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Editorial Perspective for Systematic Review on C5 Palsies.

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After approximately 122 peer-reviewed published research articles, many aspects of postoperative C5 palsies in conjunction with reconstructive cervical spine surgery unfortunately remain an unresolved mystery. Many diverse pathoetiologies have been hypothesized, which altogether offer little or no practical preventative help to surgeons apart from providing some vague reference values for risk counseling of patients. Our reviewers congratulate Drs Jack et al on the unprecedented comprehensiveness and methodological rigor which they applied in their systematic review of C5 palsies following cervical spine surgery. To extract some signal out of the pluriform chatter presented by the current literature was no small feat as the authors sought to reanalyze the available literature using strict inclusion and exclusion criteria and at the same time also apply different perspectives. With this they managed to allay *GSJ*/*EBSJ*'s concerns about being redundant relative to previously published meta-analyses and systematic reviews on this topic.

Although there is no "cure" or tangible prevention strategy, available there appear to be some helpful insights that may be gained from this systematic review.

For instance, the actual risk factor of some form of C5 palsy is approximately 6% and appears not substantively affected by different surgical techniques used beyond some statistical variations. This general complication rate might be a helpful benchmark to use for clinicians in patient counseling and for future results comparisons.

Further differentiations of results comparisons might also benefit from taking a more standardized look at severity of the clinical neurologic presentation and timing of symptom onset. Currently, studies on C5 palsies tend to blend what appears to be a bandwidth of neurologic injury presentations ranging from immediate deficits to delayed onset of hours to days and even later into one "all-or-nothing" pool, thus losing sensitivity toward what may turn out to be different pathways. Similarly, the severity of neurologic deficits seems to vary significantly from some degree of isolated shoulder abduction weakness to a multiroot presentation involving weakness in elbow flexion and even other surrounding roots with or without sensory impairment and pain. Recovery potential has also been described as highly variable, ranging from a few weeks or some permanent residual weakness, pain, and disability. Going forth, a commonly acceptable differentiation of C5 palsy severity might help research efforts by providing a greater structure to the actual neurologic injury incurred. Based on the authors' reporting, a differentiation of neurologic deficits into categories such as "mild" (ie, delayed onset, isolated incomplete shoulder abduction weakness for up to several weeks), "moderate" to "severe" (ie, immediate complete loss of active shoulder abduction and impairment of adjacent roots resulting in reduction or loss of elbow flexion lasting more than 6 months along with sensory deficits and/or radicular pain) might provide improved insights into causation, prevention, and subsequent intervention(s).

After debunking a large number of previously postulated causes, such as patient demographics, the authors provide a first and more comprehensive evaluation of 2 major mechanistic causes for C5 palsies: Foraminal tethering by bony and/or ligamentous entrapment and axial cord rotation, for instance, as result of decompression of unilateral cord impaction. Based on their findings both factors seem to play a prominent role in the etiology of C5 palsies, either each by themselves, or in concert. The authors found that taking into consideration such a multifactorial etiology could allow some more specific predictive risk and disease severity modeling and hopefully benefit outcomes through more targeted modifications of surgical techniques.

For now, the authors have made a laudable effort with their work in trying to move our spine surgeon community out of the current C5 causation stalemate. Hopefully, future investigators will find value in the many resources provided in this systematic review and take a newly targeted direction for the next generation of their studies on C5 palsies.

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