



# Moebius Syndrome – A Rare Neurological Condition Managed with Scleral Lenses

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## Background

Moebius syndrome is a rare neurological disorder characterized by weakness or paralysis of multiple cranial nerves, most often the 6<sup>th</sup> (abducens) and 7<sup>th</sup> (facial) nerves. Individuals with moebius syndrome are unable to perform certain facial expressions or movements including smiling, raising their eyebrows, or closing their eyelids. Extraocular movements are also affected due to the involvement of the 6<sup>th</sup> cranial nerve. As a result of immobile eyelids, patients with moebius syndrome are susceptible to severe exposure keratopathy that can result in constant dryness and pain. Because of the ocular involvement associated with moebius syndrome, these patients are ideal scleral lens candidates.

## Case Presentation

- 30-year-old female presents with ocular pain and redness in both eyes. She also complains of a “scratchy” sensation in both eyes and has been using lubricating tears but has noticed minimal improvement. Here vision fluctuates throughout the day and does not improve when she wears her habitual spectacles. No other concerns were reported at this time. She was diagnosed and treated for severe exposure keratopathy secondary to moebius syndrome and referred for a scleral lens fitting.

## Medical History

- Moebius Syndrome

## Ocular History

- High myopia, corneal abrasions, dryness

## Medications

- Zaditor 0.025% eye drops BID

## Exam Findings

- Entering VA's (cc): OD 20/20<sup>-1</sup> OS 20/20<sup>-1</sup>
- Entrance testing: restricted EOM on lateral gaze, OD and OS, all other testing unremarkable

## Slit Lamp Exam: See table 1

OD		OS
+4 coalesced PEE; pannus 6-9' o'clock w/ neo 1mm past limbus; stromal scarring	Cornea	+4 coalesced staining PEE; demarcated hazing 2x1mm temporally; pannus 4-7 o'clock; stromal scarring
+2 injection	Conj/Sclera	+2 injection

Table 1 (09/2020): Remarkable slit lamp findings during initial fitting

## Initial Diagnostic Fitting

OD		OS
Zenlens	Brand	Zenlens
7.60 mm	Base Curve	7.10 mm
-2.25 DS	Power	-5.75 DS
16.0 mm	Diameter	16.0 mm
4500 um	SAG	4550 um
STD	Limbal Clearance	STD
St1H/St3V	Landing zone	Steep 1

Table 2 (09/2020): Parameters for initial lenses after diagnostic fitting

## References

- Rucker, J.C. et al. Characterization of ocular motor deficits in congenital facial weakness: Moebius and related syndromes. *Brain: A Journal of Neurology* 2014; 137; 1068-1079
- Picciolini et al. Moebius syndrome: clinical features, diagnosis, management and early intervention. *Italian Journal of Pediatrics* (2016) 42:56

