

Superior Sagittal Sinus Draining Only to the Left Transverse Sinus

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ABSTRACT

In anatomical studies things expected to be studied and remembered by students are structural formats that are statistically dominant i.e. structural formats that are found in most of the population. But anatomical locations of the body organs and structures are not always found in the same form in all the people of the world which gives rise to features known as anatomical

variations. Knowing about variations has great clinical implications especially diagnosis based on imaging because unawareness of the variation may lead to diagnosing normal structures as pathological. In our routine dissection room session at Myungung Medical College, Addis Ababa, we observed a drainage pattern of the superior sagittal sinus that is statistically not dominant. In our case the superior sagittal sinus was draining to the left transverse sinus with no observable confluence of sinus. We also observed there the right transverse sinus and its impression on the bone was absent.

Key Words: Anatomy; Variations; Superior sagittal sinus; Left transverse sinus; Right transverse sinus

CASE REPORT

During our dissection session which was focusing on the brain and its related structures we started by observing the drainage of the sinus as it is the most superficial part next to the scalp. When we followed the superior sagittal sinus it was not placed in the place where it is found in most of the population rather it was going to the left with no observable right transverse sinus.

Our cadaver is 1.63 m in length with no observable gross deformity in its outer structure, has gray hair with an estimated age of 50-60 years. The superior sagittal sinus after going to the left transverse sinus it will be changed to sigmoid sinus then to the left internal jugular vein. Below there is a figure showing the statistically dominant feature superior sagittal sinus (Figure 1) and the next figure shows the variation we observed (Figure 2) and Figure 3 shows Drainage impression for the sinuses.

DISCUSSION

The brain as an organ that requires a high amount of energy and oxygen takes 15%-20% of the total cardiac output per minute which is approximately 750 milliliters per minute [1]. After this amount of blood is used and gives off the nutrients and oxygen that are needed for the normal functioning of the brain it will be metabolized into different substances and they will be drained by the venous system to the heart. The inner surface of the skull bone has several

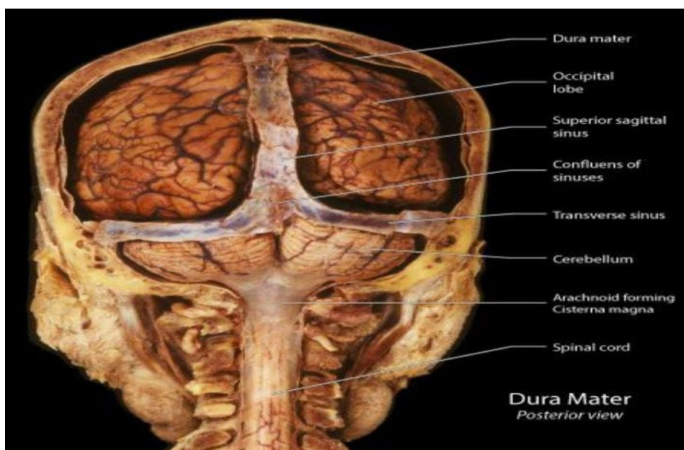


Figure 1) Statistically dominant drainage of the sinuses (Both to the left and the right sinuses).

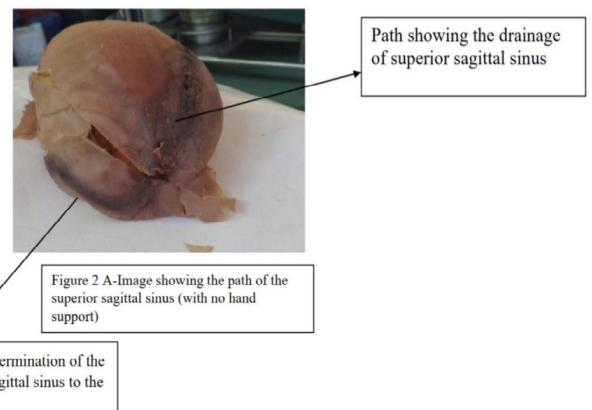


Figure 2a) Image showing the path of the superior sagittal sinus (with no hand support).

