



만성 편두통에서의 보톡스 치료

류상호

류상호신경과의원

OnabotulinumtoxinA (Botox[®]) Injection in the Treatment for Chronic Migraine

Sanghyo Ryu, MD

Dr. Ryu's Neurology Clinic, Busan, Korea

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Address for correspondence

Sanghyo Ryu, MD

Dr. Ryu's Neurology Clinic, 240 Suyeong-ro,

Nam-gu, Busan 48496, Korea

Tel: +82-51-710-8881

Fax: +82-51-710-8188

E-mail: sanghyoryu@gmail.com

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OnabotulinumtoxinA (Botox[®]) is shown to be effective when it is injected into muscles for the prevention of chronic migraine and medication overuse headaches.^{1,2}

Each treatment typically involves 31 injections in seven key areas of the head and neck area with proper reconstitution, and dilution of onabotulinumtoxinA.^{2,3}

Forehead injection is usually chosen as the first site for this treatment which needs the most careful and meticulous technique for the reason of resulting in unwanted adverse effects including double vision, ptosis, disarranging eyebrow alignment and etc. Following this initial injection, other areas are covered encompassing temporal, occipital, cervical paraspinal and trapezius muscles.^{3,4,5}

During the procedure, compression with an ice pack can be used to prevent acute pain or hematoma.

Vacuum-dried power of Botox[®] is reconstituted with normal saline using vacuum-releasing method. Using an air filled vacant syringe removes negative pressure in a Botox[®] vial. Inject normal saline into the vial while directing the needle toward the side wall of the vial in order to avoid creating foam. A few articles are claiming that the foam does not affect potency of it and that's why it is better to release the vacuum since the foam can nevertheless cause inconveniences while injecting.

This injection covers both supratrochlear nerve and superorbital

nerve bilaterally. In order to avoid unwanted adverse events such as ptosis or samurai eyebrow (Mephisto eyebrow), the injection should not be performed below the imaginary line drawn 1 cm above the utmost part of both eyebrows. Likely to be affected muscles include the corrugators above each of your eyebrows and the procerus between eyebrows and above your nose, which is usually the first injection that a doctor will make during the treatment.

Targeting auriculotemporal nerve, injections cover temporalis. First injection will be 3 cm above the tragus, then the second injection will be 1.5 cm above the first injection spot.

Injection is done between the bony prominence (occipital protuberance) and the back of each ear targeting the occipital nerve bilaterally. The first will be in the middle of the muscle and the next two are above to either side of the first one, forming an imaginary V shape.

In regards to cervical paraspinalis muscle group injection, the first injection is just off the midline of the cervical spine below occipital protuberance. The second is performed diagonally above that, towards the ear.

Injections are done into three parts on each side

of trapezius. Draw an imaginary line between acromioclavicular joint and the point where necklace would be seated on trapezius. And then divide this line into three parts and inject each one. This process will be done on both sides of our body resulting in six total shots in this location.

In addition, depending upon the location of the head pain or tender points, an additional eight injections could be administered in specific regions (temporal, occipital, and trapezius) as a “follow the pain” option. That is why the dosage of Botox® could range from 155 units up to 200 units if all the optional “follow the pain” injections were added technically.

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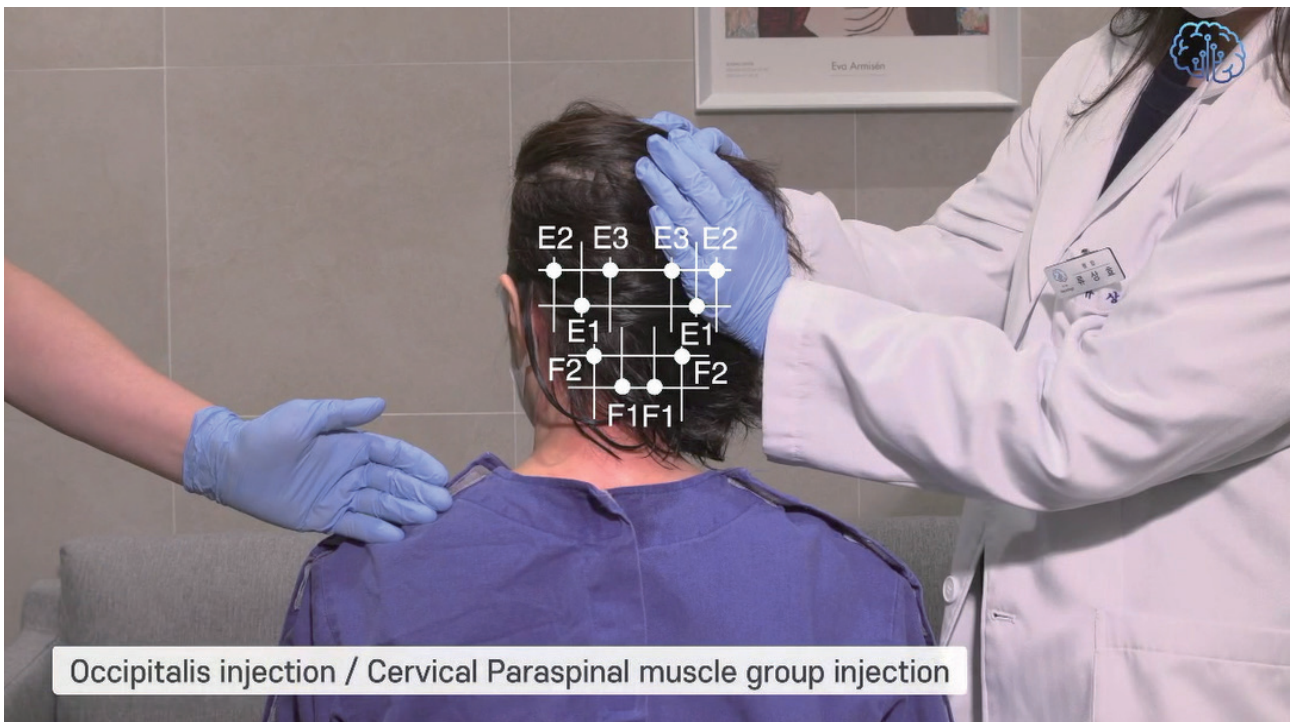
Video 1. Reconstitution and dilution. (<https://doi.org/10.17340/jkna.2023.0041>)



