

Thoracic Endografts Are Better than Fenestration Procedures for Malperfusion Owing to Aortic Dissections

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Purpose

Malperfusion of aortic side branches is a serious and potentially life-threatening complication of aortic dissections. It may be resolved by decompression of the false lumen with fenestration and/or stenting or by closure of the entry with endografts.

Methods

Twenty-nine patients (22 male and 7 female, aged 35 to 80, mean 57 years) were treated for malperfusion caused by acute type B dissection (n = 11), chronic type B dissection (n = 9), acute type A dissection (n = 4) and type A dissection after ascending aortic replacement (n = 5). Ischemia occurred in the visceral, renal, and iliac circulation in 9 patients, in the visceral and renal in 4, in the renal and iliac in 7, in the renal alone in 4, and in the iliac circulation in 5. Ten patients underwent endovascular fenestration and stent procedure; 12 underwent thoracic endografting. Five patients had conventional surgery: 2 surgical fenestration, 2 infrarenal graft replacement and 1 renal bypass. Two patients were treated medically. Patients with acute type A dissections followed by successful surgery of the ascending aorta were excluded from the study.

Results

The patients in the groups with conventional surgery and medical treatment suffered from less severe ischemia, and all 7 patients were discharged in good condition with relief of their symptoms. In the endograft group 30-day mortality was 8% (1 patient) compared with 60% (6 patients) in the fenestration group. In the deceased endograft patient restoration of the distal circulation was not successful because of complete thrombosis of the aorta and all tributary vessels. The 6 patients in the fenestration group who died had ongoing organ ischemia despite primarily successful opening of the true lumen and the side branches. Secondary procedures, either endovascular or conventional surgery, were necessary during hospitalization in 9 patients (3 after endograft, 4 after endovascular fenestration and 2 after surgical fenestration). During follow-up (1 to 67 months, mean 21 months) secondary procedures were performed in 4 patients (2 after endografts, 1 after endovascular fenestration and 1 after conventional surgery).

Conclusions

Owing to the small number of patients and the variety in clinical sequelae of malperfusion the results must be interpreted cautiously. The patients in the conventional surgery and in the medical groups suffered from less severe and more chronic ischemia. In acute dissections with severe malperfusion thoracic endografting shows superior results to fenestration. It repairs the primary damage of

dissection and is easier and quicker to perform. Both patients with acute type B dissection treated with fenestration without any attempt to close the entry died. For this reason we switched to endografting in these emergency cases with clearly better results. Additional fenestration was necessary in only one of 12 cases. In type A dissection, however, endografting is not possible with the current technology; endovascular fenestration may be helpful in residual distal dissections after replacement of the ascending aorta. All four patients died in whom we attempted to improve organ perfusion by fenestration before repair of the ascending aorta. Therefore, the results of endovascular fenestration in all types of aortic dissections are extremely poor if the primary tear is left untreated.

References

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