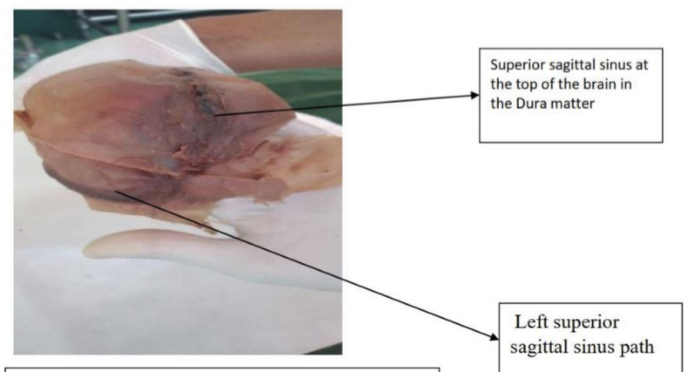


Figure 2b) Image showing the path of the superior sagittal sinus (Hand held dura matter).

impressions which are formed by the underlying soft tissues during the period of in utero to the period of postnatal development.

The drainage routes are different for different people. After the arterial blood has been supplied by the brain it will drain into the sinuses. One of the sinuses that collect venous blood and drain it to the transverse sinuses is the superior sagittal sinus which drains into the sigmoid sinus then to the internal

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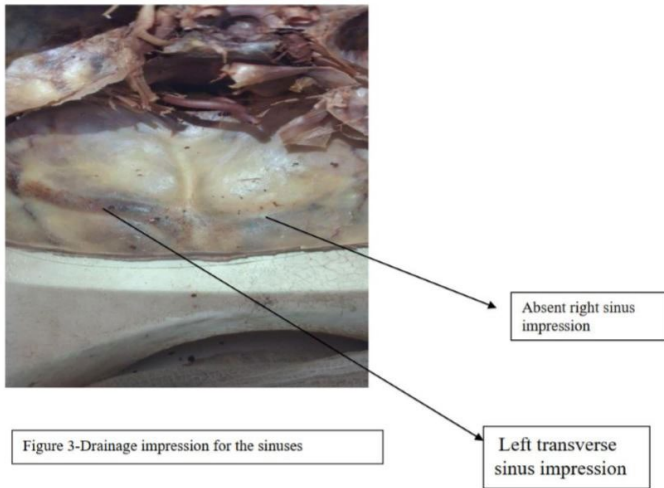


Figure 3) Drainage impression for the sinuses.

jugular veins. The venous sinuses are found at the attachment of the dural venous septa and their walls are formed by the dura mater and periosteum of the skull. This makes them in close contact with the skull and their course, existence and anatomical variation can be implicated by the impressions they make on the skull bone. Determining the normal impression and anatomical variation will help pathologists and radiologists make an appropriate diagnosis. Particularly on the occipital bone we can observe the impression of the right and the left transverse sinus. This impression is formed by its respective transverse sinus. Impression size varies in size among individuals. The average width of the right transverse sinus is 0.80 ± 0.044 and of left transverse sinus is 0.82 ± 0.035 [2].

There are six types of drainage variations that can be observed in drainage of the superior sagittal sinuses [3-5].

These are:-

Type I- The superior sagittal sinus continuing as the right transverse sinus and two occipital sinuses open to the confluence of sinuses (30.1% of cases).

Type II- The superior sagittal sinus draining as the right transverse sinus and

the confluence of sinuses draining more than two occipital sinuses (21.2% of cases)

Type III- The superior sagittal sinus draining to the left transverse sinus without showing any interruptions and the two occipital veins drain to the confluence of sinuses (12.1% of cases).

Type IV- The superior sagittal sinus diverted to the left side and continuing as the corresponding transverse sinus and multiple small occipital sinuses joining it (6.1% of cases).

Type V- Superior sagittal sinus showing anatomical continuity through transverse sinus of each side by joining in the confluence of sinuses and two occipital veins joining in the confluence of sinuses (9.1% of cases)

Type VI- The superior sagittal sinus bifurcating symmetrically before joining the transverse sinus and multiple occipital sinuses will drain to the confluence of sinuses (21.2% of cases) From this type of variations the case we are reporting can be grouped as the type IV as the superior sagittal sinus diverted to the left side and continued as the left transverse sinus without major occipital sinus joining it.

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