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Case Report

Congenital Fused Cervical Vertebrae – A Case report

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ABSTRACT

Normal typical cervical vertebrae i.e. 3rd to 6th are characterized by the presence of small body, triangular spinal canal, foramina transversarium, superior articular facet directed backwards & upward, inferior articular facet directed forward & downwards and a short bifid spine. Abnormalities in any of the features may be associated with neurological signs and symptoms. During the routine osteology classes we found two abnormally fused typical cervical vertebrae in the dept. of anatomy, Desh Bhagat Dental College & Hospital, Sri Muktsar Sahib. Both the pairs of cervical vertebrae were unilaterally fused at the zygapophyseal joints on the right sides and in one of the case the laminas were also fused partially on the right side.

INTRODUCTION

Congenital anomalies are common in the vertebral column[1]. Variations in the cervical vertebrae have been recorded for many years in morphological and clinco-radiological studies. Normal typical cervical vertebrae i.e. 3rd to 6th are characterized by the presence of small body, triangular spinal canal, long and narrow lamina, foramen transversarium, superior articular facet directed backwards and upwards, inferior articular facet directed forwards and downwards and short bifid spine[2]. Abnormalities in any of the features may be associated with neurological signs and symptoms having clinical importance.

MATERIAL AND METHOD

During the routine osteology classes for BDS 1st year students in the department of anatomy at Desh Bhagat Dental College & Hospital, Sri Muktsar Sahib, we came across two pairs of abnormally fused cervical vertebrae. The fused vertebrae were studied along with the normal typical vertebrae and were analyzed and photographed from different aspects.

Observations

We are presenting the details of the abnormally fused cervical vertebrae. It was observed that:

a) The cervical vertebrae of both the specimens I and II were fused at the zygapophyseal joint on the right side.
b) In specimen I, the lamina and spinous process of upper and lower cervical vertebrae were also fused on the right side but it was not found in the specimen II.

In specimen I, the groove for the spinal nerve was also narrow on the right side.

DISCUSSION

Congenitally fused cervical vertebrae is one of the primary malformations associated with chorda dorsalis[3-5] which is believed to be due to defects which take place during the development of the occipital and cervical somites[6-8]. It is caused because of the combination of environment and genetics which occur during the 3rd week of pregnancy[9]. Its diagnosis is complex in young age, it may give the appearance of a normal disc area as the ossification of the vertebral body is not complete till adolescence and the cartilage is also not ossified[10]. It is important to differentiate between a pathologic condition and if it is congenitally fused cervical vertebrae or acquired[11,12]. The later can be associated with conditions like tuberculosis, juvenile rheumatoid arthritis and trauma[10,11,13] and even with Klippel- Fiel Syndrome[14]. In the congenitally fused vertebrae, the AP diameter of the vertebra is decreased and the individual measurements of the two vertebrae`s bodies height is equal to the two fused vertebrae`s height including the inter-vertebral disc. Though the fusion may appear silent but in advanced age it causes degenerative changes in non segmented cervical regions and also leads to development of hypermobility and degenerative arthritis above and below the fused cervical region, webbed neck, kyphosis, torticollis, compression of nerve roots resulting in hypothesia and paralysis of the concerned parts of the body. Early diagnosis can help in the prevention of degenerative process by motivating the patients to change their life style for instance avoiding undue trauma, extension and rotational maneuvers which may place the spinal cord and vertebral artery at risk[15]. In our both specimens, the vertebrae are fused on the right side at the zygapophyseal joint on the right side and in specimen II the groove for spinal nerve is reduced in size, so it may lead to compression of nerve roots resulting into hypothesia and paralysis of the concerned parts of the body.

CONCLUSION

Congenitally fused vertebrae results in biochemical stress in the adjoining segments of the vertebral column leading to premature degenerative change and this can lead to consequences like distal tear, spondylosis, etc.

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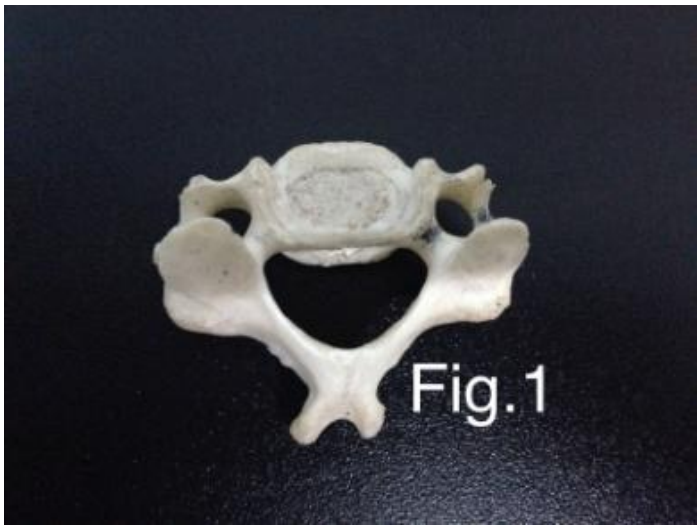

