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CORR Insights®: Is Botulinum Toxin Type A a Valuable Adjunct During Femoral Lengthening? A Randomized Trial

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Where Are We Now?

The history of medicine is replete with instances of failed extrapolations. Bloodletting, for instance, may have started when an ancient healer observed the beneficial effect of blood loss in cases of congestive heart failure. Extrapolating to all maladies resulted in two millennia of induced hypovolemia, anemia, and premature death.

This CORR Insights® is a commentary on the article “Is Botulinum Toxin Type A a Valuable Adjunct During Femoral Lengthening? A Randomized Trial” by Park and colleagues available at: DOI: [10.1007/s11999-016-5018-6](https://doi.org/10.1007/s11999-016-5018-6).

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Likewise, the clear-cut benefit of skull trephination in the presence of a subdural hematoma resulted in all manner of craniotomies for an assortment of ill-considered indications in long ago epochs.

We have not improved all that much in this regard with the passage of time. The known benefits of botulism toxin on the spasticity of cerebral palsy suggested to some practitioners that this poisonous substance could overcome muscle resistance to elongation during limb lengthening. Hence, the technique was adopted into practice in several centers around the world without prospective clinical research.

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The experiment is easy enough to perform. As Park and colleagues have done, randomly assigning patients to either Botulinum toxin Type A (BtX-A) or saline injections during limb lengthening readily answers the question. They found that, with the dose they selected, BtX-A provides no benefit when compared to saline, eliminating any justification for BtX-A injections.

This is no surprise because, for the most part, it appears that the progressive contractures, subluxations, and dislocations associated with limb lengthening are a consequence of resistance to elongation from fascial structures (tendons, thickened membranes—like the fascia lata and interosseous membrane—and epimysium) rather than muscle cells themselves.

Where Do We Need to Go?

Nevertheless, clinicians emotionally invested in BtX-A usage during limb lengthening could reasonably claim that the dosage used by Park and

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colleagues (200 IU BtX-A) was substantially less than the recommended quantity of 10 IU/kg body weight for individuals weighing more than 20 kg.

However, once a randomized prospective study has been presented, the naysayers who find that one or another fault with the experimental design must now set about repeating the study in a randomized prospective manner while simultaneously eliminating those specific features of the project (perhaps like dosage) that they find objectionable.

How Do We Get There?

More than a decade ago, Moseley and colleagues [1] demonstrated in a randomized, prospective blinded study that arthroscopic knee surgery (or joint lavage) in the presence of radiographic osteoarthritis of the knee results in no greater benefit than did sham surgery. The reactionary hoots and howls by arthroscopic surgeons continue to reverberate in conferences and workshop around the world, yet nobody has refuted Moseley's findings with a well-designed sham-surgery-controlled study.

If any reader intends to continue using BtX-A injections to reduce complications during limb lengthening, (s)he now bears the burden of proof to justify such an intervention.

Reference

1. Moseley JB, O'Malley K, Petersen NJ, Menke TJ, Brody BA, Kuykendall DH, Hollingsworth JC, Ashton CM, Wray NP. A controlled trial of arthroscopic surgery for osteoarthritis of the knee. *N Engl J Med.* 2002;347:81–88.