Long-term Outcomes of Primary Surgical Repair for Communicating DeBakey IIIb Chronic Dissecting Aortic Aneurysm

Objective: Although surgical strategies for communicating DeBakey IIIb chronic dissecting aortic aneurysm (CD3bDA) include several primary approaches to reduce surgical invasiveness, the optimal choice remains controversial. This study aimed to evaluate our surgical strategy for CD3bDA, considering the optimal primary approach to prevent aortic events based on long-term outcomes.

Methods: From 2002 to 2021, 101 CD3bDA patients who underwent surgical repair were divided into four groups by the primary surgical repair; one-stage repair of thoracoabdominal aortic aneurysm (TAAA, n=22) or staged repair such as descending thoracic aneurysm repair (DTA, n=43) or preemptive total arch replacement with elephant trunk implantation (TARET, n=25) and thoracic endovascular aortic repair (TEVAR, n=11). Staged repair included additional surgeries for the distal dissecting aorta. Early and late postoperative outcomes were compared between the four groups.

Results: Between TAAA, DTA, TARET and TEVAR groups, there were no significant differences in patient characteristics, except the Marfan syndrome (MSD) patients in the TAAA group was significantly higher than in other groups (36.4% vs. 18.6% vs. 12.0% vs. 0%; p=0.027). Early outcomes were associated with the incidence of stroke (9.1% vs. 0% vs. 4.0% vs. 9.1%; NS), spinal cord injury (13.6% vs. 4.7% vs. 12.0% vs. 0%; NS) and in-hospital mortality (9.1% vs. 2.3% vs. 0% vs. 9.1%; NS). During follow-up (median 6.5 years), false lumen-related reintervention rate in the TEVAR group was significantly higher than in other groups (4.5% vs. 13.9% vs. 16.0% vs. 45.5%; p=0.024), which was associated with the increased number of additional surgeries for distal dissecting aorta (1.0 vs. 1.4 vs. 1.8 vs. 2.0 times; p=0.0002). The 10-year overall survival (61.7% vs. 71.6% vs. 21.5% vs. 26.5%; NS) and 7-year rates of freedom from aortic events (93.7% vs. 84.3% vs. 74.4% vs. 51.4%; p=0.049). In both the TAAA and DTA groups, MSD patients had higher survival rate [(TAAA 100% vs. 43.8%; p=0.050), (DTA 100% vs. 51.4%; NS)] and aortic events free rate [(TAAA 100% vs. 90.0%; NS), (DTA; 87.5% vs. 67.2%; NS)] compared with non-MSD patients.

Conclusions: Considering the optimal primary surgical repair to prevent aortic events based on long-term outcomes, TEVAR was not a better option. Patient-specific TAAA or DTA repair, such as in MSD patients, may be aggressively adopted rather than defaulting to minimally invasive primary repairs for all CD3bDA patients.

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Additional Resources

- https://files.aievolution.com/prd/aat2101/abstracts/abs_8630/AorticSymposium2024SMiura.pptx