

Rehabilitation Strategies Following Surgical Treatment of Upper Extremity Spasticity



Janese Petuchowski, MS, OTR/L, CHT^{a,1},
Kaitlin Kieras, MS, OTR/L^b, Kristina Stein, MS, OTR/L^{c,*}

KEYWORDS

- Occupational therapy • Hand therapy • Postsurgical guidelines • Spasticity • Upper extremity
- Postsurgical treatment • Upper extremity transfers

KEY POINTS

- A comprehensive occupational therapy program is essential following surgical treatment of upper extremity spasticity.
- Variations in protocols are dependent on surgeon preference, skill of therapist, and function of the patient.
- Patient and/or family training is critical for successful postoperative outcomes.
- Therapy that is meaningful and functional is likely to promote better results.

INTRODUCTION

Upper motor neuron injuries, such as that seen in cerebral palsy (CP), cerebrovascular accidents (ie, stroke), and traumatic brain injury, often result in substantial challenges with motor function. Individuals may have underlying weakness and difficulty with motor control. This condition may result in static or dynamic restrictions of movement causing pain, skin breakdown, and impaired function. Multiple surgical options are available to improve upper extremity positioning and, in some cases, volitional control of the upper extremity.

Postoperative management with therapy is imperative to assist patients/caregivers in maximizing the potential functional gains. Techniques to improve motor control and functional training are important to incorporate into the therapy program.

As with all postoperative referrals to physical or occupational therapy, communication between the therapist and surgeon is critical. Surgical procedures vary based on surgeon preference, goals of surgery, restrictions of neurovascular structures or skin, and patient cognition/function. Postoperative joint immobilization and

Disclosure: The authors have no affiliations with or involvement in any organization or entity with any financial interest (eg, honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or nonfinancial interest (eg, personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this article.

^a Occupational Therapy, Solace Health Care, 4500 Cherry Creek South Drive Suite 710, Denver, CO 80246, USA;

^b Occupational Therapy, Ann & Robert H. Lurie Children's Hospital of Chicago, 225 East Chicago Avenue, Box 142, Chicago, IL 60611-2605, USA; ^c Occupational Therapy, Ann & Robert H. Lurie Children's Hospital of Chicago, 225 East Chicago Avenue, Box 142, Chicago, IL 60611-2605, USA

¹ 3498 East Ellsworth Avenue Unit 801C, Denver, CO 80209.

* Corresponding author.

E-mail address: kstein@luriechildrens.org

Hand Clin 34 (2018) 567–582

<https://doi.org/10.1016/j.hcl.2018.06.013>

0749-0712/18/© 2018 Elsevier Inc. All rights reserved.

progression of motion should take into account all concomitant upper limb procedures. As with many upper extremity procedures, postoperative rehabilitation for patients with upper extremity spasticity must balance necessary immobilization to prevent tendon rupture and/or attenuation with the risk of potential adhesions and/or contractures from delayed initiation of movement.

This article presents contemporary guidelines for immobilization and initiation of therapy after commonly performed surgeries for patients with upper extremity spasticity. In addition, it discusses a variety of therapy techniques that can be used to maximize functional outcomes.

Management of Shoulder Spasticity

The most common shoulder deformity for patients with hemiplegia is a position of adduction, internal rotation, and forward flexion. Muscles that contribute to this deformity include the pectoralis major, latissimus dorsi, subscapularis, and teres major. Shoulder releases are indicated for pain, skin breakdown, or difficulties with hygiene and dressing. Operative management in these patients may consist of release or lengthening of the spastic muscles/tendons (Table 1).^{1,2}

Management of Elbow and Forearm Spasticity

Surgical intervention may be indicated in the setting of significant elbow flexion and forearm pronation deformities. These deformities may cause pain, difficulties with hygiene/self-care, poor cosmesis, and impaired motor function.

Elbow correction

Correction for an elbow flexion contracture is typically not required unless the deformity is greater than 30°. Flexion contractures between 30° and

60° may be treated with soft tissue lengthening procedures. Contractures greater than 60° may require aggressive soft tissue/tendon releases, with possible release of the anterior elbow capsule (Table 2).³⁻⁷

Pronator teres release/rerouting

Many patients with spasticity present with a severe pronation posture of the forearm that can severely impede function. A pronator teres rerouting improves resting posture of the forearm and may unmask active supination. However, a pronator teres rerouting improves both active supination and dynamic forearm positioning. Per Oishi and Butler,⁸ the ideal candidate for a PT rerouting has no active supination but a near-full arc of passive supination. The primary indication for surgery is a pronation deformity of 25° or greater because this positioning precludes effective grasp of large objects (Table 3).^{6,9-11}

Management of Wrist Spasticity

Flexion of the wrist with pronation of the forearm is common in patients with spasticity. These deformities can hinder function, cause pain, and interfere with caregiver assistance for activities of daily living. Range of motion (ROM) deficits at the wrist are commonly interrelated with elbow and hand/finger deformities. Depending on the degree and duration of deformity, management of the wrist can include both bone and soft tissue procedures (Table 4).

Proximal row carpectomy

An advantage of proximal row carpectomy (PRC) compared with wrist arthrodesis is the ability to maintain motion. The immobilization period is shorter and there is no need for internal hardware or concern regarding bone union. This procedure

Table 1
Postoperative management of the shoulder

Surgical Procedures	Week After Surgery	Postoperative Guideline	Immobilization/Orthosis
Shoulder releases: may include single or multiple musculotendinous lengthening, fractional lengthening, z lengthening, or complete tendon release	0-4	Wear pillow/wedge at all times except for sponge bathing Day 1 initiation of AAROM in supine for shoulder flexion, ER, horizontal abduction/adduction, and in standing for IR No PROM or resistance until after 3 wk	Limb positioned in abduction and external rotation with pillows while at rest for several months

Abbreviations: AAROM, active-assisted range of motion; ER, external rotation; IR, internal rotation; PROM, passive range of motion.

Download English Version:

<https://daneshyari.com/en/article/11013673>

Download Persian Version:

<https://daneshyari.com/article/11013673>

[Daneshyari.com](https://daneshyari.com)