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**Case Report**

# Tortuous abdominal aorta: A case report from cadaveric dissection with radiological emphasis

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## Abstract

During routine dissection for MBBS first year in the region of abdomen, tortuous abdominal aorta was noticed in a female cadaver of approximately sixty five years of age. There was no dilatation or reduction in vessel wall thickness as is usually seen in aneurysms. Ultrasonography plays a major role in the exploration of the abdominal aorta, from its emergence from the diaphragm to its bifurcation. It is indicated for the diagnosis and follow-up of various aortic diseases, especially aneurysms. No abnormal pathology of a vessel and more so tortuosity is said to be the result of localized atherosclerosis.
**Keywords:** Abdominal aorta, aneurysm, catheterization.

## 1. Introduction

Abdominal aorta begins at the aortic hiatus of the diaphragm, anterior to lower border of the body of the twelfth thoracic vertebra, descends in front of the vertebral column and ends at the level of fourth lumbar vertebra, commonly a little to the left of the middle line by dividing into the two common iliac arteries[1]. Abnormal localized dilatation with thinning of vessel wall is usually seen in aneurysms. Aneurysmal abdominal aorta, shows thin arterial and usually distorts the anatomy by displacing adjoining structures. We are reporting a case, where the vessel was tortuous and shifted to left from its usual position. Similar case of abdominal tortusity was reported by the same author [2]. These type of cases are reported with relevance to clinical implication during catheterization and probable indication for pre-procedural imaging study in suspected cases.

## 2. Case Report

During routine dissection, variations in abdominal aorta were seen in a 65-year-old female cadaver. Abdominal aorta was tortuous instead of following a straight course. Part of the aorta below the level of origin of renal artery was curved. The artery was shifted to the left from midline [Figure 1]. The maximum distance of abdominal aorta from the inferior vena cava was 11.30mm measured with help of digital callipers [Figure 2]. Vessel wall of abdominal aorta was normal on palpation. No segmental or localized dilatation was observed. The diameter of abdominal aorta was 14.71mm at the level of origin of renal artery, which was in the normal range.

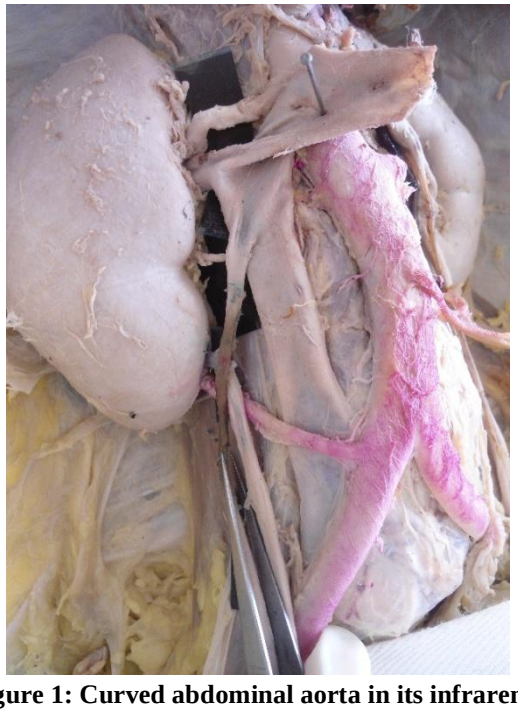

**Figure 1: Curved abdominal aorta in its infrarenal segment**

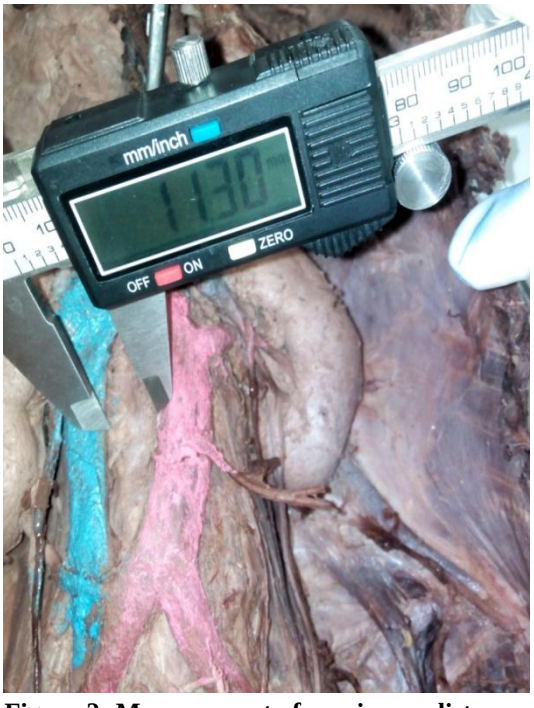


**Figure 2: Measurement of maximum distance between abdominal aorta and inferior vena cava.**

## 3. Discussion

Arteries generally traverse a designated course and curve with relevance to structures related in the vicinity. Classical examples of tortuous arteries conventionally described are splenic artery and facial artery. Course of abdominal aorta and inferior vena cava and their branches or tributaries usually follow a straight course. Feller and Woodburne [3] documented the lateral deviation of the abdominal aorta to be of clinical significance since it could be mistaken for an aneurysm, when it was palpated through the abdominal wall as a pulsatile mass. Similar case showing tortuosity of abdominal aorta was also reported by Wadhawa *et al* where abdominal aorta was deviated to right against vertebra L1 and L2 [4].

Different types of catheterization or intra-aortic balloon pumping commonly done in therapeutic and diagnostic procedures are routed through abdominal aorta. It is likely that a tortuous abdominal aorta, when encountered, can lead to difficulty in negotiation of catheters. Hence, it is necessary to have prior knowledge of the course of abdominal aorta as a catheter has to pass through this aortic segment before reaching the targeted area. In this context, Gerlock Jr and Goncharenko further commented about difficulty in using straight-tipped catheters in patients with tortuous abdominal aorta [5]. Kara *et al* also report an incidence of blocked catheter at the abdominal aorta during coronary angiography [6].

Technological innovations in the field of ultrasound, computed tomography, angiography, and magnetic resonance imaging (MRI) have expanded the options for vascular imaging and modified diagnostic protocols [7, 8]. Ultrasonography is the first-line imaging study for the diagnosis and the postoperative evaluation and follow-up of patients with diseases of the abdominal great vessels [9]. Battaglia *et al* reported in their study that color doppler Ultrasound usually provides very accurate measurements of the axial diameter of the aneurysm, unless the involved segment is particularly tortuous, in which case the caliber may be overestimated [10]. So it is clearly understood that tortuosity of a vessel can be confused with auerysm.

## 4. Conclusion

Finding of tortuosity of a part of abdominal aorta with a shift to left makes this case a rare presentation. The knowledge on such cases has an important clinical significance in abdominal operations or invasive arterial procedures.

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