Comments on “Compensation by the Uninjured Arm After Brachial Plexus Injury”

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We read the recent article “Compensation by the Uninjured Arm After Brachial Plexus Injury” published in *Hand* with great interest.⁵ Brachial plexus injury (BPI), like a number of other devastating unilateral upper limb injuries, will result in compensation with the unaffected limb based on the level and severity of the initial injury. The authors of this article have clearly demonstrated that the Disability of the Shoulder, Arm and Hand (DASH)³ summed score reflects both disability of the injured limb and compensation with the uninjured limb following BPI. We concur that measures of overall physical function including compensation are important as in the real world people will use techniques that are the quickest and easiest to perform. We know, for example, unilateral upper limb amputees report similarly low DASH disability scores to people with Dupuytren contracture and finger amputation, as presumably they become very skilled at using compensatory techniques.^{1,7} However, the results of this study seem to indicate that when completing the DASH, people can differentiate between tasks performed by the affected or unaffected limb for both unilateral and bilateral activities based purely on how the question is worded. By measuring actual day-to-day use of the affected limb following BPI, rather than the degree of compensation, we may be able to investigate the true benefit of what are often long-term and expensive treatment modalities.

In addition, the authors reported their results pre or post surgery and in terms of dominance. Another important aspect of measuring outcome following BPI is the level of injury and how this influences the need for compensation. It would be interesting to know, for example, if those with a pan plexus injury, who by the very nature of their injury must rely on far greater levels of compensation, can be compared with those who sustained an injury at the C5/6 level. The DASH has been reported as a multifactorial outcome measure with items falling into different factors variously reported as

“light effort tasks,” “greater effort tasks” and “limitations in social/work activities and pain”;⁶

“shoulder range of motion,” “manual functioning,” and “symptoms”;² and

“gross motor activities,” “fine motor activities” and “symptoms.”⁴

By investigating how people with different levels of injury responded, we may begin to identify sets of items that are representative of injury levels. Intuitively people with a C5/6 injury (poor shoulder and elbow function) should be able to perform very different tasks to people with a C8/T1 level lesion (no hand function). In addition, it would be interesting to know how participants responded to the non-activity items such as the pain questions. Did people reporting high compensatory scores also report higher levels of pain or vice versa?

By breaking down the DASH to analyze compensation and actual function of the affected limb, the authors have introduced an interesting line of research that could enhance our understanding of the true impact of BPI at a day-to-day level.

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Response to: Comments on “Compensation by the Uninjured Arm After Brachial Plexus Injury”

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We appreciate the readers' interest and comments about our work regarding compensation by the contralateral limb after brachial plexus injury (BPI).⁴ We concur that measuring actual daily use of the limb in addition to compensation provides a more comprehensive perspective of the long-term benefits of interventions for BPI.¹ To accomplish this, we have ongoing work to look specifically at actual function, motion analysis, and motor/sensory recovery in a more functional manner. In addition, new self-report surveys specifically focused on function after BPI permit greater nuanced assessments from the patient's perspectives.² We also agree with the readers that the extent of injury should be considered in functional assessments. Based on preliminary analysis from our sample, patients with complete plexopathy reported more compensation for items of the Disability of the Arm, Shoulder and Hand (DASH) compared with the pooled sample of patients with partial

plexopathy.³ However, the samples were small and these are not conclusive results. We will continue to enroll patients so that we can address this question according to level/severity of injury (ie, C5-6, C5-6-7, and full plexus) in future studies. With respect to the effect of pain on compensation, we found no systematic relationship with more pain being associated with more compensation for some DASH items but not for others. This may be because patients only attempt tasks that they think are amenable to compensation in spite of pain, and simply do not attempt others they perceive as impossible because of pain or other reasons. Thus, the latter group would report no role for compensation. We also will assess the role of pain and other psychosocial issues in future studies of compensation.⁵

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