Figure 1. Normal typical cervical vertebra

Figure 2a. Specimen I (Above view)

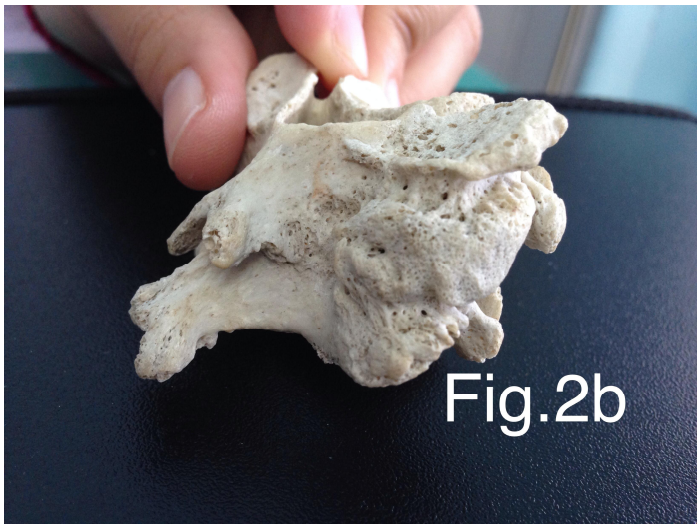

Figure 2b. Specimen I (Right Lateral View) showing fusion at the zygapophyseal joint on the right side as well as the lamina and spinous process are also fused

Figure 2c. Specimen I (Anterior View) showing narrow spinal groove on the right side

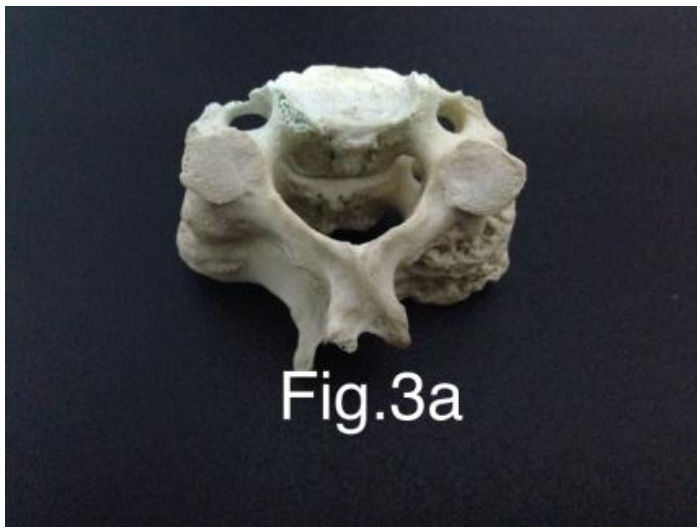

Figure 3a. Specimen II (Above View)

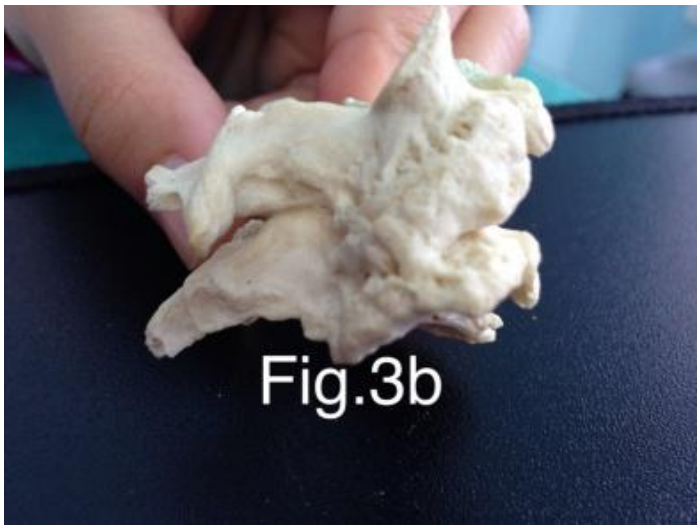

Figure 3b. Specimen II (Right Lateral View) showing fusion at the zygapophyseal joint on the right side