INTRODUCTION

Peripheral nerve surgery

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PERIPHERAL nerve surgery has been greatly advanced in the past few decades with innovations in imaging, surgical technique, and experimental work in elucidating the mechanisms of peripheral nerve regeneration. Peripheral nerves are unique in their capacity, compared to the central nervous system, for long-distance regeneration. Understanding and exploiting this phenomenon has been central to the impressive results from surgical intervention. However, peripheral nerve injuries are frequently associated with incapacitating pain; new techniques and intervention are essential for improving the quality of life of our patients. This applies not just to the peripheral nervous system itself but also to cortical plasticity associated with relearning. In addition, the peripheral nervous system is subject to many unique disorders, such as invasion of small branches of the peripheral nervous system either by malignant cells or joint effusions, about which we are continuing to learn the multiple manifestations—the clues to better diagnosis and treatment. In this issue of *Neurosurgical Focus*, we are delighted to present a series of articles covering the multiple facets of peripheral nerve surgery.

Schwann cells are the neurites' partner in the regenerative dance that leads to functional recovery after peripheral nerve injury. The first article, by Gersey et al., describes the authors' experience with the first use of autologous Schwann cells for augmenting sciatic nerve repair; this article is followed by a review article written by Ray. Similarly, overcoming the gap in nerve injuries has been a challenge for the centuries of nerve repair. Hundepool et al. describe optimizing techniques for decellularization

of nerve allografts to create an optimal environment for nerve regeneration.

The treatment of pain of peripheral nerve origin remains a dogged challenge. Use of peripheral nerve stimulation has shown considerable promise for carefully selected patients; Reddy et al. describe a technique to facilitate patient selection. Likewise, surgical neurectomy may be successful in decreasing neuropathic pain. However, given the chronic pain of these patients, our goal should be to be as minimally invasive as possible, and in this issue, a newer technique is described by Henning et al. Decreasing surgery-related morbidity is particularly viable, especially with the posterior approach to the brachial plexus, as discussed by Crutcher et al. Nor should we consider the failure of one surgery as a failure of surgery, as we learn from van Gent and colleagues, when revision remains a viable option.

Improvement in diagnosis comes from astute observation, such as the case of minimally visible pathology reported by Laumonerie et al., or that of minimally injurious biopsy, as discussed by Wilson and colleagues. Improvement of outcomes follows similar characterization, such as in the cost-effectiveness from motor nerve transfers (Wali et al.), peripheral nerve injury after stereotactic radiosurgery (Stubblefield et al.), and the understanding of cortical plasticity (Bhat et al.).

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Disclosures

The authors report no conflict of interest.