

# Emergency surgery for Type A Aortic Dissection in Octogenarians – do we still err on the side of caution?

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## **Emergency surgery for Type A Aortic Dissection in Octogenarians – do we still err on the side of caution?**

*Running head: elderly and aortic dissection*

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Emergency surgery for acute type A aortic dissection (ATAAD) in elderly patients has been an area of careful consideration; within a population of higher frailty and reduced quality of life, best practice and optimal outcomes remain controversial. This problem is augmented by the growing number of ATAAD cases arising from an increasingly ageing population. Estimates from some studies suggests an increase of 50% of ATAAD cases in those with over 75 years of age in the coming years, leading to increased need for a more precise data and best practice guidelines<sup>1</sup>.

Surgical intervention for ATAAD in octogenarians is associated with high morbidity and mortality rates, and therefore, patients in this age range are often declined emergency surgical repair owing to the risks of surgical mortality and a limited gain to life expectancy with poor tolerance to post-operative complications<sup>1</sup>. However, medical therapy is not necessarily a better option; the German registry for ATAAD reported a survival rate of only 40% at the first 48 hours, with only 25% surviving to 2 weeks<sup>2</sup>. On the contrary, Dumfarth et al. reported higher 30-day survival rate among their cohort of 90 octogenarians with ATAAD that underwent surgical repair (61.2% vs 34.8% in the medical treatment group)<sup>3</sup>.

Octogenarians with ATAAD present with a wide range of clinical presentations and comorbidities, which will dictate the risk of the surgery along with their age, further causing controversy among the decision to operate and the assessment of risk vs benefits. The study by Bojko et al. of 70 octogenarian's vs 165 septuagenarians reported no difference in 30-day survival risk (28.6% vs 21.2%,  $p=0.29$ ), and no difference in the survival until 4 years after the surgery ( $p=0.07$ ), after which the septuagenarians showed greater survival benefit<sup>4</sup>. In our experience, outcomes for octogenarians who have experienced complex aortic surgery that included a period of deep hypothermic circulatory arrest (DHCA) were severely impacted<sup>5</sup>. Out of the 457 patients (24 octogenarians) who underwent a period of DHCA, elective in-hospital mortality and stroke rates were higher (16.7% and 22.2%)<sup>5</sup>. Another interesting point of note is the discharge arrangements, only 56% of the patients were safely discharged<sup>5</sup>. As such, age alone is not a factor in selecting patients for whom emergency ATAAD repair surgery should be performed. Other factors such as mortality, stroke rate, and discharge arrangements are critical information to consider when making decisions<sup>5</sup>.

Nevertheless, given the high-risk nature of the surgery and the potential adverse outcomes associated with repair, there have been suggestions to use less invasive methods and more conservative techniques to improve the outcomes and recognise that extensive repair will not always yield the same benefit that one might expect in a younger patient.<sup>6</sup> Chen et al. implemented this approach in their cohort of octogenarian patients with a 16.7% 30-day mortality rate and 34.7% 5-year mortality probability<sup>7</sup>. Similar results have been seen from Japanese cohort study by Suzuki et al. who reported hospital mortality of 10.2% and 47.5% mortality rate at 8 years<sup>8</sup>.

Despite the life-saving implications of this surgery, the quality-of-life following surgery is also of utmost importance to patient care. We note that the conservative approach used by Chen et al. was most effective in reducing post-operative complications, with 81.7% of all surgical octogenarians being discharged alive and well, defined as a clinical status free from tracheostomy, permanent dialysis, and severe neurologic dysfunction at discharge. This can be compared to 32.0% of octogenarians being discharged home post-operatively in the cohort analysed by Bojko et al.<sup>4</sup> In this patient population, even a successful surgery can often lead to a series of severe cerebrovascular or bleeding-related complications, which are avoided by restricting usage of intensive operative methods and techniques.

However, a criticism of this study and most others is the lack of data on surgical turndowns. Surgeons will understandably pick the winners and those amongst the octogenarian population that are physiologically less than their chronology. It is incumbent on all authors to capture and present the entire cohort of referrals to

better understand patient selection. For this reason caution should be exercised in accepting conclusions that octogenarians may be safely offered surgery. We would advocate a patient specific approach which apart from the acute presentation and past medical history/co-morbidities, also includes measures of frailty, cognition, and functional performance. Options should include other treatments such as best medical therapy and where anatomy and pathology allows, TEVAR. We should remember that IRAD data on mortality per hour is historic and likely surpassed by contemporary aggressive and improved ITU level care. Lastly, patient consent in the form of shared decision making is crucial. The authors outcomes are impressive; however, we caution against publication bias and surgical prowess in the approach to octogenarians with acute Type A disease. Discharge alive is an important outcome measure but equally so is discharge destination and quality of life.

Further work to optimise the surgical pathway and develop operative experience, as well as obtaining more detailed analysis of outcomes from larger studies will help us to fully maximise the improvement in quality of life that is possible from emergency surgical intervention.

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