

Letter to the Editor

Things may not go as planned: The role of aortoiliac dilation and elongation during the estimation vascular structures' anatomical course



To the Editor:

We read with great interest the article by Li et al. "Distribution of iliac veins posterior to common iliac artery bifurcation (CIAB) for pelvic lymphadenectomy" (Li et al., 2015).

Pelvic lymphadenectomy, performed in close proximity to multiple vascular structures, is an essential part of management of gynecological malignancies for its prognostic and therapeutic significance. This close anatomical localization keeps potentially catastrophic complication such as vascular injuries resulting intraoperative hemorrhage. Li et al. reported that the most commonly injured vascular structures are the iliac veins due to their perplexing relationship, anatomical variability and their deep positions posterior to CIAB. They stated the importance of distinguishing the distribution of iliac veins posterior to CIAB to prevent complications (Li et al., 2015).

The authors concluded that their new classification defining the distribution of iliac veins posterior to CIAB, including structural types, frequencies, venous diameters immediately posterior to CIAB, and their quantified courses from CIAB to external/internal iliac veins confluence could help surgeons reduce the risk of vascular injury, hemorrhage or transfusion in pelvic lymphadenectomy (Li et al., 2015).

To our knowledge, aortic morphology is known to change over time. Aortic morphology, in particular aortic length, branching points, and correlation with adjacent structures and organs are well studied in the literature, however many of the published articles have cross-sectional design (Chandra et al., 2015; Sugawara et al., 2008; Collins et al., 2014). Aortic length varies significantly with body habitus or height. Interestingly, it has been reported that all the segments between the branches of the abdominal aorta were significantly correlated with a particular piece of aorta between the celiac artery and the aortic bifurcation, while this last portion of aorta is also correlated with the body length and height. This issue has been explained with the fetal embryogenesis (Panagouli et al., 2011). It is reported that ectomorphs have a longer aorta than the mesomorph (Chandra et al., 2015; Cerqueira et al., 2005). Several of the other studies have demonstrated that especially ascending aorta lengthens over time. Sugawara et al. measured lengths of the aorta and carotid and iliac arteries on magnetic resonance images of 256 healthy volunteers of varying age and they found evidence of longer ascending aortas with advancing age (Sugawara et al., 2008). Charles et al. reported that the diseases such as arteriosclerosis, syphilis and hypertension all appear to produce aortic elongation in this respect and are additive to produce variance of the standardized length or benchmark of the structures independently from the healthy but aged population (Dotter et al., 1950). These cross-sectional studies,

however, are limited as the influence of genetic and constitutional factors cannot be eliminated (Chandra et al., 2015). It has been reported that the connective tissue disorders such as arterial tortuosity syndrome (ATS) which is an autosomal recessive connective tissue disorder caused by mutations in the SLC2A10 gene, mainly characterized by tortuosity and elongation of the large- and medium-sized arteries, may get out of focus to distinguish the distribution of veins to arteries (Castori et al., 2012).

Aortic remodeling with ageing and important heterogeneity of visceral vessels distribution should be carefully studied in preoperative course and the patients must be evaluated by himself measurements which may be varied by various factors such as age, hypertension, atherosclerosis and genetic (Lawton et al., 2016). Kornreich et al. remarked that the positions of the aortic branching (as well as common iliac bifurcation) and venous confluence showed a highly significant downward shift with increasing age and the shift was more pronounced in women (Kornreich et al., 1998). Finally, distinguishing the distribution of an anatomical structure such as iliac veins according to an arterial

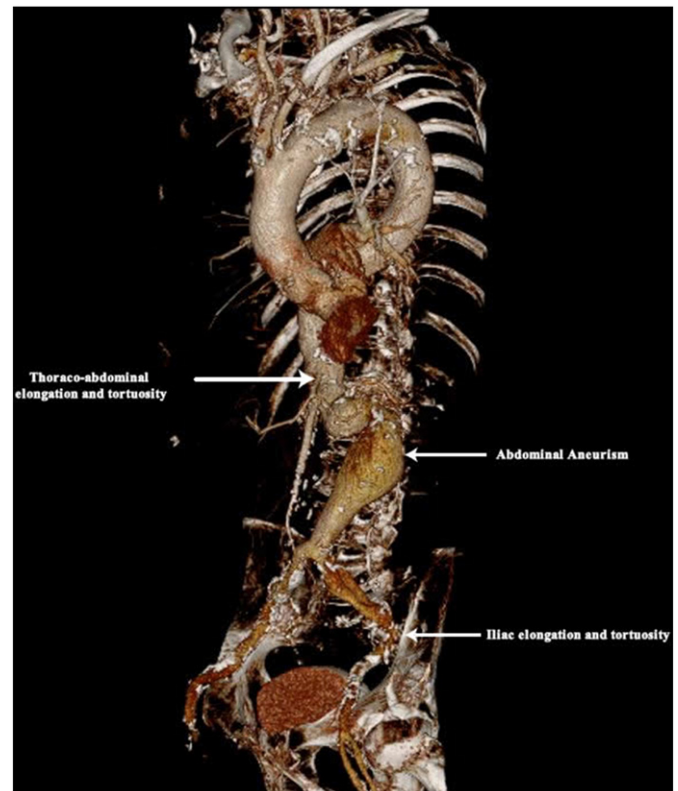


Fig. 1. An example of 3D structured computerized tomography of the thoraco-abdominal aortic elongation and tortuosity, the abdominal aorta aneurism and the iliac tortuosity in a 48 years old woman who has a severe hypertension and atherosclerosis.

vascular landmark, it must be kept in the mind of the patients' associated cardiovascular diseases such as hypertension, atherosclerosis and aortic aneurism. In this context, herein, a 3D structured computerized tomography of a 48 years old woman who has a severe aortic elongation and dilatation caused by hypertension and atherosclerosis has been shown on Fig. 1.

As a conclusion, the major weakness of the present study is the wide range of age which may affect vascular morphology. Besides, patients with hypertension, atherosclerosis, and aortic aneurysm should be excluded from the study because they may distort and modify aortic morphology. Surgeons should also keep in mind that neighboring adjacent structures, vascular morphology and the classification given in this study may be different in these patients and we hope that the previously mentioned comments might add to the value of the manuscript by Li et al. (Li et al., 2015).

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