

# Aortic Dissection: A Closer Look at Diagnosis and Management Strategies

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## Introduction

Aortic dissection is a life-threatening condition characterized by the tearing of the inner layer of the aorta, the large blood vessel branching off the heart. This tear allows blood to flow between the layers of the aortic wall, potentially causing the layers to separate (dissect). Rapid diagnosis and appropriate management are crucial in saving lives, as aortic dissection carries a high mortality rate if left untreated. In this article, we delve into the nuances of diagnosing and managing aortic dissection. The aorta, the main artery of the body, carries oxygenated blood from the heart to the rest of the body [1]. Aortic dissection typically occurs in the thoracic (chest) or abdominal aorta. The condition is often associated with hypertension (high blood pressure) and connective tissue disorders, such as Marfan syndrome and Ehlers-Danlos syndrome. However, it can also occur in individuals without these risk factors. Symptoms of aortic dissection can vary widely but often include sudden, severe chest or upper back pain that may radiate to the neck, arms, or abdomen. Other symptoms may include shortness of breath, difficulty swallowing, and a weak pulse in one arm compared to the other [2].

## Description

Diagnosing aortic dissection requires a high index of suspicion, as the symptoms can mimic other conditions, such as a heart attack. Various imaging modalities are used to confirm the diagnosis and assess the extent of the dissection. This imaging technique is often the first-line investigation for suspected aortic dissection due to its rapid availability and high sensitivity for detecting the condition. MRI may be used when a CT scan is inconclusive or if there are contraindications to CT, such as contrast allergy or renal insufficiency. TEE involves inserting a probe into the esophagus to obtain detailed images of the heart and aorta. It is particularly useful in unstable patients or when other imaging modalities are inconclusive. Once diagnosed, the management of aortic dissection aims to prevent further tearing of the aorta, reduce complications, and preserve organ function [3].

Blood pressure control is paramount in managing aortic dissection to reduce the shear stress on the aortic wall and prevent further tearing. Intravenous medications, such as beta-blockers and vasodilators, are often used to lower blood pressure. Surgical intervention may be necessary, especially for Stanford type A aortic dissections, which involve the ascending aorta. Surgery typically involves replacing the damaged portion of the aorta with a synthetic graft to restore blood flow. In select cases, minimally invasive endovascular procedures, such as Thoracic Endovascular Aortic Repair (TEVAR), may be performed to exclude the dissected segment of the aorta

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using stent grafts. Patients with aortic dissection require close monitoring in an intensive care unit or specialized cardiac care unit to detect and manage complications promptly. Serial imaging studies may be performed to assess the stability of the dissection and the effectiveness of treatment. Aortic dissection is a medical emergency that requires prompt recognition and intervention to improve outcomes. Clinicians must maintain a high index of suspicion for this condition, especially in patients with risk factors such as hypertension and connective tissue disorders. Timely diagnosis, aggressive blood pressure control, and appropriate surgical or endovascular interventions are essential components of the management strategy. By understanding the intricacies of diagnosing and managing aortic dissection, healthcare providers can optimize patient outcomes and reduce mortality associated with this life-threatening condition.

Chronic high blood pressure is the most common risk factor for aortic dissection. Elevated blood pressure puts increased stress on the walls of the aorta, making them more susceptible to tearing. Conditions such as Marfan syndrome, Ehlers-Danlos syndrome, and Loeys-Dietz syndrome are associated with abnormalities in the structure and function of connective tissue, which can weaken the aortic wall and predispose it to dissection. Hardening and narrowing of the arteries due to plaque buildup (atherosclerosis) can weaken the aortic wall and increase the risk of dissection, particularly in the abdominal aorta. Blunt or penetrating chest trauma, such as from motor vehicle accidents or falls, can cause aortic injury and lead to dissection, especially in individuals with preexisting vascular disease. Aortic dissection most commonly affects individuals between the ages of 50 and 70, and men are more frequently affected than women [4].

Untreated dissection can cause a rupture of the aorta, leading to massive internal bleeding and rapid deterioration of the patient's condition. Dissection may impair blood flow to vital organs, such as the brain, kidneys, intestines, or limbs, leading to organ dysfunction or failure. If the dissection involves the arteries supplying blood to the brain, it can result in a stroke due to reduced blood flow or the formation of blood clots. Dissection involving the aortic root or ascending aorta can disrupt the function of the aortic valve, leading to aortic regurgitation (leakage of blood back into the heart) or aortic stenosis (narrowing of the valve opening). Controlling hypertension through lifestyle modifications (such as a healthy diet, regular exercise, and stress reduction) and medications can help prevent aortic dissection and other cardiovascular complications.

Individuals with connective tissue disorders or other risk factors for aortic dissection should undergo regular medical evaluations and imaging studies to monitor the health of their aorta and detect any abnormalities early. Taking precautions to prevent traumatic injuries, such as wearing seat belts in vehicles and using appropriate safety gear during sports and recreational activities, can help reduce the risk of aortic dissection related to trauma. Individuals with a family history of aortic dissection or known genetic connective tissue disorders should consider genetic counseling and testing to assess their risk and make informed decisions about preventive measures and screening [5].

## Conclusion

Aortic dissection is a complex and potentially life-threatening condition that requires a multidisciplinary approach to diagnosis and management. By understanding the risk factors, complications, and preventive measures associated with aortic dissection, healthcare providers can better identify

high-risk individuals, implement appropriate interventions, and improve patient outcomes. Additionally, raising awareness among the general population about the signs and symptoms of aortic dissection can facilitate early recognition and prompt medical attention, ultimately saving lives.

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## Acknowledgement

None.

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## Conflict of Interest

None.

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## References

1. Akutsu, Koichi, Naoki Sato, Takeshi Yamamoto and Norishige Morita, et al. "A rapid bedside D-dimer assay (cardiac D-dimer) for screening of clinically suspected acute aortic dissection." *Cir J* 69 (2005): 397-403.
2. Sbarouni, Eftihia, Panagiota Georgiadou, Aikaterini Marathias and Stefanos Geroulanos, et al. "D-dimer and BNP levels in acute aortic dissection." *Int J Cardiol* 122 (2007): 170-172.
3. Shao, Ning, Shan Xia, Jia Wang and Xin Zhou, et al. "The role of D-dimers in the diagnosis of acute aortic dissection." *Mol Biol Rep* 41 (2014): 6397-6403.
4. Wen, Dan, Xin Du, Jian-Zeng Dong and Xian-Liang Zhou, et al. "Value of D-dimer and C reactive protein in predicting inhospital death in acute aortic dissection." *Heart* 99 (2013): 1192-1197.
5. Shinohara, Tadashi, Kimihiro Suzuki, Makoto Okada and Masaru Shiigai, et al. "Soluble elastin fragments in serum are elevated in acute aortic dissection." *Arterioscler Thromb Vasc Biol* 23 (2003): 1839-1844.

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