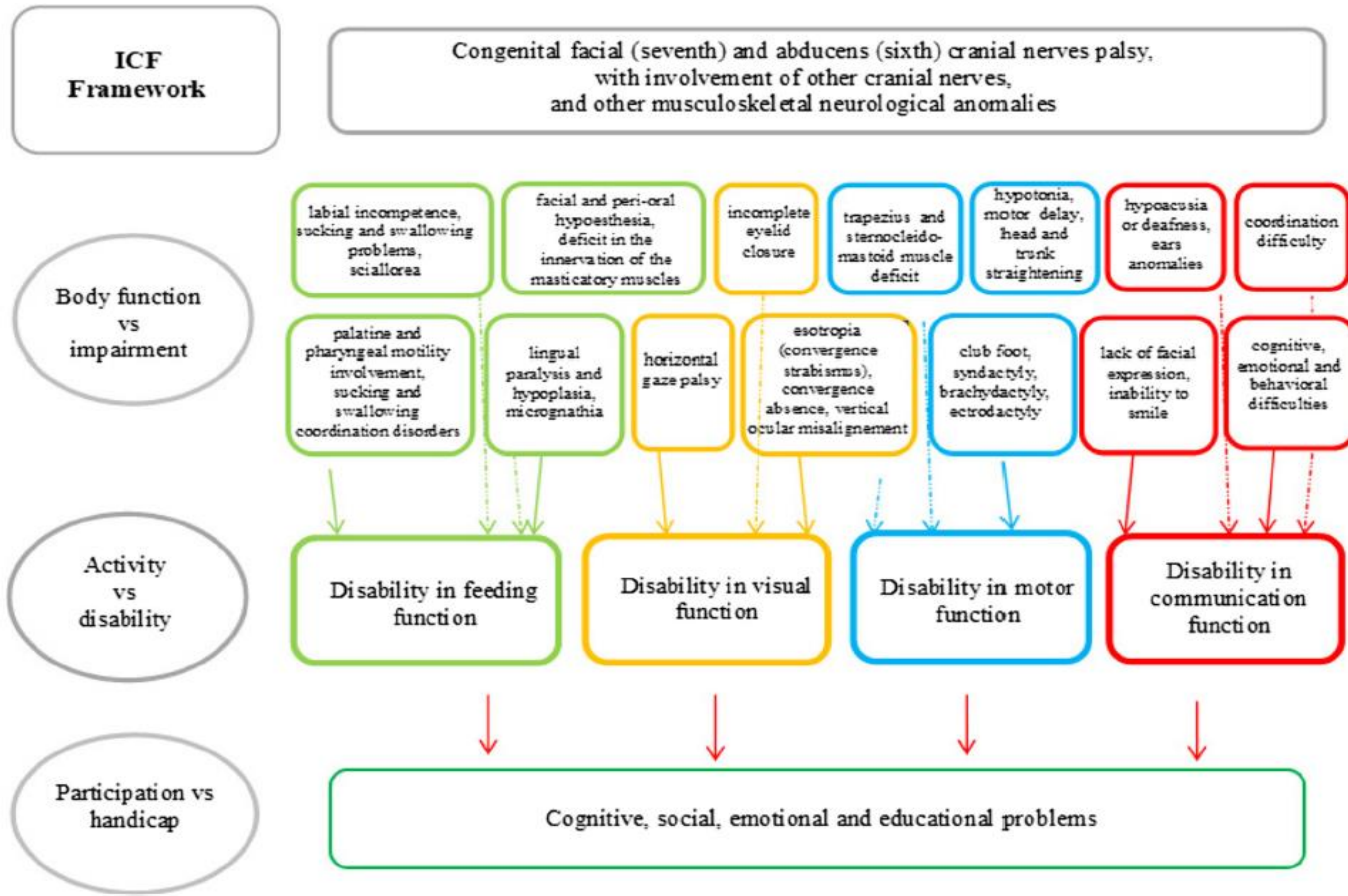


Figure 1: Diagram of cranial nerve framework involved in moebius syndrome

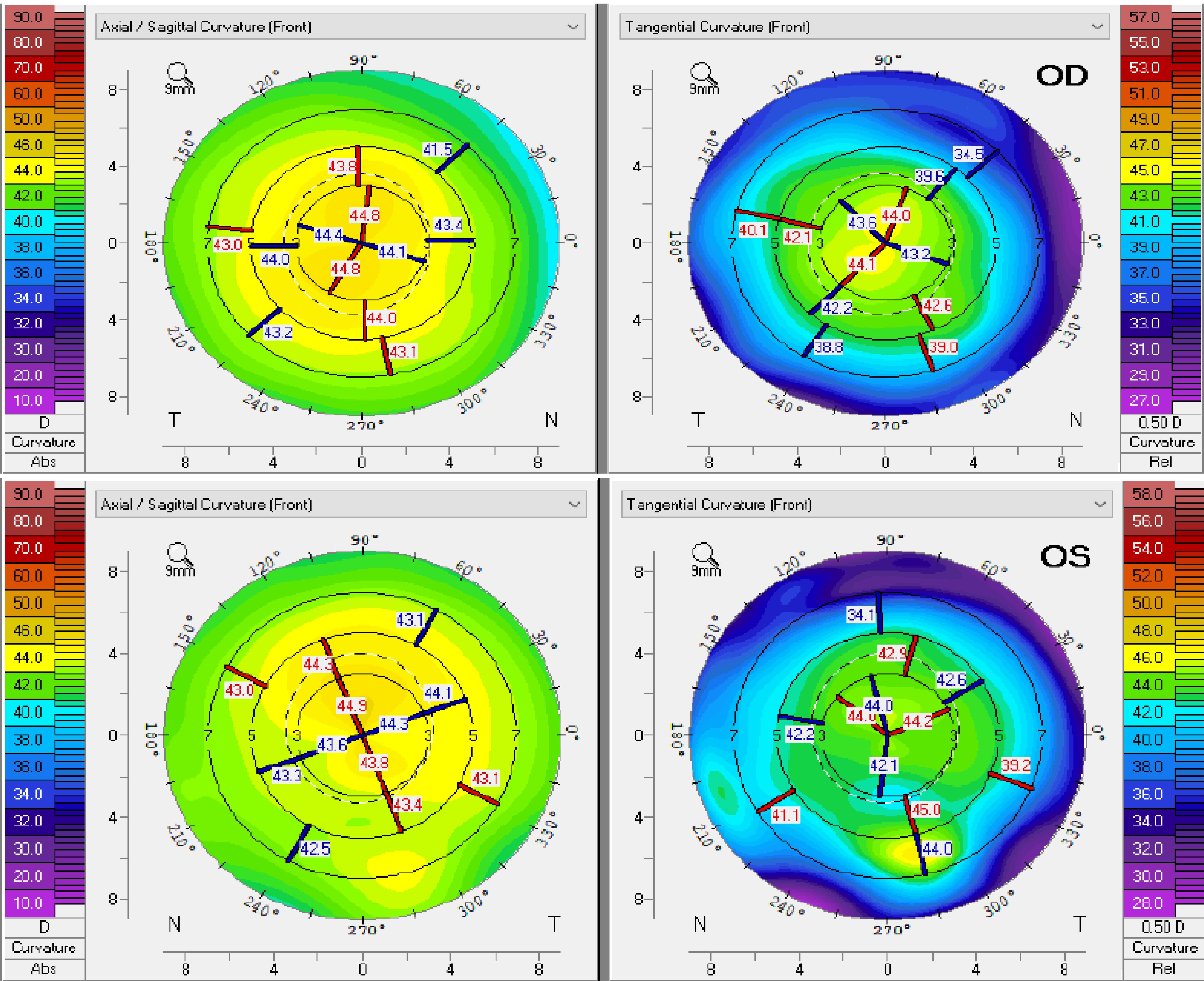


Figure 2 (09/2020): Corneal topography maps. Mild distortion OS from excessive ocular surface dryness. Keratometry results resulted as the following: OD 44.3/44.8@78.1 OS 43.9/44.4@101.3

