

Resource for Unit 4 Lesson 4 Botulinum Toxin in Practice – Crows Feet

Periorbital Wrinkles (Crows feet):

Periorbital rhytids result from repeated radial movement of the orbital part of the orbicularis oculi muscles, resulting in wrinkles along the lateral canthus known as Crow's feet. These lines radiate from the lateral canthus and are initially dynamic – appearing only during smiling but may become static with age, photodamage and skin remodelling.

Orbicularis oculi:

Function: The orbicularis oculi muscle is comprised of three parts:

Orbital part – closes eyelids tightly.

Palpebral part – closes eyelids gently.

Deep palpebral part – compresses lacrimal sac.

Innervation: Dual innervation from two branches of the facial nerve. Upper half of orbicularis oculi receives innervation from the frontal branch of CN VII, whilst the lower half receives innervation from the zygomatic branch of CN VII.

Arterial supply: Facial artery (and angular artery) and superficial temporal artery (external carotid artery); supraorbital, lacrimal and supratrochlear artery (ophthalmic artery – branch of internal carotid artery)

Venous drainage: Facial vein which is a tributary of the internal jugular vein. Supraorbital, lacrimal and supratrochlear veins which flow into superior ophthalmic vein which ultimately drains into cavernous sinus.

Attachments:

The orbicularis oculi muscles are located underneath the skin of the eyelid. It is continuous with the superficial musculoaponeurotic system (SMAS) in the upper face. It attaches medially to the medial canthal tendon and surrounding periosteum (nasal part of the frontal bone and frontal process of the maxilla). Laterally, it attaches to the lateral palpebral raphe, but can extend to insert into the temporalis fascia.

Superiorly, it interdigitates with the surrounding muscles: frontalis, corrugator and depressor supercilli muscles and inserts into the subcutaneous tissue of the eyebrow.

Inferiorly, it blends with the levator labii superioris, levator nasolabialis and zygomaticus minor muscles.

BoNT-A injections:

12 units of onabotulinum toxin distributed along a line 1cm from the lateral orbital rim can weaken the sphincter function of orbicularis oculis resulting in relaxation of rhytids in lateral canthal region. One must avoid the zygomaticus major and levator labii superioris muscles as they can result in lip ptosis and an uneven smile. Two patterns are recommended depending on the height of the eyebrows (left side is more appropriate for patients with low eyebrows; right side is recommended for those with high eyebrows).

The needle is inserted to one third its depth and the toxin is injected superficial to the muscle (immediately deep to the dermis) as the muscle lies directly underneath. Ensure that the injection is not placed in the upper eyelid by directing the needle away from the eye in a lateral position. This area is prone to bruising due to high vascularity.

Of note, botulinum toxin may not successfully eliminate all crow's feet lines in a patient, with good results being obtained for dynamic rhytids, but static lines due to photodamage and loss of underlying fat are less responsive to treatment.