Lateral sinus

The transverse sinuses (left and right lateral sinuses), allow blood to drain from the back of the head. They run laterally in a groove along the interior surface of the occipital bone. They drain from the confluence of sinuses (by the internal occipital protuberance) to the sigmoid sinuses, which ultimately connect to the internal jugular vein.

The transverse sinuses are of large size and begin at the internal occipital protuberance; one, generally the right, being the direct continuation of the superior sagittal sinus, the other of the straight sinus.

Each transverse sinus passes lateralward and forward, describing a slight curve with its convexity upward, to the base of the petrous portion of the temporal bone, and lies, in this part of its course, in the attached margin of the tentorium cerebelli; it then leaves the tentorium and curves downward and medialward (an area sometimes referred to as the sigmoid sinus) to reach the jugular foramen, where it ends in the internal jugular vein.

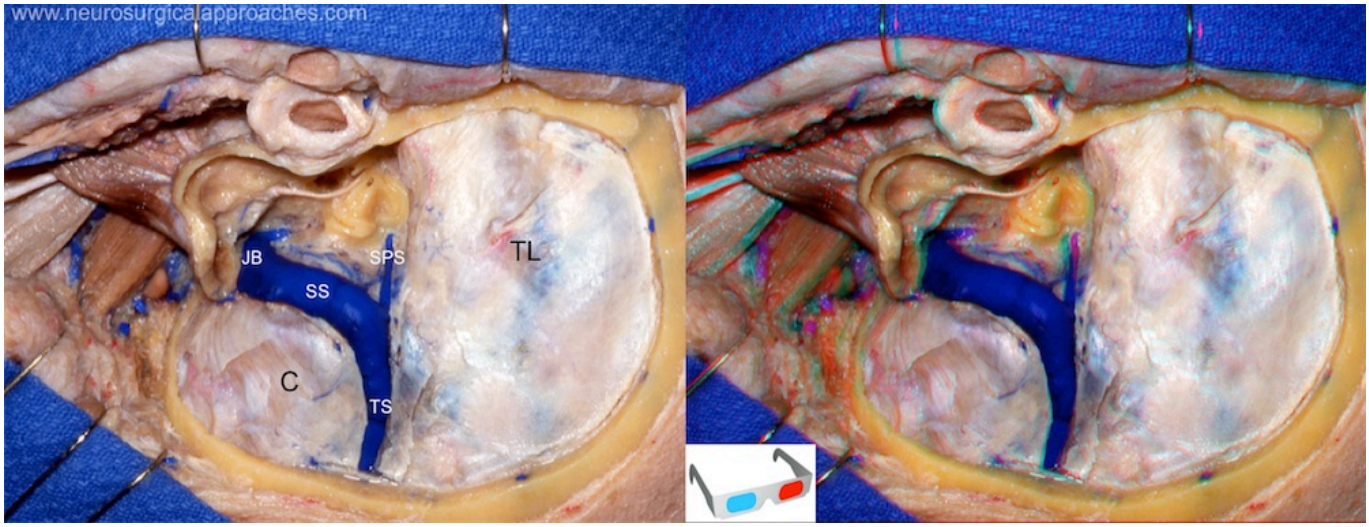
In its course it rests upon the squama of the occipital, the mastoid angle of the parietal, the mastoid part of the temporal, and, just before its termination, the jugular process of the occipital; the portion which occupies the groove on the mastoid part of the temporal is sometimes termed the sigmoid sinus.

The transverse sinuses are frequently of unequal size, with the one formed by the superior sagittal sinus being the larger; they increase in size as they proceed, from back to center.

On transverse section, the horizontal portion exhibits a prismatic form, the curved portion has a semicylindrical form.

They receive the blood from the superior petrosal sinuses at the base of the petrous portion of the temporal bone; they communicate with the veins of the pericranium by means of the mastoid and condyloid emissary veins; and they receive some of the inferior cerebral and inferior cerebellar veins, and some veins from the diploë.

The petrosquamous sinus, when present, runs backward along the junction of the squama and petrous portion of the temporal, and opens into the transverse sinus.



In the combined supra and infratentorial presigmoid approach a temporooccipital craniotomy is performed and the transverse sinus, the superior petrosal sinus and the sigmoid sinus are exposed. C: cerebellum; JB: jugular bulb; SPS: superior petrosal sinus; SS: sigmoid sinus; TL: temporal lobe; TS: transverse sinus.

Pathology

The association of idiopathic intracranial hypertension (IIH) with stenosis or narrowing of the transverse sinuses (TSs) is well known. However, there is debate as to whether the stenosis is a cause or consequence.

see Lateral sinus thrombosis.

see Venous sinus stenosis.

A combination of image-guidance and micro-Doppler enhances the accuracy in localizing the margins of the transverse and sigmoid sinuses in the retrosigmoid approach, thus preventing inadvertent injury. The method could potentially be applied during other craniotomies involving the exposure of a venous sinus [1].

Quiñones-Hinojosa, et al. [2] described a bilateral occipital transtentorial/transfalcine approach for large falcotentorial meningiomas. They ligated and cut the transverse sinus after checking the patency of the occluded sinus, and used permanent aneurysmal clips to ligate the vein of Galen when the straight sinus was occluded. The area above and below the tentorium can provide wide exposure and reduce occipital lobe retraction during prolonged operation times. Moreover, this approach may allow surgeons some form of intraoperative flexibility in terms of their surgical plan.

1)
Baghdasaryan D, Albrecht M, Shahnazaryan M, Rosahl S. Real-time ultrasound Doppler enhances precision in image-guided approaches to the cerebello-pontine angle. World Neurosurg. 2017 Aug 10. pii: S1878-8750(17)31300-1. doi: 10.1016/j.wneu.2017.08.003. [Epub ahead of print] PubMed PMID: 28804044.

2)
Quiñones-Hinojosa A, Chang EF, Chaichana KL, McDermott MW. Surgical considerations in the management of falcotentorial meningiomas: advantages of the bilateral occipital transtentorial/transfalcine craniotomy for large tumors. Neurosurgery. 2009 May;64(5 Suppl 2):260-8; discussion 268. doi: 10.1227/01.NEU.0000344642.98597.A7. PubMed PMID: 19287325.