

Transperitoneal Exclusion

A Simple Third World Solution for Abdominal Aortic Aneurysm

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ABSTRACT

We present an operation never described before for dealing with abdominal aortic aneurysms by exclusion via a midline trans-abdominal approach. This breakthrough holds many advantages over conventional aneurysmorrhaphy and requires further clinical trials.

INTRODUCTION

Pre-operative, intra-operative and post-operative management of patients undergoing repairs of abdominal and aorto-iliac aneurysms presents a formidable task in the Third World hospital, given the limitations of operating time, availability of blood, and intensive care and monitoring facilities. We present a simple surgical technique for repair of infrarenal abdominal aorto-iliac aneurysms which requires minimal intra-operative and post-operative care facilities, and could be easily performed by a general surgeon in a Third World setting.

Technique

The patient is placed supine on the operating table and a longitudinal midline abdominal incision made from xiphoid to pubic symphysis. Circulatory exclusion of the aneurysm is performed. The peritoneum is entered and the neck of the aneurysm dissected out. The aorta is divided between clamps and the distal stump oversewn with a continuous 3/0 prolene suture. A dacron bifurcation graft is cut so that most of the tube portion is removed leaving only 1.5 cm of 'tube' attached to the two limbs. This is anastomosed to the proximal part of the divided aorta so that the graft bifurcation now sits just below the renal arteries.

The limbs of the graft are tunnelled retroperitoneally on each side of the aneurysm sac and end-to-end anastomosis performed to the distal end of the divided iliac arteries, the proximal ends having been oversewn. Alternatively, an end-to-side anastomosis can be done with ligation of the iliac artery proximally so that the aneurysm is excluded from the circulation. Every effort should be made to include at least one internal iliac artery in the circulation.

CASE REPORT

A 68-year-old male was admitted to the General Hospital, Port of Spain for treatment of a urinary tract infection. He was found incidentally to have an expansile mass in the abdomen. Ultrasound revealed a 6 cm infrarenal abdominal aortic aneurysm with involvement of both common iliac arteries. Elective aneurysmorrhaphy was scheduled, but the patient had no blood donors and did not have blood available for the operation. The options considered were retroperitoneal exclusion aneurysmorrhaphy (1), intra-operative auto-transfusion, and perioperative acute haemodilution with auto-transfusion immediately post-operatively (2). The current devices for intra-operative auto transfusion are expensive and were not available. Although the surgical team was familiar with the retroperitoneal exclusion operation with minimal blood loss (1) it was decided that, with some modification, the exclusion operation could easily be done transperitoneally. The transperitoneal exclusion operation was done as described above with a total blood loss of 125 ml and an operating time of 145 minutes. The patient was managed post-operatively on the general surgical ward. There was no need for post-operative intensive unit care or ventilation. He tolerated oral fluids after 24 hours and intravenous fluids were discontinued after 48 hours. He was discharged after an uneventful stay of five days.

DISCUSSION

Conventional surgical repair of abdominal aortic aneurysms involves a transperitoneal approach with opening of the aneurysmal sac, ligation of the inferior mesenteric and lumbar arteries, placement of an in-lying graft, and anastomosis to the proximal cuff and aortic bifurcation or iliac arteries, combined with covering the graft with aneurysmal sac. This procedure is usually associated with significant blood loss and requires intensive care management post-operatively (3). Major blood loss and large transfusions cause appreciable haemodynamic dis-

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turbances and can compromise both cardiac and pulmonary function; this can increase the need for intensive care. The greatest blood loss in most elective aortic aneurysmorrhaphy operations is in opening the sac and ligating the lumbar arteries.

Extraperitoneal exclusion and bypass has been recommended as a method that results in minimal blood loss, little fluid and electrolyte disturbance and less requirement for intensive care admission (1). This non-resective principle has provided the basis for the modified transperitoneal approach presented here. The transperitoneal exclusion technique provides numerous advantages over the conventional technique. Firstly, it requires less operating time, since no time is lost in opening the aneurysm, evacuating thrombus, suctioning blood, ligating the lumbar arteries, and closing the sac at the end of the procedure. Our procedure took 2.4 hours, which is less than the time (4.4 ± 1.1 hrs) required to perform the conventional approach (3). Secondly, fluid and electrolyte disturbances are less likely in this shortened operation because the abdomen is open for a shorter time. This may also result in a reduced risk of ileus post-operatively. Thirdly, because the sac is not opened there is much less blood loss – 125 ml in this case compared with 731 ± 52 ml reported with the use of the retroperitoneal exclusion and bypass (4). Less blood loss leads to less demand on a blood supply which is insufficient in most developing countries. There is also less alteration in haemodynamics and less respiratory compromise from fluid shifts and blood transfu-

sion. It is suitable for patients who do not wish to be transfused on religious and other grounds.

Use of the transperitoneal exclusion technique facilitates immediate extubation in the operating room. 39 % of the patients undergoing routine transperitoneal aneurysmorrhaphy required post-operative ventilation for 3 to 23 hours (3). The operation is suitable for the surgeon who feels more comfortable with an anterior transperitoneal than a retroperitoneal approach to the aneurysm, and is ideal for patients with significant co-morbid conditions in whom conventional repair may be risky. It also offers advantages for otherwise normal patients in whom there is iliac artery involvement requiring a bifurcation graft for aneurysmorrhaphy.

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