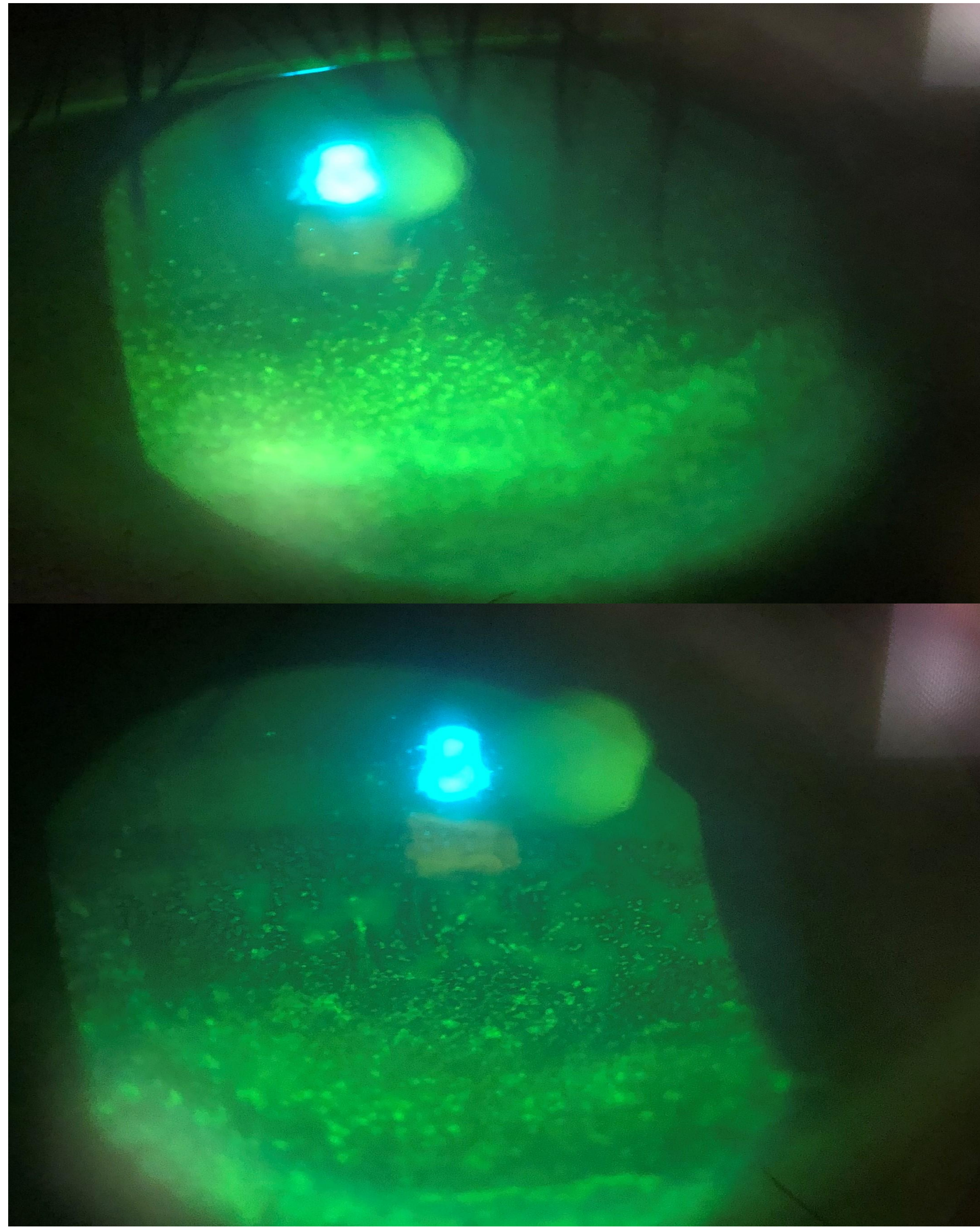


Image 1 (09/2020): Corneal staining after fluorescein application . Top image: OD Bottom image: OS

## Case continued

After the first set of lenses were dispensed, the patient returned for a contact lens check. The patient came in for her contact lens check without her lenses on because the lenses became too dry and uncomfortable after a couple of hours of wear time. An evaluation of the lenses after they were applied revealed poor front surface wettability. She also reported increase in redness outside of the lenses during wear time and artificial tears did not provide sufficient improvement in her symptoms. After the fit of the lenses was rendered to be ideal, the patient was switched from Unique pH to Clear Care to eliminate any preservatives that could be contributing to her symptoms. New lenses were ordered with the addition of tangible hydrapeg and the patient was scheduled to return for a contact lens dispense.

## Conclusion

Moebius syndrome is a congenital, non-progressive condition that may present differently amongst those affected (see figure 1). Seemingly, the most common abnormalities seen with moebius syndrome are facial paralysis, reduced lateral ocular movement, and incomplete eyelid closure. The role of an optometrist becomes crucial for these patients when it comes down to monitoring and treatment of these abnormalities. As a result of facial paralysis, these patients are at higher risk of developing severe exposure keratitis, which can lead to other ocular surface complications including scarring, neovascularization, and infection. Scleral lenses act as a protective barrier to reduce constant exposure, repair damaged corneal tissues, and decrease associated pain. The use of scleral lenses can greatly improve quality of life for patients with moebius syndrome.