ANOMALOUS ATLANTO-OCCIPUT

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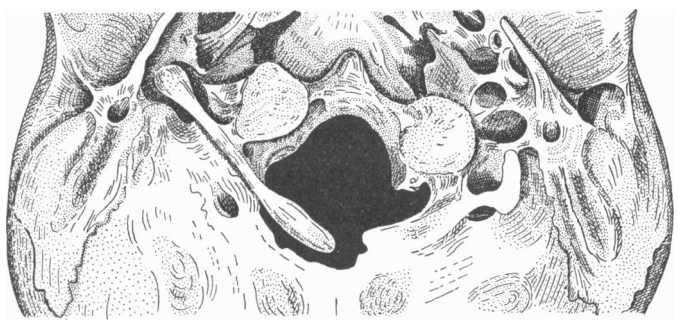
The variation described hereunder was met with in the skull of a male aged about 50 years, said to have died of cancer of the penis, in the King George Hospital, Vizagapatam, attached to this Medical College, in July, 1932.

Description

Ectocranial aspect. The skull presents normal asymmetry. The foramen magnum 35 mm. long, 33 mm. broad is situated a little further back than normal. The ventral arch of the atlas is fused with the basi-occiput. The anterior margin of the foramen magnum 15 mm. in depth is notched for the reception of the odontoid process of the axis which conforms to the normal type. The fusion has occurred in such a manner that there is a groove between the two bones on the right side, while on the left side there is none. There is an accessory foramen on the right side below and medial to the



anterior condyloid foramen between the fused atlas and the occiput and anterior to the lateral mass bearing the inferior articular process. The costal bar of the transverse process of atlas is absent on the left side, while on the right the foramen transversarium is completed in the usual manner by both the ventral and dorsal bars. The paracondyloid processes are present on both sides. They are not united to the transverse processes. The posterior arch of the atlas is deficient in the middle. The right segment of the posterior arch is distinctly separated from the occipital bone in the region of the foramen magnum by a distance of 6 mm. On its superior face, there is the usual groove for the vertebral artery and the suboccipital nerve. The bar terminates behind in a blunt rounded extremity. The left segment of the posterior arch is confluent with the squama of the occipital. There is a gap of 7 mm. to the right of the middle line between the posterior ends of the separate and fused right and left neural arches respectively. The inferior articular facets are asymmetrical and are of the atlanto-axial type. The facet on the right side is small and ovoid and measures 19 × 15 mm., while that of the left side is nearly circular and measures 18 × 19 mm. Large vascular foramina are found behind and above the inferior articular facets of both sides.

Endocranial aspect. Posterior fossa of the basis cranii interna.

The groove for the superior petrosal sinus of the left side is wider and shallower than the corresponding one of the right side.

Porus acusticus is bigger on the left side. Subarcuate fossae are well marked on both sides. Aqueducti vestibuli of both sides are indicated by conspicuous clefts. The lateral parts of the lower margins of the posterior surfaces of the pyramids of the temporals are drawn out into spines overhanging the terminal parts of the sigmoid portions of the transverse sinuses of both sides. The spines are separated from the rest of the temporals by two faint suture lines which suggest their development by independent accessory ossific centres. The anterior margin of the foramen magnum presents lateral elevations on either side of a median depression. The groove for the inferior petrosal sinus is wider and shallower on the left side. The groove for the superior sagittal sinus forks out into a right and a left groove of almost equal size. The torcular fossa is not marked though the internal occipital protuberance is well defined. The so called vermian fossa of Verga is present and is 16 mm. at the widest part. It is roughly triangular in outline with its apex at the internal occipital protuberance and its base at the posterior margin of the foramen magnum. Two ovoid depressions are found on either side of the median vermian fossa, the left being the smaller with a foramen for an emissary vein opening into it and the right the larger. There is a foramen behind the dorsal bar of the transverse process on the left side. This gives the appearance of duplication of the foramen transversarium. The left vertebral artery enters the skull directly without passing through the foramen magnum. The right artery has its usual course through the foramen magnum. On the supra-tentorial aspect there are faint ridges 30 mm. on either side of the middle line presumably for the sulci lunati.

Features of interest.

(1) Complete bilateral synostoses of the condyloid diarthroses between the occiput and the atlas.

(2) Complete concrescence of the atlas with the occiput on the left side and incomplete fusion on the right side.

(3) *Deficient* posterior arch.

(4) Apparent duplication of the vertebrarterial foramen of the left side.

(5) The presence of an accessory foramen below and medial to the anterior condyloid foramen probably for the passage of the first cervical nerve.

(6) Raised anterior margin of the foramen magnum.

(7) The presence of a wide vermian fossa.

The anomalous bones present some features indicative of the condition of "manifestation of an occipital vertebra"; others indicative of assimilation of the atlas on the left side; and finally of simple fusion on the right side.

The sketch of the specimen has been made from a drawing by our artist, Appaladas, to whom we express our thanks.