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Using a line synthetic 15mm graft as a temporary bypass in thoracoabdominal aortic aneurysm surgery

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Aims

To study the possibility of using a line vascular prosthesis as a temporary bypass for the prevention of visceral organs ischaemia at the stage of clamping of the thoracic aorta in operations for thoracoabdominal aortic aneurysm (TAAA) and descending TAAA (DTAA).

Methods

The basis of our work is on analyses of surgical treatment results of 35 patients with TAAA, admitted to our department from 1998 to 2016. Fifteen of them had DTAA and TAAA I type, 16 TAAA (II-IV types by Crawford) and four patients had a dissecting aortic aneurysm (DsAA) (IIIB DeBakey type). Twenty-nine of them were male (83%) and six were women (17%). Age ranged from 38 to 73 years (mean 52±7.5 years). In 20 patients of 35 the defence of visceral organs was performed with a TB (I group) and 15 patients had no protection (II group). As a TB we have used a dacron graft with a diameter not less than 12–15mm with zero porosity. It was anastomosed and located in different zones depending on the pathological process localisation. The proximal anastomosis was created with an ascending or descending thoracic aorta, and the distal was applied with left iliac or common femoral artery. After the completion of the main phase of the operation—the restoring of blood flow to the visceral arteries—TB was sutured distally and proximally then removed. No heparin during surgery was used. There were no cases of TB thrombosis during operation time in all cases.

Results

The total mortality rate was 31.4% (11 patients), in which emergency ruptured TAAA operation was 50%, while planned operations accounted for 27.6% of the mortality rate. Intraoperative mortality was not registered. Five patients died in the I group (25%). Two of them died from cerebral coma, which developed after acute heart failure. The other two patients died due to profuse bleeding in the immediate postoperative period (rupture of the thread of the proximal anastomosis). Fifth patient died due to

pulmonary embolism. In none of the cases was death associated with failure of visceral organs and kidneys or developing of a spinal stroke. After planned surgery of TAAA when it was performed without TB mortality rate was 21.4% (three) and using this technique 14.3% (two), ($p=0.12$). Mortality rate in patients with DTAA was independent from the use of the TB surgical technique (36.4% and 37.5%, respectively). Spinal stroke was reported in two cases with DsAA.

Conclusions

Temporary bypass technique is a reliable and, at the same time, a simple measure of protection of the internal organs during surgery for TAAA and DTAA. A 15mm vascular prosthesis can be used as a TB for preventing of visceral, kidney and spinal cord ischaemia.