and rupture occurred through a recurrent enterocele, whereas in my patient there was no recurrence of the prolapse. No cause was found for the sudden rupture of the vagina, but presumably it occurred at a point of weakness caused by scarring of the vaginal vault during the previous Manchester operation. This view is supported by the finding that the peritoneum of the pouch of Douglas was firmly adherent to the underlying vaginal vault. It seems possible that the poor post-operative union of tissues often associated with old age may have been a contributory factor to the vaginal weakness in this case. If so, it may be expected, in view of the increasing age at which colporrhaphy is now performed, that instances of this kind will occur more frequently in the future.

Perusal of the literature suggests that vaginal rupture with evisceration of bowel occurs more often after vaginal hysterectomy than after colporrhaphy; Fox (1949), Kayser *et al.* (1951), and Outerbridge (1953) all report cases of this type. The decreased incidence of this admittedly rare but often fatal complication would therefore seem to be a small point in favour of the Manchester operation as opposed to vaginal hysterectomy in the treatment of uncomplicated procidentia.

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REFERENCES

- Fox, P. C. (1949). *Illinois med. J.*, **96**, 32.
Kayser, F. W., Heaney, N. S., and Dahleen, H. C., jun. (1951).
Amer. J. Obstet. Gynec., **61**, 1393.
Outerbridge, G. W. (1953). *Ibid.*, **65**, 439.
Thompson, W. (1948). *J. Obstet. Gynaec. Brit. Emp.*, **55**, 664.

Resected Coarctation of the Aorta and Pregnancy

Coarctation of the aorta of the adult type is an unpredictable anomaly, usually symptomless and diagnosed accidentally; but the prognosis is so poor that only one-third of the sufferers reach the age of 40. Sudden haemorrhagic death may intervene at any time, for 40% of patients rupture either the aorta itself or an intercostal, intracranial, or dissecting aneurysm. The association of coarctation with pregnancy is very rare, and the uncertain risks involved may be assessed accurately only by recording individual cases. It is, however, confidently expected that prior operative resection of the coarctation may obviate many of these dangers.

CASE REPORT

The patient was a healthy 18-year-old girl whose routine miniature chest radiographs disclosed an enlarged heart shadow. No symptoms were complained of, but she did admit to slight shortness of breath when cycling fast. Her apex beat was forceful, and there was a grade 2 aortic systolic murmur, which was conducted to the right common carotid and followed by a loud aortic second sound. A grade 1 systolic murmur was heard in all other cardiac areas, and there was a harsh continuous murmur at the junction of the innominate and right subclavian arteries. The blood-pressure in both arms was 170/100. Over the scapulae was a well-marked collateral circulation. No femoral pulses could be felt. Chest radiographs showed an enlarged left ventricle, a dilated proximal aorta, and moderate rib-notching. The electrocardiogram was normal. The diagnosis was classical coarctation.

In September, 1955, the coarctation was excised and an end-to-end anastomosis performed without tension. It was found at the classical site in relation to the ductus arteriosus,

which was not patent. The stenosed segment was about 1 in. (2.5 cm.) in length, and the lumen was reduced to about 2 mm. The ductus arteriosus and two large intercostal arteries with aneurysmal dilatations were divided. Immediately after operation pulsation was felt in the lower limbs.

The operative results were good, and for the ensuing six years she remained in excellent health and was able to undertake any physical exertion. No collateral circulation could be felt, but the pulses were palpable in both femoral and both dorsalis pedis arteries. The blood-pressure in both arms was 130/80. The systolic murmur completely disappeared, but was replaced by a grade 2 early diastolic murmur, indicating residual aortic incompetence. Screening showed that some left ventricular hypertrophy persisted.

She was advised that pregnancy would now carry no risk so far as the coarctation was concerned, and she conceived in October, 1961. Close antenatal supervision throughout revealed no rise in blood-pressure, no toxæmia, and no changes in her cardiac condition. She continued in good health until the 34th week of pregnancy, when she was awakened at 3 a.m. by a feeling of suffocation, and she collapsed. She became pulseless and cyanosed, and the blood-pressure could not be recorded. Despite blood transfusion and oxygen therapy she died eight hours later.

Necropsy showed rupture of a dissecting aneurysm of the ascending arch of the aorta, with haemorrhage into the pericardial sac and the pleural cavity. The site of operative anastomosis was undisturbed. The foetus, placenta, and gravid uterus were all normal.

COMMENT

Goodwin (1961) reviewed the literature on coarctation and pregnancy and collected reports of 147 cases with 13 deaths, a mortality of 9%. Eight of the deaths were caused by vascular rupture—three of the aorta, three of a dissecting aneurysm, and two of an intracranial aneurysm. All the deaths were in cases of unresected coarctation, and 10 were instances of undiagnosed coarctation, although proper medical examination at the initial antenatal visit should enable the diagnosis to be made (Farrelly and Thompson, 1961). However, even without operation some patients may survive repeated pregnancies without any deleterious effect (Jordan, 1958). The divergent fortunes of different patients have led to conflicting views on their management.

Dissecting aneurysm of the ascending aorta is not very rare in the young and healthy, and is found in 1 in 70 of coroners' necropsies (Jordan, 1954). In women it occurs with special frequency in association with pregnancy (Schnitker and Bayer, 1944). It is also a common cause of death in unresected coarctation even without pregnancy. So there exists a double predisposition of both pregnancy and coarctation towards developing a dissecting aneurysm.

Only recently has pregnancy been occurring in patients whose coarctation has been previously diagnosed and excised. Naturally it has been assumed that successful prior operation and careful antenatal supervision would remove the pre-existing risk of aortic rupture and dissecting aneurysm. Unfortunately that assumption proved false in the present tragic case. The risk of dissecting aneurysm may remain even in patients with resected coarctation, and the advisability of pregnancy must be regarded as doubtful.

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REFERENCES

- Farrelly, P. A., and Thompson, J. W. (1961). *J. Obstet. Gynaec. Brit. Cwlth.*, **68**, 961.
Goodwin, J. F. (1961). *Clin. Obstet. Gynec.*, **4**, 645.
Jordan, W. M. (1954). *Brit. med. J.*, **2**, 131.
— (1958). *Lancet*, **1**, 163.
Schnitker, M. A., and Bayer, C. A. (1944). *Ann. intern. Med.*, **20**, 486.