

Case Report

FUSED AXIS AND THIRD CERVICAL VERTEBRA AND ITS CLINICAL SIGNIFICANCE

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ABSTRACT

The present study shows abnormally fused axis & third cervical vertebra. The study was conducted in the department of Anatomy, GMC, Nagpur. Bodies, pedicles & laminae of two vertebrae are completely fused on right side but on left side only bodies are partially fused while pedicles & laminae are separate. On the right side, the intervertebral foramen is also very narrow but it appears to be normal on the left side. This abnormality may be associated with neurological signs & symptoms. Therefore the case has been studied.

KEY WORDS: Cervical vertebrae, pedicles, laminae, intervertebral foramen.

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INTRODUCTION

Fusion of cervical vertebrae (FCV) may be congenital or acquired. For many years, this anomaly was of interest mainly to Anatomists [1]. Congenital anomalies are common in the vertebral column. In condition of fused vertebra; two vertebrae appear not only structurally as one but also function as one. [2] This anomaly may be asymptomatic or may also appear with serious manifestations like myelopathy or syndrome like Klippel-Feil [3], limitation of neck movement [4] or the muscular weakness, atrophy, & neurological sensory loss [5].

The present study is based on one of such abnormally fused axis vertebra & third cervical vertebra.

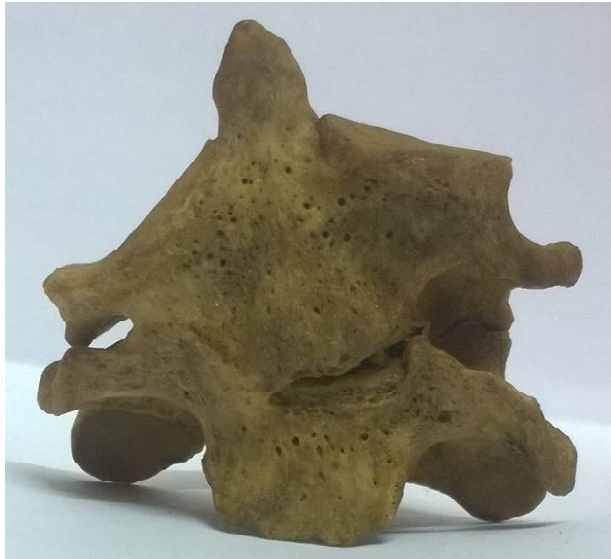
CASE REPORT

In a routine annual survey of the bone room, in the department of Anatomy, G.M.C. Nagpur, we found one abnormally fused Axis & Third cervical vertebrae. We analyzed this fused cervical vertebrae with normal cervical vertebrae under the following headings – body, lamina, pedicle, transverse process, foramina transversarium & costal elements. The specimen was photographed from different aspects.

OBSERVATIONS

We are presenting the details of fused Axis & Third cervical vertebra in the present study:

Fig. 1: Showing anterior aspect of Fused Axis & Third Cervical vertebra (bodies are completely fused on right side).



On Left Side: Bodies of Axis & third vertebra were not completely fused on anterior aspect showing a clear gap but on posterior aspect they were completely fused. Pedicles, transverse processes & intervertebral foramen appeared to be normal. Even the laminae were completely separate. Foramina transversaria of both vertebrae were normal.

Fig. 2: Showing posterior aspect of Fused vertebrae:



1. Laminae are fused on right side while separate on left.
2. In third vertebra, spinous process of right side is fused with spinous process of Axis vertebra showing Spina Bifida.

On Right Side: The bodies of two vertebrae were completely fused on anterior as well as posterior aspect. The pedicles of two vertebrae are also completely fused. The articular process

of axis is pushed downwards because of which the intervertebral foramen between the axis & third vertebra became narrow and small. Also the foramen transversarium of axis appeared small as compared to left side. The spinous process of third cervical vertebra showed a gap forming the congenital anomaly called spina bifida as its right component was fused with the spinous process of axis & left component was separate.

The overall vertebral canal appeared to be longer on the left side than the right as the bodies and pedicles were fused on right side.

Fig. 3: Showing lateral aspect of Fused cervical vertebrae -Intervertebral foramen is compressed on right side.



DISCUSSION

Fused cervical vertebra (FCV) has clinical & embryological significance.

Congenitally fused cervical vertebra is one of the primary malformations associated with chorda dorsalis [6], which is believed to be due to defects which take place during the development of the occipital & cervical somites [7-9]. It is caused because of combination of environment and genetics factors which occur during the third week of pregnancy [10].

Acquired FCV is generally associated with diseases like tuberculosis, other infection like juvenile rheumatoid arthritis & trauma. Clinical symptoms may vary from asymptomatic to myelopathy, limitation of the neck movements or muscular weakness, atrophy & neurological sensory loss or associated with Klippel-Feil syndrome [2]. Early diagnosis can help in the prevention of degenerative process by motivating the patients to change their life styles

to lead a normal life. Surgical intervention for block vertebra carries higher risk & morbidity. The awareness & monitorization of complications needs to be considered. Appropriate counseling on the management of own risk factors should be encouraged [11].

Embryological Significance: Sacrum is an example of block vertebra [12]. The body, posterior arch and transverse process of C2 vertebra is derived from second cervical sclerotome, tip of dens is derived from cranial half of 1st cervical sclerotome [13]. Block vertebra results from embryological failure of normal spinal segmentation due to increase in local blood supply during third to eighth week of fetal development. The commonly encountered anomaly is block vertebra [14] and the common site is C2-C3 with an incidence of 0.4% to 0.7% with no sex predilection [10].

Conflicts of Interests: None

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