MITRAL VALVOTOMY IN A PROVINCIAL HOSPITAL GROUP

BY

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Published accounts of mitral valvotomy have come from hospital departments specially experienced in thoracic surgery and with resources much above the ordinary. Their eminent authors have contributed to the pioneer work and development of this brilliant advance in surgery and medicine. Conscious of the comparison and of our few cases, we explain that the purpose of this paper is simply to indicate that the selection of cases and the operation itself are now a well-established procedure within the competence of a general physician and surgeon interested in the subject. At the time we decided to do this work candidates for the operation were sent away far from home, there was a long waiting-list, and it had been reported (*British Medical Journal*, 1950) that patients had died in acute pulmonary oedema while waiting.

The better interpretation of clinical findings resulting from the work to which we have already referred enabled us to make more accurate pre-operative diagnoses and to manage without cardiac catheterization. Latterly the operation was done in the ordinary theatre list, electrocardiograms were no longer taken during the operation, and we dispensed with the post-operative oxygen tent; oxygen, if required, was given by means of Tudor Edwards's spectacles frame. The approach to the heart was made through the fifth left intercostal space; it was seldom necessary to resect a rib. To reduce the risk of emboli the auricular appendage was opened without clamping but after the insertion of two thread purse-string sutures. Any thrombus in the appendage was usually palpable and could be dissected out with finger or scissors before any attempt was made to split the mitral opening. The split was made with the finger alone in 16 patients; in five Brock's knife, as modified by one of us (Lentin, 1955), was needed; and in four patients the valve was not altered. While the mitral opening was being manipulated the anaesthetist maintained carotid compression.

In assessing the severity of the disease we adopted the criteria used by Baker *et al.* (1952) and later summarized (Baker *et al.*, 1955) in the following grades: 1, slight disability; 2, moderate disability; 3, gross disability; and 4, total incapacity. Two of the three patients in grade 1 were brought to hospital on account of near-fatal attacks of pulmonary oedema.

Results

All patients who had their chest opened for intended valvotomy have been included (see Table). There were 21 women and four men. The youngest was aged 26, the oldest 54, the average being 36. The first operation was performed three years ago and the last in this series just over six months ago. A patient restored to normal active life was recorded as an excellent result.

A grocery-store manager aged 34 was first seen in October, 1953, having coughed up an ounce (28 ml.) of blood. Though

Results of Attempted Valvotomy after Six Months to Three Years

Grade	No. of Cases	Excellent	Good	Fair	Poor	Dead
1	3	2	—	—	1	—
2	3	3	—	—	—	—
3	10	1	6	2	1	—
4	9	—	3	1	2	3
Total	25	6 (24%)	9 (36%)	3 (12%)	4 (16%)	3 (12%)

his activity was limited by breathlessness, having to walk slowly up a gentle slope, he was able to support his family, and we advised against valvotomy, adding that we would see him again if he became worse. A month later he was admitted to hospital apparently moribund. Happily he recovered from this severe attack of pulmonary oedema, and valvotomy was done a month after admission. He now regards himself as fit as any man of his age; he works 62 hours a week and regularly carries 1-cwt. (50-kg.) sacks. He runs uphill pushing the pram, leaving his wife breathless behind him.

Patients classed as good were able to carry out their former occupation and duties without embarrassment and to enjoy their leisure. The six excellent and nine good results need little further comment except that during their assessment we were grateful for a rewarding clinical experience; these patients all had a satisfactory operation and made a sharp contrast with the unfortunates for whom little or nothing could be done. Of the three classed as having fair results, one had deteriorated into this category after more than two years as good, the other two do most of their shopping and housework, which they could not do before operation, and regard themselves as having good results.

One of the deaths occurred in a patient who had an auricular appendage which was too small and the heart was not entered; she remained in congestive heart failure and died 23 months after her operation. Another death occurred 11 months after an incomplete and unsatisfactory mitral dilatation, which was, however, followed by temporary improvement; the patient developed auricular fibrillation a few weeks before she died. In the third fatality the patient was known to have a degree of aortic stenosis: a tight fibrous mitral orifice was found, which failed to yield to manipulation, and she died in pulmonary oedema 48 hours after the operation.

One of the four patients who had a poor result had effort syndrome and was at first advised not to have the operation. Another had mitral regurgitation, which was thought to be causing the symptoms, and we were again persuaded against our initial and, as it proved, better judgment. In the remaining two with poor results we were disappointed to find at operation hard calcified valves. There was a close correlation between the assessment of the operation and the subsequent degree of improvement. To complete the account of morbidity we record one temporary post-operative collapse of the lower lobe of a left lung; and an unlucky patient, who otherwise did well, suffered amputation of her right leg a year after valvotomy on account of an embolus. This last patient had a thrombus 2 by 1 by 1 cm. removed from the auricular appendage at valvotomy.

Summary

Mitral valvotomy was attempted in 25 patients, and the results were assessed six months to three years after operation. The results in six were excellent and in nine good, in three the patients were improved, and in four there was no improvement. There was one death two days after operation. Two patients died in congestive heart failure, one 11 months and the other 23 months after the operation. In three of the poor results and one of the late deaths the valve was not altered at operation. The ill effects of an unsuccessful operation were much less than we had expected. Our results bear

comparison with those of previous authors. The only unusual feature of this series is that the work was done in the general departments of a provincial hospital group.

We acknowledge the help of Dr. G. M. Colson, who has worked closely with us since his appointment to our hospital group in May, 1954. Five of his patients are included in this series. We thank also the anaesthetists for their interest and help, and the general practitioners who referred their patients and assisted us in assessing the results of operation.

