Goel et al., reported of 3 relatively rare clinical cases in which the absence of posterior elements of the axis was associated with basilar invagination and multiple other craniovertebral junction musculoskeletal and neural abnormalities. Atlantoaxial stabilization resulted in remarkable clinical recovery in all 3 cases. C2-3 fixation was not done, and bone decompression was not done. On the basis of their experience, the authors conclude that atlantoaxial fixation is a satisfactory form of surgical treatment in patients having an association of basilar invagination with absent posterior elements of axis [1].

A 30-year-old female with BI who developed recurrent ischemic stroke in posterior circulation. Before the onset of ischemic stroke, she didn't present neck pain or clinical signs of lower cranial nerve dysfunction, brainstem compression or transient ischemic attack. At first she suffered from sudden onset of left-sided hemidysesthesia. Magnetic resonance imaging from a local hospital revealed an acute infarction in the right thalamus. Cerebral MR angiography was unremarkable at that time. The tip of the odontoid process had protruded into the foramen magnum and could be observed at the level of the lower medulla, but unfortunately it was ignored by the clinicians and the radiologists. She was given antiplatelet therapy and the sensory disturbance disappeared gradually. However she experienced a recurrence in the pontine and midbrain region 2 months later. At this time she was transferred to our hospital, and reconstructed computed tomography of cervical spine demonstrated basilar invagination, atlanto-axial dislocation, and atlanto-occipital assimilation. Computed tomographic angiography (CTA) revealed a dominant right vertebral artery (VA) and a redundant loop in its third segment. Dynamic cerebral angiogram demonstrated that the patient had a Bow Hunter's type phenomenon, with dynamic occlusion of the right dominant VA during contralateral head turn. This case highlighted the necessary of hemodynamic evaluation in asymptomatic basilar invagination [2].

1)
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2)
Yang H, Zhong S, Hu Y, Bao Z. Rotational vertebral artery occlusion in a patient with basilar invagination. Br J Neurosurg. 2019 Jan 17:1-3. doi: 10.1080/02688697.2018.1540763. [Epub ahead of print] PubMed PMID: 30652932.