

Results of Conventional and EVAR Abdominal Aortic Aneurysm Repair

Resultados de la reparación de aneurisma de aorta abdominal convencional y EVAR

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Abdominal aortic aneurysm (AAA) is defined as a 30-mm diameter or greater dilation of the aorta at the abdominal level, exhibiting a prevalence of 1.5%-5.9% in people aged 50 years or older, and even higher in smokers. In addition to smoking, it is associated with risk factors such as atherosclerosis, hypertension and dyslipidemia. (1)

The introduction of endovascular techniques for the repair of ruptured AAAs has emerged as an alternative to conventional open surgery and is now considered the first option in cases with favorable anatomy. (1)

The aim of our study was to analyze the results in the management of patients with asymptomatic and complicated AAA in our center, comparing conventional surgery with endovascular aneurysm repair (EVAR).

We conducted a descriptive and retrospective study of 45 patients with a diagnosis of asymptomatic or complicated AAA presenting with vital signs (palpable peripheral pulses, detectable blood pressure or audible heart sounds), who underwent surgery at Hospital Italiano de Córdoba between January 2016 and November 2020. Follow-up was extended to 5 years after hospital discharge. Statistical analysis was performed with InfoStat® version 2016e. Student's t-test and the chi-square test were used for the analysis of significant differences, considering $p < 0.05$ as level of significance.

Thirty-five men and 10 women aged between 51 and 85 years, with average age of 73.3 years, were included in the study. A high proportion of patients had risk factors and concomitant diseases: hypertension in 39, smoking in 40, ischemic heart disease in 10 and obstructive pulmonary disease in 8.

Of the 45 patients operated on, 25 (55.5%) were asymptomatic and 20 (44.4%) had complicated or ruptured aneurysm. Conventional surgery was used in 27 (60%) and EVAR in 18 (40%).

Among the 25 asymptomatic aneurysms, 8 (32%) were repaired conventionally and 17 (68%) by EVAR. In the case of the 20 complicated aneurysms, 19 (95%) were repaired with conventional surgery and 1 (5%) by EVAR (this only repaired patient in the complicated group because of a previous endoleak.).

The type of clinical presentation was an important factor for choosing the type of surgery: conventional surgery was performed in 8 asymptomatic and 19 complicated patients, and EVAR in 17 asymptomatic patients and only in 1 complicated patient ($p < 0.0001$).

Mean AAA diameter differed significantly between asymptomatic and complicated (ruptured) cases: 66.16 mm vs 82.4 mm ($p = 0.0061$).

Hospital length of stay was also significantly different: 9.6 ± 9 days for conventional surgery versus 2.7 ± 1 for EVAR ($p < 0.001$). This logically had its correlation with the different length of hospitalization according to the admission condition, with means of 3.6 days in asymptomatic patients and 11.7 days in complicated patients.

Overall mortality of the series of 45 patients was 33.3% ($n = 15$). Among the 25 asymptomatic patients there were 2 deaths (8%), none in the 17 patients with EVAR vs. 2 among the 8 patients with conventional surgery, $p = 0.093$. Among the 20 complicated patients there were 13 deaths ($p < 0.001$ versus asymptomatic ones), all among the 19 patients who underwent conventional surgery. The 2 patients who died among the elective patients were due to sepsis, and almost half of the deaths among the complicated patients were due to multiple organ failure.

When comparing the 60-month long-term survival with conventional surgery vs. EVAR in discharged patients, no significant difference was observed (92.6% vs. 88.9%, $p = 0.587$).

The results of the present analysis show a higher incidence of interventions in the male sex and at an advanced age, which coincides with the literature

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consulted. Age is usually considered an important risk factor in all the reported experiences. However, there is sufficient evidence that morbidity and mortality depend in part on predictable, modifiable or controllable factors. Coinciding with the fact that most of the patients included in the sample were over the sixth decade of life, more than half of them had several associated comorbidities. Evidence of the association between smoking and AAA was first provided by the Framingham study in 1967. Other studies also showed similar results, where smoking and hypertension increased the risk of having an aortic aneurysm by 30-40% and 70-80%, respectively. (2)

The type of clinical presentation was an important element in choosing the type of repair. In most studies, hemodynamic instability is one of the exclusion criteria for EVAR: patients undergo immediate conventional or open surgery because the necessary studies to plan EVAR cannot be performed. However, these adverse factors can be overcome by following an appropriate protocol that employs the use of a hypotensive hemostatic approach and transfemoral aortic balloon occlusion technique. (3)

Recent publications show that small AAA can be observed periodically, with strict clinical controls, without a higher rupture rate if those that present accelerated growth or reach a diameter equal to or greater than 5.5 cm are operated on. In the present series, the average size of AAA in asymptomatic operated patients was 6.6 cm, and in complicated patients 8.2 cm, which reveals a conservative attitude in the surgical indication.

Beyond the risk imposed by the disease, surgical intervention per se significantly influences perioperative risk, related to underlying complications and stress associated with tissue injury; treatment by EVAR is less aggressive and this is reflected by shorter hospital stay. In our registry, hospitalization was shorter in asymptomatic than in complicated patients, and longer in both cases with conventional treatment, similar to what has been described in other national registries. (4)

The postoperative mortality of complicated AAA is reported to be approximately 30-50%. In our study

overall mortality was 33.3%. Despite our small sample size, we can agree with the meta-analysis of Qin et al, (5) which demonstrated significant differences in favor of EVAR in terms of mortality in the first 30 days after surgery.

With respect to asymptomatic aneurysms, we obtained 8% mortality with conventional surgery and 0% in the case of EVAR, similar to that reported by large studies where endovascular treatment decreased in-hospital mortality, as for example in the EVAR study, where mortality was 1.8% with endovascular surgery and 4.3% with conventional surgery. (6)

Conflicts of interest

None declared.

(See conflicts of interest forms on the website).

Ethical considerations

Not applicable.

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