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Medical Memorandum

Early Diagnosis of Congenital Atresia of the Small Intestine

Every baby that is born with a congenital atresia of the intestine and is not operated upon during the first few days of life dies. The successful treatment of one of these babies gives it a normal expectation of life.

In the past the mortality among cases of atresia and stenosis has been high, but with early diagnosis and operation the survival rate has recently shown marked improvement. Gross (1953) gives the results of operation in 211 cases of intrinsic obstruction, showing a fall in mortality from 77% in 1940 to 32% in 1952. O'Neill *et al.* (1948) reviewed the 36 cases which had survived up to 1948; of these, only seven followed operations performed after the fifth day of life. Stevens (1951), Sweetnam *et al.* (1953), and Heanley (1954) report the survival of infants operated on at 4 and 3 days of age. Baronofsky (1951) describes the case of an infant operated on at 13 hours.

There is vomiting of green material, which is often effortless. Usually the earlier the vomiting the higher in the intestinal tract is the lesion. Abdominal distension is present. A normal-looking meconium-coloured stool may be passed, but more commonly there is absence of stool. A straight x-ray film of the abdomen with the patient erect shows dilated gut and fluid levels. It should not be necessary to use barium for this investigation, but, if used, care must be taken that it is washed out before operation. If left, there is a greatly increased risk, following operation, of obstruction due to the barium or a barium leak causing a fatal peritonitis.

CASE REPORT

A female child was admitted to hospital on August 22, 1953. She had been born 23 hours before admission. Her birth weight was 6 lb. (2.7 kg.). Six hours after birth the mother noticed that dark green fluid was coming up through the child's nose and mouth. This did not appear to be vomit. The same thing occurred on two other occasions during the night, and again on the morning of the day of admission. The child passed urine normally but no meconium.

On admission the infant was apparently normal; she was not clinically dehydrated. Shortly after admission she regurgitated meconium-like material. The abdomen was full, especially in the epigastrium. No peristalsis was seen. Normal bowel sounds were present. Nothing abnormal was felt on palpation. Examination of the anus showed that a sphincter was present, and the little finger could be passed without difficulty for 1 in. (2.5 cm.). When withdrawn there was no evidence of meconium on the finger-stall. The heart and lungs were clinically normal. Straight x-ray films of the abdomen, taken erect and also inverted, showed distended intestinal loops with fluid levels. As there was no dehydration she was immediately prepared for operation. A Ryle tube was passed into the stomach and aspirated.

Operation was performed under general anaesthesia. An atresia of the lower ileum was found, the gut ending blindly 4 in. (10 cm.) from the ileo-caecal valve. The intestine above this was dilated. The terminal ileum was collapsed and not attached in any way to the upper blind loop, and there was a defect in the mesentery. The collapsed small bowel was distended with air, and meconium was aspirated from the distended gut to deflate it. Intestinal continuity was restored by an anti-peristaltic lateral anastomosis. Gas was seen to traverse the completed anastomosis. No further lesions were seen.

Post-operative Care.—The child was nursed in an oxygen incubator. She was given 250,000 units of soluble penicillin and 0.25 g. of streptomycin twice daily. During the first 12 hours after operation 60 ml. of normal saline was given subcutaneously and the stomach was aspirated hourly. After 24 hours the child was given sips of water. More fluid was retained than aspirated. On August 24 she passed two meconium-coloured stools and oral feeding was begun, using half-strength expressed breast-milk. On August 27, progress being satisfactory, the Ryle tube was removed. Breast-feeding was started on August 28. She was discharged home on September 12, weighing 5 lb. 5 oz. (2.4 kg.), with the wound healed. Her bowels were moving normally.

When seen a year later (August 22, 1954) her mother reported that she had developed normally. She was not constipated, and weighed 19 lb. 2 oz. (8.7 kg.).

COMMENT

The differential diagnosis is chiefly from vomiting due to cerebral birth injury. In cerebral cases the child is usually shocked to start with, the vomiting is projectile, may be smaller in quantity, and there is no abdominal distension. Stools should be passed normally. Obstructions above the duodenum do not give rise to bile in the vomiting. Vomiting due to a feeding upset should not occur at this stage, nor should that due to infections.

Treatment must be operative, but dehydration must be corrected first. At laparotomy the obstruction may be found to be a septum, a stricture, or a complete absence of a segment of bowel, with the upper loop ending blindly. There may be an associated defect in the mesentery. The common regions for these abnormalities are at the duodeno-jejunal junction, at the ileum in the vicinity of a Meckel's diverticulum, and at the ileo-caecal junction. The lesion may be single, but in many cases it is multiple. In the past all cases treated by ileostomy alone have died.

The successful cases have all had anastomoses of one sort or another, and Heanley (1954) has reported two cases of anastomosis supplemented by ileostomy above the anastomosis.

Reports show that this condition need not be as fatal as has been accepted in the past, provided that the possibility of congenital obstruction is considered as a cause of vomiting in the neonatal period. The mortality in these cases is in direct proportion to the delay in operating. Of the recently described cases which have survived, none have been operated upon after the fifth day of life. The average infant stands surgery very well provided the fluid and electrolyte balance is maintained.

I should like to thank Miss S. N. Nabarro, who so efficiently supervised the post-operative feeding. I am indebted to Miss G. Harrison, who gave the anaesthetic, and to Mr. M. C. Oldfield, under whose care the child was admitted, for his help and permission to publish this case.

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