the first 50 cases and the last 50 regarding mortality, morbidity, and success.