# Imaging Sciences Interesting Cases

## CASE 32

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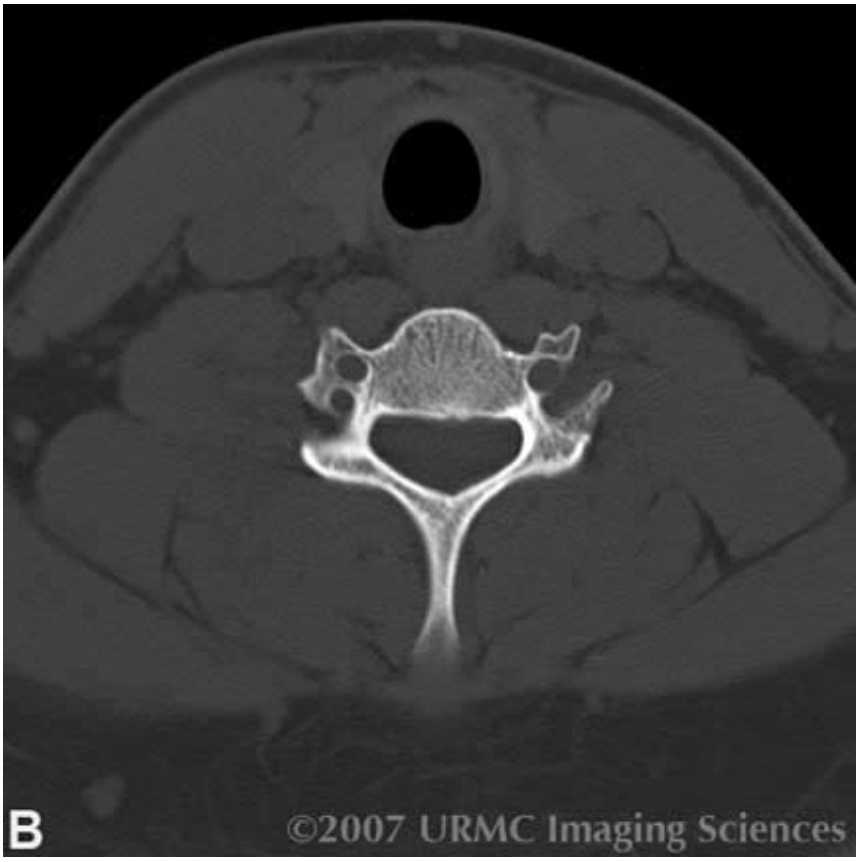
**CLINICAL PRESENTATION:** Incidental finding on neck CT.

**IMAGING FINDINGS:** CT scan of the neck demonstrates duplicated bilateral foramen transversarium in C5 through C7.



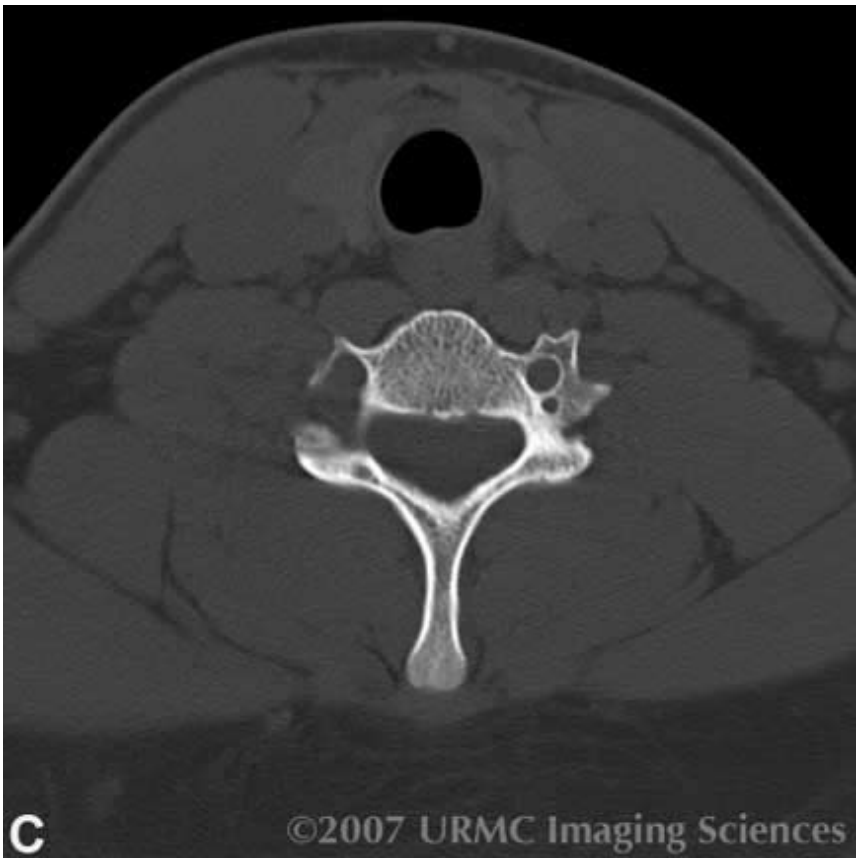




**Figure 1A-C**

**DIAGNOSIS: Duplicated foramen transversarium and presumed duplication of the vertebral arteries**

**DISCUSSION:** Foramen transversarium is a bony canal seen in the transverse process of C1-C6 vertebra. It usually contains vertebral artery, veins, and sympathetic nerves. The size and shape of this structure varies from one individual to another. In some people it may be absent or duplicated. A single cadaveric study reported finding duplicated foramen transversarium in 2 out of 132 specimens (1.5%).

Although exact numbers have not been reported. duplicated foramen transversarium is likely to be associated with anatomical variants of vertebral artery, such as duplication and fenestration. Duplicated vertebral arteries have two origins and fusion points in the neck outside of spinal canal. Fenestrated vessels have single origins and divide into two parallel trunks within or outside of the vertebral canal. Only 74 cases of fenestration have been reported in the literature, most of them demonstrate left predominance. Four (5%) of them are bilateral. In contrast, there are 22 cases of vertebral artery duplication. Only one (5%) of them is bilaterally symmetric.

The embryogenesis of the vertebral arteries occurs between day 32 and 40 of gestation. They are formed from fusion of the longitudinal anastomoses that link cervical intersegmental arteries following the course of the 2 through 8 cervical segmental nerves. Most of intersegmental arteries regress, except for the seventh artery, which becomes the proximal portion of the subclavian artery, giving rise to the vertebral artery. It has been postulated that persistence of a portion of the primitive dorsal aorta with two intersegmental arteries may give rise to vertebral artery duplication. A partial failure of regression of the intersegmental arteries can result in vertebral artery fenestration. Intracranial duplication results from failure of regressions of transient lateral basivertebral anastomoses during formation of basilar artery from the fusion of two longitudinal neural arteries.

Histologic examination of fenestrated arteries demonstrates underdeveloped muscular wall, disorganized or absent elastic fibers, and common adventitia. Therefore, it is believed to predispose to pathology. While no histologic evaluation has been reported, it is generally believed that duplicated arteries are histologically normal and therefore of no consequence.

**REFERENCES:**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