C5 palsy

C5 palsy is a known cause of postoperative deltoid muscle weakness. Prognostic variables affecting the incidence of the palsy have been poorly understood.

Little information has been available on the surgical outcomes of deltoid palsy due to cervical disc herniation (CDH), because there are relatively few cases of deltoid palsy due to CDH.

A literature review yielded few studies that reported surgical outcomes of deltoid palsy due to CDH.

Chang et al. reported that surgical decompression significantly improves the degree of deltoid palsy due to cervical radiculopathy. They also reported that deltoid palsy can occur in patients with CDH at C3-4 and C5-6, as well as CDH at C4-5, due to variations in motor distribution or anomalies of the cervical nerve roots. However, there are two limitations to Chang et al. study. The first is the small number of cases (14 cases) included in their study. The second is the absence of an analysis of prognostic factors affecting recovery of deltoid palsy due to CDH, after surgery [1)].

Therefore, Chung et al. performed a retrospective multicenter study on the largest series of CDH cases associated with deltoid palsy, in the literature to date, in order to investigate prognostic factors affecting postsurgical recovery of deltoid palsy due to CDH [2)].

All patients undergoing C4-5 operations for degenerative conditions were retrospectively reviewed over 21 years. Anterior operations included an anterior cervical discectomy and fusion (ACDF) or a corpectomy, whereas posterior operations included laminectomy and fusion (± foraminotomy).

Of the total 1001 operations, in 49.0% anterior and 51.0% posterior cases, there was an overall C5 palsy incidence of 5.2% (52 cases): 1.6% and 8.6%, respectively ($P < .001$). Of the 99 corpectomies, the palsy incidence of 4.0% was not only higher than ACDFs (1.0%), but also followed an upward trend with increasing corpectomy levels ($P = .009$). Of the 69 posterior and 83 anterior C4-5 foraminotomies, the incidence of C5 palsy was statistically higher in the posterior (14.5%) vs anterior (2.4%) cohort ($P = .01$). Multiple logistical regression identified older age as the strongest predictor of C5 palsy in the anterior ($P = .02$) and C4-5 foraminotomy in the posterior ($P = .06$) cohort. This condition improved within 3 to 6 months in 75% of patients in the anterior and 88.6% in the posterior cohort after a mean follow-up of 14.4 and 27.6 months, respectively.

In one of the largest cohorts on C5 palsy, Bydon et al., found in anterior operations an increasing number of corpectomy levels had a higher incidence of C5 palsy; however, older age was the strongest predictor of C5 palsy. In posterior operations, C4-5 foraminotomy carried the strongest correlation [3)].

1)
Chang H, Park JB, Hwang JY, Song KJ. Clinical analysis of cervical radiculopathy causing deltoid paralysis. Eur Spine J. 2003;12:517–521.
2)
Chung JY, Park JB, Chang H, Song KJ, Kim JH, Hong CH, Lee JS, Lee SH, Song KS, Yang JJ, Uh JH, Kim YT, Lee JM. Prognostic Factors for Postsurgical Recovery of Deltoid Palsy due to Cervical Disc Herniations. Asian Spine J. 2015 Oct;9(5):694-8. doi: 10.4184/asj.2015.9.5.694. Epub 2015 Sep 22. PubMed PMID: 26435786; PubMed Central PMCID: PMC4591439.
3)
Bydon M, Macki M, Kaloostian P, Sciubba DM, Wolinsky JP, Gokaslan ZL, Belzberg AJ, Bydon A, Witham TF. Incidence and prognostic factors of c5 palsy: a clinical study of 1001 cases and review of the

literature. Neurosurgery. 2014 Jun;74(6):595-604; discussion 604-5. doi: 10.1227/NEU.0000000000000322. PubMed PMID: 24561867.