



Case Report

Foramen in the right anterior root of transverse process of a typical cervical vertebra

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Abstract

The cervical vertebrae are the smallest vertebrae with a vertebral foramen and a foramen transversarium in each transverse process. The foramen transversarium transmits the vertebral artery with its accompanying veins and a sympathetic plexus from the lower cervical ganglion. In this case, a foramen was noticed in the right ventral bar of the transverse process of a typical cervical vertebra. The diameter of the foramen was 3.6 mm x 3.4 mm and was at a distance of 3.5 mm lateral to vertebral body. This foramen was entirely different from the accessory foramen transversarium. Neither standard textbooks nor journals of anatomy have reported such a foramen. To our knowledge, this is the first report of such a foramen, for which we propose the term of anterior root foramen.

© *Int J Anat Var (IJAV)*. 2014; 7: 60–61.**Key words** [foramen] [transverse process] [cervical vertebra] [vertebral artery]

Introduction

The seven cervical vertebrae, smallest of the movable vertebrae, are typified by a foramen in each transverse process (TP). The typical cervical vertebrae are C3 to C6. The right and left transverse processes of cervical vertebra are composed of two bars or roots, ventral and dorsal. The two roots end laterally as anterior and posterior tubercles. The two tubercles are joined to one another by an intertubercular lamella, also termed as costotransverse lamella. These three elements represent morphologically the capitellum, tubercle and neck of a cervical costal element. The attachment of dorsal bar to the pediculolaminar junction represents the morphological transverse process and the attachment of ventral bar to ventral body represents capitellar process [1]. A gutter for spinal nerve is formed between the anterior and posterior roots of each TP, serves as an exit passage for spinal nerve. The boundaries of the foramen of TP are formed by the pedicle, anterior root of TP, posterior root of TP, and intertubercular lamella. The foramen transversarium transmits the vertebral artery with its accompanying veins and a sympathetic plexus from the lower cervical ganglion [2].

Case Report

Among 167 cervical vertebral collection housed in the Department of Anatomy, Meenakshi Medical College and

Research Institute and Meenakshi Ammal Dental College, a typical cervical vertebra presented with a foramen in the right anterior bar of transverse process. The diameter of the foramen was 3.6 mm x 3.4 mm with regular margin. The foramen was at a distance of 3.5 mm away from the junction of the right anterior root with the vertebral body. Measurement was done by means of a digital Vernier caliper. The oblique view of the vertebra exposes the foramen clearly (Figure 1). A white thread was passed through the foramen to show the patency of the foramen (Figure 2). Contralateral side showed no variations.

Discussion

The intervertebral foramina (IVF) lie between the superior and inferior vertebral notches of adjacent cervical vertebrae. Boundaries of IVF are pedicle of vertebra above, vertebral body of vertebra above, intervertebral disc, vertebral body of vertebra below and uncinat process. Floor of IVF is formed by the pedicle of vertebra below. The posterior wall is formed by the Z joint, formed by inferior articular process of vertebra above and superior articular process of vertebra below. IVF provides an osteoligamentous boundary between central and peripheral nervous system. The structures traversing IVF include spinal nerve, dural root sleeve, lymphatic channels, spinal branch of a segmental artery, communicating veins between external and internal vertebral venous plexus,

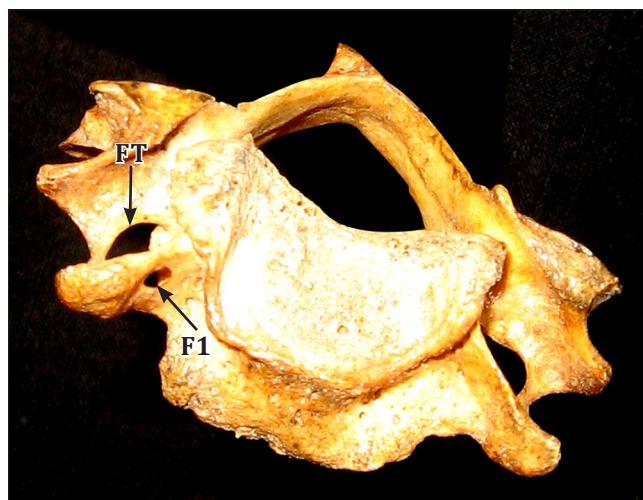


Figure 1. Oblique view of typical cervical vertebra with the arrow pointing upwards towards the *foramen in anterior root of transverse process (F1)* and the other arrow pointing downwards towards the *foramen transversarium (TF)*.

recurrent meningeal nerves (sinuvertebral nerve) and adipose tissue surrounding all the structures [3].

The foramen present in the ventral bar may be of developmental than acquired. If developmental, any of the structures present in the IVF or a content of transverse foramen might have passed through. It may be a branch of anterior radicular arteries, segmental arteries or a branch of vertebral artery, a twig from sinuvertebral nerve. Since it is a dried specimen the original contents are unknown. Such foramina are not part of any standard surgical-orthopedic procedure. The margin of the foramen is regular, without any bony spicules projecting near the edges which clearly indicates that it is of developmental origin, and not iatrogenic or traumatic.

To our knowledge, none of the standard anatomy textbooks and journals have reported such a foramen. Thus this is the first ever case report of a foramen in the anterior root of cervical vertebra, for which we propose the term, Anterior root foramen of cervical vertebrae. This may prove useful to the neurosurgeon and orthopedic surgeons practicing

the anterolateral approach to the spine. Knowledge of this foramen may help in avoidance of unnecessary trauma to the structures passing through the foramen, during any procedures.



Figure 2. Figure shows a white thread in the foramen to show the patency of the foramen.

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