



Letter to the Editor / Editöre Mektup

## Surgical planning of aberrant right subclavian artery and aortic coarctation co-existence

*Aberran sağ subklavyen arter ve aort koarktasyonu birlikteliğinde cerrahi planlama*

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Aberrant right subclavian artery (ARSA) originates from the last branch of the aortic arch and it is seen in 1% of autopsy series.<sup>[1]</sup> Being the most common anomaly of the aortic arch, ARSA is usually asymptomatic; however, it may lead to dysphagia as it involves the contralateral hemithorax from the posterior esophagus of the aberrant artery. In addition, late aneurysm formation is a well-known complication of this abnormal artery. In the literature, coexistence of ARSA with aortic coarctation has been reported, which accounts for 1% in cases of ARSA.<sup>[2]</sup>

Although this rare coexistence is not challenging for surgeons, it has certain aspects different from classical aortic coarctation. During repair, as in classical form, left posteriolateral thoracotomy is the incision to be chosen. If ARSA is considered asymptomatic and not divided, late complications should be kept in mind. These include, firstly, late aneurysm formation if ARSA is very close to the coarcted segment or higher surgical risk compared to the initial repair, when surgery is planned, if ARSA is considered symptomatic. Secondly, if ARSA is not released and divided in patients in whom end-to-end anastomosis is planned, ARSA pulls the aortic arch upward and backward, leading to anastomotic tension. As an alternative and successful technique, it has been reported that ARSA is divided and flaps are created and ARSA is used to expand the coarcted segment with patches.<sup>[3]</sup> However, using this technique, the tissue

which is located in the coarcted segment and is blamed for frequent recoarctation is left in the aortic lumen. In addition, aortic patchplasty-specific aneurysms in the late period can be unsurprisingly seen. Thirdly, higher ratio of paraplegia can be seen compared to normal aortic coarctation.<sup>[4]</sup> The main reason of this is that both right and left vertebral arteries originating from the upper portion of the spinal cord are left in the clamping site. In addition, in case of wide resection and end-to-end anastomosis, the left carotid, left subclavian, and right subclavian arteries, which are the components of the circle of Willis, are left in the clamping site, leading to an increased risk for ischemic stroke. Considering all these factors, the selection of a repair technique, which removes the left subclavian and left carotid arteries from the clamping site, may be an effective approach to reduce the risk of paraplegia. Also, other well-known accessory techniques such as hypothermia, ischemic preconditioning, and left atrio-femoral bypass can be used. Although no consensus has been reached upon yet, repair procedures less than 25 min are considered safe.<sup>[5]</sup> Finally, it is worth mentioning that the aberrant artery originates from the distal or proximal portion of the coarcted segment. When the aberrant artery originates from the proximal portion of the coarcted segment, the risk of paraplegia is relatively low. However, in case of the distal origin, the aberrant artery behaves as the main collateral of the coarcted segment, which is associated with

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increased spinal cord complications. In patients with such a pathological anatomy, necessary measures must be taken to prevent paraplegia.

In conclusion, although coexistence of aortic coarctation and ARSA seems to be simple for the surgical perspective, a careful pre- and intraoperative surgical planning should be customized, as it may lead to an increased risk for devastating complications such as paraplegia and stroke.

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