City Lights: corneal diseases in Hollywood movies

Since its origins, cinema has been fascinated with blind heroines. From the poor and blind Bertha in *The Cricket on the Hearth* (1909) to the character played by Audrey Hepburn (1929–1993) in *Wait until Dark* (1967), the representation of blindness offers a way for cinema to explore the limitations and possibilities of its visual technologies.[1] *City Lights* (1931) by Charlie Chaplin (1889–1977) is perhaps one of the most renowned movies featuring a blind girl among its characters. Chaplin plays the role of a tramp who is mistaken for a millionaire by a blind florist (Virginia Cherrill, 1908–1996), falling in love with her at first glance. After various comical mishaps, the tramp earns money for an eye surgery that cures the blindness of his beloved.

The movie may provide unexpected information on the history of ophthalmology and on the diffusion of eye disorders in 1930s. Chaplin's blind girl suffered from an unspecified eye disorder, but a surgical operation would suffice to restore her sight. What was the underlying cause of the florist's blindness? Modern ophthalmologists may suppose a congenital cataract, but in those years its surgical removal did not allow a full improvement of sight: the unavoidable aphakia would have caused a loss of accommodation and hyperopia.[2] More likely, the girl's disease may have been a cornea problem that could be effectively treated by keratoplasty, quite widespread in the first part of the twentieth century. The idea of removing a cloudy cornea was discussed for the first time by Erasmus Darwin (1731–1802) in 1796.[3] Initially, physicians used animal cornea to replace human tissue: the Irish surgeon James Bigger conducted the first successful keratoplasty using a gazelle's opaque cornea in 1830s.[3] In the second part of the nineteenth century, the technique was further improved, but until the 1900s the lack of aseptic setting often caused surgical infections and loss of the eye. The year 1905 marked the first successful human allograft, performed by Eduard Zirm (1887–1948) in Prague. Since the first successful corneal transplant, innumerable ophthalmologists have contributed to the development and refinement of corneal transplantation.[3]

We assume that the florist in *City Lights* was not blind since birth, because in that case the occipital lobe would not develop fully and the operation would be unsuccessful. Her problem could be a disease that affects both eyes and gradually causes blindness, most likely during her childhood. Trachoma would be a plausible cause. It was once extremely common in parts of the United States because of immigration, crowding, poverty, and lack of clean water and hygiene, especially in 1930s during the Great Depression, and accounted for a large proportion of blindness.[4] Other possibilities are Fuchs' dystrophy, a progressive bilateral endothelial disease, and keratoconus, a degenerative disease of cornea that can affect one or both eyes. In conclusion, the blind girl could suffer from different diseases most likely affecting the cornea, such as trachoma, Fuchs' dystrophy, and keratoconus, and they could be resolved by a bilateral keratoplasty. *City Lights* could represent the hidden fear and compassion of the 1930s U. S. audience toward juvenile blindness—which was extremely common in those years—but also the hope of the society in new progresses of medicine and surgery. Therefore, even movies should deserve a major consideration by historians of ophthalmology and in all scholars interested in the cultural relationship between this discipline and the society.[5]

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Widefield en face optical coherence tomography to quantify the extent of paracentral acute middle maculopathy

Paracentral acute middle maculopathy (PAMM) has been described as a hyperreflective band or plaque-like region on spectral-domain optical coherence tomography (SD-OCT) at the level of the inner nuclear layer (INL), which is straddled by the intermediate and deep retinal capillary plexuses.[1,2] PAMM has been reported to cause eccentric wedge-shaped lesions that extend to the edge of the foveal avascular zone.[3] Although these lesions resolve over time, patients are left with irreversible INL atrophy, resulting in a permanent paracentral visual field defect. PAMM can be idiopathic or secondary to local retinal vascular or systemic disease; more recent