ENDOLUMINAL REPAIR OF ABDOMINAL AORTIC ANEURYSM

by Dr David Robinson

The management of abdominal aortic aneurysms (AAA) has been changed significantly by the advent of endoluminal repair. This involves the transluminal placement of a graft within the aneurysm so that the sac is excluded from the general circulation, preventing expansion and rupture. The graft is held in place by self-expanding stents that seal against relatively normal arteries above and below the aneurysm. This technique avoids laparotomy and cross clamping the aorta, reducing morbidity and mortality as it constitutes a much smaller physiological insult to the patient. This means that repair can often be offered to patients who would be unsuitable for open repair due to co-morbidities.

DETECTION OF AAA

Many patients now present with an aneurysm that has been found during imaging of an unrelated problem. The widespread availability of cross-sectional imaging of the abdomen has meant that many AAA that previously would only have been diagnosed when they ruptured are now diagnosed when they are asymptomatic, and there is evidence that this early diagnosis has meant a decrease in the number of ruptures. Screening also reduces the number of patients presenting with ruptured aneurysm due to early diagnosis and confers a survival benefit, and should be offered to patients with a smoking history or family history of AAA.

Patients are offered repair once their AAA reaches 5.5 cm, the size at which the risk of rupture begins to rapidly increase. The only exceptions to this are aneurysms that are symptomatic, saccular (as the risk of rupture is more difficult to predict) or infected. Patients with aneurysms smaller than this can usually be followed with regular duplex ultrasound as this minimises exposure to ionising radiation and contrast. Even patients with small AAA should be referred to a vascular surgeon for assessment.

ENDOLUMINAL VS OPEN REPAIR

Once the aneurysm reaches 5.5 cm, the patient will be offered repair. More precise imaging with a dedicated aortic CT study is done first as this enables delineation of the anatomy, determining whether endoluminal repair is feasible, as some anatomical factors will contraindicate an endoluminal approach. If the AAA is suitable for endoluminal repair, this would usually be offered as the first option. Occasionally there will be patient factors that need to be taken into account when deciding which type of operation to offer. If the patient is young, they may be offered open repair as a first option as the durability of endoluminal repair is still being determined. If the patient is unable or unwilling to attend for regular follow up they should be offered open repair. If the patient is to have an open aneurysm repair they will usually be referred for a cardiac assessment, while if they are suitable for endoluminal repair this is usually not required unless they have a relevant history. Depending on patient factors and technical aspects of the operation, some patients may be discharged the day following surgery.

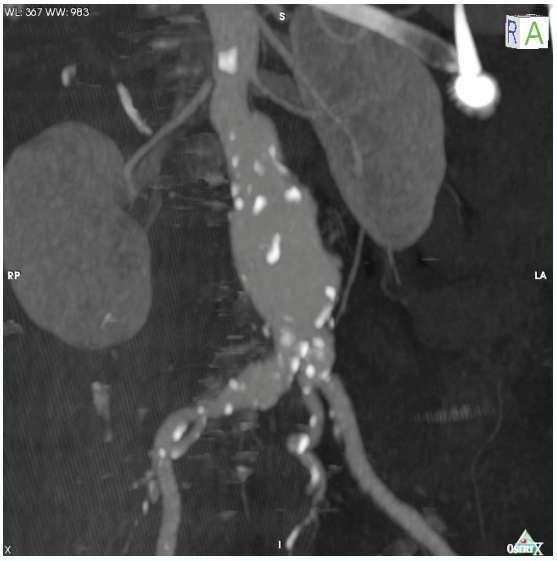

FIG 1: 3D RECONSTRUCTION OF CT AORTOGRAM SHOWING AAA

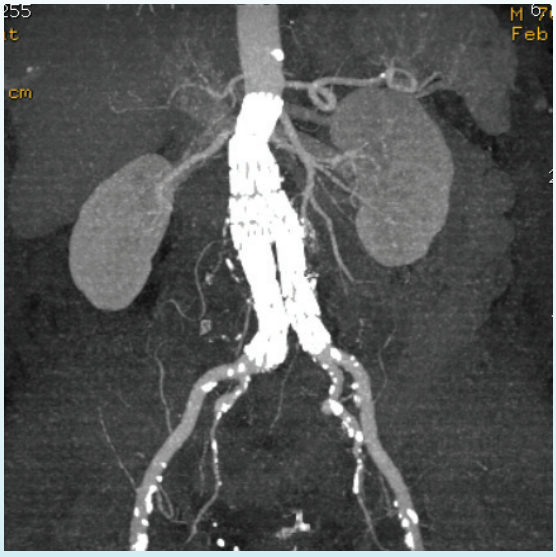

FIG 2: SAME PATIENT FOLLOWING ENDOLUMINAL REPAIR OF AAA.

Patients having endoluminal repair need to be followed up regularly. The graft may migrate, and up to 20% of patients may develop what is known as an endoleak, which is leakage within the confines of the aneurysm sac but external to the graft. The major types of endoleak are type 1, where the leak is via the sealing zone of the stent, or type 2 where the sac fills via a branch vessel. Type 1 may lead to aneurysm rupture and should be fixed when diagnosed, whereas type 2 usually have a more benign course and can be watched.

In conclusion, in appropriate patients endoluminal AAA repair represents a safe and effective option that returns the patient to the community and their regular lifestyle much faster than open repair.

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