

## pB-C2 line

pB-C2 line (drawn perpendicular to a line drawn between the [basion](#) and the posterior aspect of the [C2](#) vertebral body, at the most posterior extent of the [odontoid process](#) at the dural interface). The pB-C2 line is a measure of ventral canal encroachment.

The study of Khaleel et al. demonstrates that the odontoid process in adults is anatomically different from that in children: it is longer, more posteriorly inclined, and has a greater pB-C2 line. Therefore, utilization of these parameters with previously published cutoffs in the pediatric population is not appropriate for surgical planning in adults <sup>1)</sup>.

Ladner et al. divided the pB-C2 line length into Grade 0 (< 3 mm) and Grade I ( $\geq$  3 mm). Ventral canal encroachment may explain the symptomatology of selected patients with [Chiari I malformation](#). The clinical findings presented suggest that patients with Grade I pB-C2 lines, with increased ventral canal obstruction, may experience a higher likelihood of syrinx reduction and headache resolution from decompressive surgery with duraplasty than those with Grade 0 pB-C2 lines <sup>2)</sup>.

For Grabb et al. patients with a pB-C2 measurement of less than 9 mm do not require treatment directed at ventral brain stem compression (VBSC). In select patients with pB-C2 measurements of 9 mm or greater, reduction of VBSC may be prudent before posterior fossa decompression <sup>3)</sup>.

<sup>1)</sup>

Khaleel ZL, Besachio DA, Bisson EF, Shah LM. Estimation of odontoid process posterior inclination, odontoid height, and pB-C2 line in the adult population. J Neurosurg Spine. 2014 Feb;20(2):172-7. doi: 10.3171/2013.10.SPINE13405. Epub 2013 Dec 6. PubMed PMID: 24313675.

<sup>2)</sup>

Ladner TR, Dewan MC, Day MA, Shannon CN, Tomycz L, Tulipan N, Wellons JC 3rd. Evaluating the relationship of the pB-C2 line to clinical outcomes in a 15-year single-center cohort of pediatric Chiari I malformation. J Neurosurg Pediatr. 2015 Feb;15(2):178-88. doi: 10.3171/2014.9.PEDS14176. Epub 2014 Dec 5. PubMed PMID: 25479579.

<sup>3)</sup>

Grabb PA, Mapstone TB, Oakes WJ. Ventral brain stem compression in pediatric and young adult patients with Chiari I malformations. Neurosurgery. 1999 Mar;44(3):520-7; discussion 527-8. PubMed PMID: 10069589.

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