All cervical spine MRIs performed at Lucile Packard Children's Hospital at Stanford from 2009-2015 were retrospectively reviewed. Sixty-six dynamic cervical MRIs performed in 45 children and two young adults were identified for further study.

Forty-three scans were imaged under general anesthesia. All imaging was performed by the neuroradiology team with no direct supervision by the neurosurgery team. There were no adverse events. Dynamic MRI detected significant instability that was not clearly seen on dynamic radiographs (5 patients) as well as cord compression not seen on static MR scans (9 patients). One patient with asymptomatic instability found on flexion-extension radiographs had no cord compression with movement on MRI and was managed conservatively. Two neonates with significant congenital malformations of the cervical spine were cleared for OR positioning for cardiac procedures based on flexion-extension MR imaging.

Dynamic MRI represents a safe and useful tool for evaluating the cervical spine and cervicomedullary junction in a variety of pediatric patient populations and can be performed safely without direct neurosurgical supervision. Additionally, we describe for the first time the use of flexion-extension MRI to clear neonates with severe congenital cervical spine abnormalities for complex operative positioning and ICU care [1)].

1)
Yecies D, Fogel N, Edwards M, Grant G, Yeom KW, Cheshier S. Safety of Dynamic MRI of the Cervical Spine in Children Performed Without Neurosurgical Supervision. World Neurosurg. 2018 Jun 5. pii: S1878-8750(18)31164-1. doi: 10.1016/j.wneu.2018.05.210. [Epub ahead of print] PubMed PMID: 29883828.