Video 2. Forehead injection. (<https://doi.org/10.17340/jkna.2023.0041>)



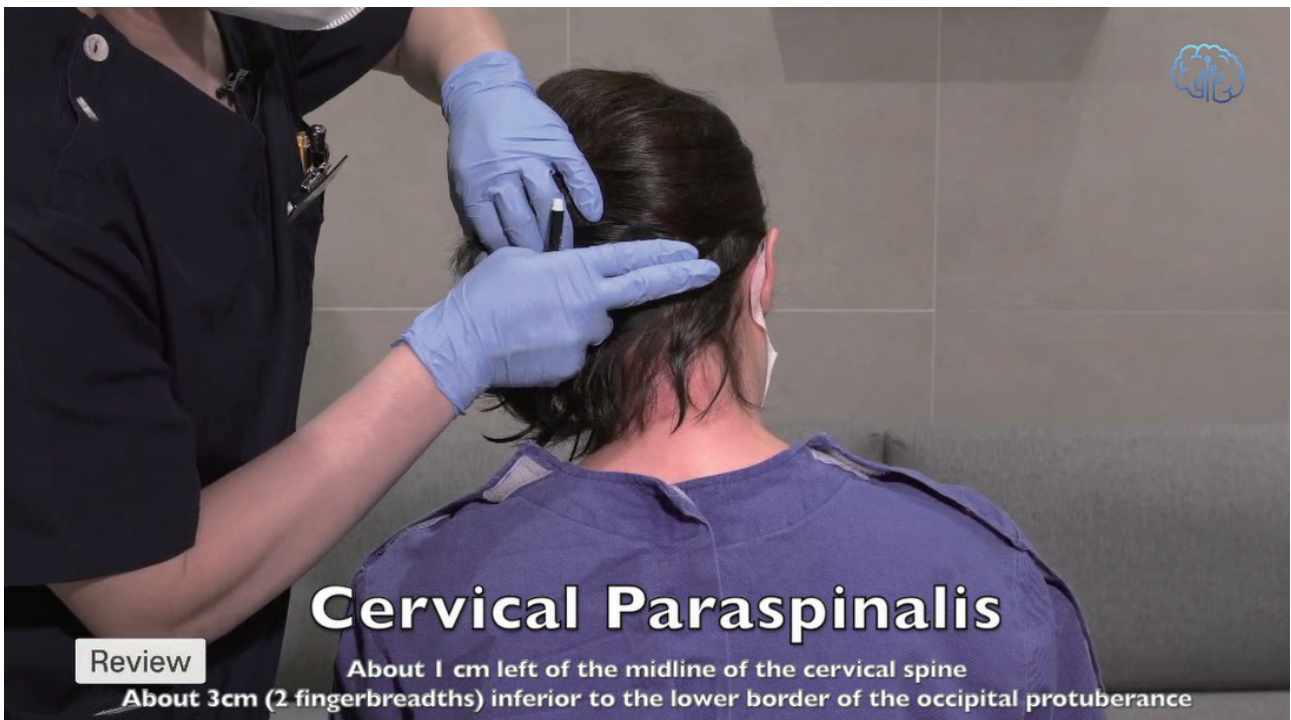
Video 3. Temporalis injection. (<https://doi.org/10.17340/jkna.2023.0041>)



Video 4. Occipitalis injection and cervical paraspinal muscle group injection. (<https://doi.org/10.17340/jkna.2023.0041>)



Video 5. Trapezius muscles injection. (<https://doi.org/10.17340/jkna.2023.0041>)



Video 6. Review. (<https://doi.org/10.17340/jkna.2023.0041>)