

Appendix 1. Adductor Release Surgery

A standard surgical protocol for bilateral adductor surgery was followed during the study period:

- i. Bilateral, open lengthening of the adductor longus and gracilis was performed through a groin skin crease incision, in all children.
- ii. Lengthening of the iliopsoas tendon at the lesser trochanter under anesthesia was added in nonambulatory children if hip flexion contracture was $>20^\circ$. In children with ambulatory potential, iliopsoas release was usually deferred until the time of the child's single-event multilevel surgery (SEMLS). In a small number of cases, ambulatory children with hip flexion contracture of $>20^\circ$ underwent iliopsoas recession over the pelvic brim.
- iii. During the early part of the study period, anterior obturator neurectomy was added to the hip adductor and flexor releases in nonambulatory children with severe spasticity and preoperative scissoring (GMFCS IV and V)²⁹.
- iv. Later during the study period, phenolization of the anterior branch of the obturator nerve replaced anterior obturator neurectomy in these severely affected nonambulatory children (GMFCS IV and V)²⁹.
- v. For all procedures, the adductor region was explored via a 2.0-cm skin incision made 1 cm distal to, and parallel to, the groin crease. The anterior branch of the obturator nerve was identified in the interval between the

adductor longus and the adductor brevis. We prefer to identify the nerve prior to releasing the adductor longus, as muscle division distorts local anatomy and bleeding can dilute the phenol solution. The nerve is variable in position, with one to four main divisions in the above interval. For phenolization of the anterior branch of the obturator nerve, a 6% solution of aqueous phenol is drawn up from a fresh ampule immediately prior to use, and 1 to 2 mL of this solution is dripped from a syringe and mixing needle directly onto the nerve. The epineurium usually changes slightly in color from translucent to more opalescent as the phenol denatures the proteins. After allowing two to three minutes for the phenol to work, the remaining tight muscles are tenotomized close to their osseous origin by means of electrocautery.

The evolution of our surgical protocol from anterior-branch obturator neurectomy to phenolization during the study period occurred for several reasons. Although we have not encountered abduction contractures or windswept deformities following neurectomy, a number of informed parents and physical therapists were concerned about the irreversibility of neurectomy. In addition, some of the surgeons participating in this study were not comfortable with this procedure. Finally, phenolization proved to be quick and easy, and its cost was a fraction of the cost of other treatments such as botulinum toxin A treatment.