

Occipitoatlantoaxial rotatory fixation (OAARF)

Rare condition involving fixed rotational subluxation of the atlas in relation to both the occiput and axis. [Atlantoaxial rotatory fixation](#) (AARF) appears to precede OAARF in most cases, as untreated AARF may cause compensatory counter-rotation and occipitoaxial fixation at an apparently neutral head position.

A case of OAARF in an 8-year-old girl with juvenile idiopathic arthritis. Cervical imaging demonstrated slight rightward rotation of the occiput at 7.63° in relation to C-2 and significant rightward rotation of C-1 at 65.90° in relation to the occiput and at 73.53° in relation to C-2. An attempt at closed reduction with halo traction was unsuccessful. Definitive treatment included open reduction, C-1 laminectomy, and occipitocervical internal fixation and fusion ¹⁾.

Six consecutive pediatric patients with chronic atlantoaxial rotatory fixation (AARF) underwent posterior fixation. All patients were first treated conservatively such as with a neck collar, traction, Minerva jacket, or halo-vest; however, they failed to achieve successful reduction because of the C2 facet deformity or C1-2 facet fusion. We performed C1-2 fusion using a C1 lateral mass screw and a C2 pedicle screw, a C1-2 transarticular screw, or an occipitocervical fusion using a rod and wiring system. Five patients achieved solid fusion with no torticollis or neck pain by the final follow-up. One patient had mild torticollis after surgery but no pain. Although we believe that with early diagnosis of AARF and appropriate conservative treatment we can avoid surgery, even with conservative treatment from the onset of symptoms, five patients in our series required surgery because conservative treatment did not lead to successful reduction. When conservative treatment for chronic AARF patients fails, C1-2 transarticular fixation, and C1 lateral mass screw and C2 pedicle screw fixation are reliable methods to treat these patients ²⁾.

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Fusco MR, Hankinson TC, Rozzelle CJ. Combined occipitoatlantoaxial rotatory fixation. J Neurosurg Pediatr. 2011 Aug;8(2):198-204. doi: 10.3171/2011.5.PEDS10496. PubMed PMID: 21806363.

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Tauchi R, Imagama S, Ito Z, Ando K, Muramoto A, Matsui H, Matsumoto T, Yukawa Y, Kanemura T, Ishiguro N. Surgical treatment for chronic atlantoaxial rotatory fixation in children. J Pediatr Orthop B. 2013 Sep;22(5):404-8. doi: 10.1097/BPB.0b013e3283633064. PubMed PMID: 23764756.

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