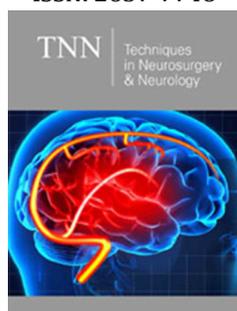


# Surgical Anatomy of the Foramen Jugular

**Behzad Saberi\***

Medical Research, Iran

ISSN: 2637-7748



\*Corresponding author: Behzad Saberi,  
Medical Research, Esfahan, Iran

Submission: 📅 June 12, 2019

Published: 📅 June 17, 2019

Volume 2 - Issue 2

**How to cite this article:** Behzad S,  
Surgical Anatomy of the Foramen  
Jugular. *Tech Neurosurg Neurol.*2(2).  
TNN.000537.2019.  
DOI: [10.31031/TNN.2019.02.000537](https://doi.org/10.31031/TNN.2019.02.000537).

**Copyright@** Behzad Saberi, This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

## Opinion

Foramen jugular is located in the posterior fossa lateral to the carotid canal. Petrous bone forms its anterior wall and occipital bone forms its posteromedial wall. Foramen jugular located about 5mm above the intracranial orifice of the hypoglossal canal, 23 mm to the apex of the mastoid tip and 15mm from tympanomastoid suture. Its direction has an anterior, lateral and inferior pattern. Foramen jugular divided anatomically into pars nervosa which contains inferior petrosal sinus, Jacobsen's and glossopharyngeal nerves and pars vascularis which contains cranial nerves X and XI, Arnold's nerve, jugular bulb, internal jugular vein and a branch of the ascending pharyngeal artery which would be its posterior meningeal branch. Hypoglossal nerve is located medial to the foramen jugular, vertebral artery is located inferior to that, mastoid segment of the facial nerve is in its lateral side and petrous part of the internal carotid artery located in its anteromedial side. There are some potential spaces along the foramen jugular which are buccopharyngeal fascia, superficial layer of the deep cervical fascia and prevertebral fascia. Mandibular ramus, styloid and mastoid processes and transverse process of the C1, limit lateral approach to the foramen jugular. Both Arnold and Jacobson's nerves cross the jugular foramen, but the hypoglossal nerve does not traverse it. In about 5mm lateral to the foramen jugular, the facial nerve can be detected while it leaves the stylomastoid foramen. levator scapulae, longissimus and splenius capitis, sternocleidomastoid are some muscular relationships to the jugular foramen which their anatomical relationships are important to know during surgical approach to the foramen jugular. There are some surgical approaches for resection of tumors of the foramen jugular. Typically, Transjugular posterior infratemporal fossa approach is used to remove tumors involving the foramen jugular but overall, the size, location and vascular encasement determine the best choice to approach its tumors. As an example for large paragangliomas and tumors with intracranial extension more than 2cm, several lateral infratemporal fossa and combined two-stage resection approaches have been described. Since surgical management of the jugular foramen tumors can be challenging in skull base surgery, knowing the precise surgical anatomy of the foramen jugular and adjacent anatomical structures is of great importance to achieve successful surgical results with lowest complications [1-8].

## References

1. Fayad JN, Schwartz MS, Brackmann DE (2009) Treatment of recurrent and residual glomus jugulare tumors. *Skull Base* 19(1): 92-98.
2. Gottfried ON, Liu JK, Couldwell WT (2004) Comparison of radiosurgery and conventional surgery for the treatment of glomus jugulare tumors. *Neurosurg Focus* 17(2): E4.
3. Graham MD, Larouere MJ, Kartush JM (1991) Jugular foramen schwannomas: diagnosis and suggestions for surgical management. *Skull Base Surg* 1(1): 34-38.
4. Al-Mefty O, Teixeira A (2002) Complex tumors of the glomus jugulare: criteria, treatment, and outcome. *J Neurosurg* 97(6): 1356-1366.
5. Katsuta T, Rhoton Jr AL, Matsushima T (1997) The jugular foramen: microsurgical anatomy and operative approaches. *Neurosurgery* 41(1): 149-201(discussion 201-202).
6. Brackmann DE, Fayad JN, Owens RM (2006) Paragangliomas and schwannomas of the jugular foramen. In: Sekhar LN, Fessler RG, (Eds.), *Atlas of Neurosurgical Techniques: Brain*. Thieme, New York, USA, pp. 752-758.

7. Ramina R, Maniglia JJ, Fernandes YB, Paschoal JR, Pfeilsticker LN, et al. (2005) Tumors of the jugular foramen: diagnosis and management. *Neurosurgery* 57(suppl 1): 59-68.
8. Mann WJ, Amedee RG, Gilsbach J, Perneczky A, Wolfensberger M (1991) Transsigmoid approach for tumors of the jugular foramen. *Skull Base Surg* 1(3): 137-141.

For possible submissions Click below:

[Submit Article](#)