

TEMPORARY LATERAL TARSORRHAPHY IN MANAGING CORNEAL ULCERATION RELATED TO FACIAL NERVE PALSY : CASE REPORT

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Abstract: Case Report: Temporary Lateral Tarsorrhaphy in Managing Corneal Ulceration Related to Facial Nerve Palsy. Corneal ulceration is a breach in the corneal epithelial surface that can lead to blindness. Facial nerve palsy can lead to inadequate eyelid closure and reducing lubrication of the eye's surface. A 58-year-old man presented with a one-month history of worsening blurred vision, pain, and a whitish spot in the Right Eye (RE). He had been diagnosed with facial nerve palsy three months prior which hadn't improved. Ophthalmic examination revealed reduced visual acuity, conjunctival hyperemia, hypopyon, and lagophthalmos with corneal exposure in RE. Fluorescent test showed 4x5 mm corneal ulceration with infiltrate. A neurological examination confirmed facial nerve involvement. After pharmacological treatment, a follow-up showed resolution of hypopyon but a persistent corneal ulcer with infiltrate. Long-term corneal exposure from lagophthalmos can cause corneal ulceration and thinning, especially in the lower part of cornea. This poses a therapeutic challenge. A temporary lateral tarsorrhaphy was performed to encourage healing of the corneal surface by optimizing eyelid positioning. One month post-procedure, the ulcer showed good re-epithelialization.

Keywords : Corneal ulceration, Corneal exposure, Facial nerve palsy, Tarsorrhaphy

Abstrak: Laporan Kasus: Tarsorafi Lateral Sementara dalam Menangani Ulkus Kornea Terkait Kelumpuhan Saraf Wajah. Ulkus kornea adalah kerusakan pada permukaan epitel kornea yang dapat menyebabkan kebutaan. Kelumpuhan saraf wajah dapat menyebabkan penutupan kelopak mata yang tidak memadai dan berkurangnya pelumasan permukaan mata. Seorang pria berusia 58 tahun datang dengan riwayat penglihatan kabur yang memburuk selama satu bulan, nyeri, dan bintik keputihan di kanta kanan. Ia telah didiagnosis dengan kelumpuhan saraf wajah tiga bulan sebelumnya yang tidak kunjung membaik. Pemeriksaan mata menunjukkan penurunan ketajaman penglihatan, hiperemia konjungtiva, hipopion, dan lagoftalmus dengan paparan kornea mata kanan. Uji fluoresensi menunjukkan ulserasi kornea berukuran 4x5 mm dengan infiltrat. Pemeriksaan neurologis mengonfirmasi keterlibatan saraf wajah. Setelah pengobatan farmakologis, hipopion berkurang tetapi ulkus kornea serta infiltrat tetap ada. Paparan kornea jangka panjang dari lagoftalmus dapat menyebabkan ulserasi dan penipisan kornea, terutama di bagian bawah kornea. Hal ini menimbulkan tantangan terapeutik. Tarsorafi lateral sementara dilakukan untuk mendorong penyembuhan permukaan kornea dengan mengoptimalkan posisi kelopak mata. Satu bulan setelah tindakan, ulkus menunjukkan re-epitelisasi yang baik.

Kata Kunci : Ulkus Kornea, Paparan Kornea, Kelumpuhan Saraf Wajah, Tarsorafi

INTRODUCTION

Corneal ulcer is a condition characterized by a discontinuity in the surface of the corneal epithelium, which leads to infiltrates and necrosis around

the cornea. This can result in corneal opacity, decreased visual function, and potential blindness (Cheng et al., 2024). In 2014, the World Health Organization

(WHO) reported 45 million blind people worldwide, with one-third of that number in Southeast Asia, including Indonesia (Zhang et al., 2022). Corneal ulcers, which are caused by damage to the corneal epithelium, can be the result of infections from bacteria, viruses, fungi, or parasites such as *Acanthamoeba*. (Sandyakala Purnama et al., n.d.) Additionally, non-infectious factors such as autoimmune diseases, neurotrophic diseases, allergic keratitis, chemical exposure, or conditions like entropion, trichia, blepharitis, and lagophthalmos can also cause corneal ulcers (Kenia et al., 2020). Common symptoms include reduced vision, watery eyes, light sensitivity, and pain, with the intensity and type of these symptoms varying depending on the cause and the acute or chronic phase (Mark B, 2023).

Prolonged lagophthalmos can cause superficial keratopathy and corneal ulcers (Alhoutan & Alarfaj, 2021). The accurate diagnosis, cause identification and severity assessment greatly influence the success of treating and managing patients with corneal ulcers (Journal et al., 2019). Initial medical management is crucial, and if the corneal ulceration persists and does not respond to medical treatment, surgical intervention becomes necessary. Optimal results may be achieved through a combination of these treatments. While various surgical strategies are available, the choice depends on the underlying cause and associated parameters (Stamate et al., 2019). This case report delineates the complexities involved in addressing a corneal ulcer concurrent with facial nerve palsy, requiring a

combination of surgical intervention and pharmacological treatment to mitigate the deterioration of the patient's visual acuity.

CASE ILLUSTRATION

A 58-year-old man presented with complaints of blurred vision, pain, and a white spot in the center of the RE. He has been experiencing these symptoms for the past month, and they have worsened in the previous few days. Additionally, he has been unable to close his RE as completely as his left eye for the past 3 months. Neurologist diagnosed the patient with idiopathic right facial nerve palsy, which has not improved in 3 months. The patient has a history of type 2 diabetes. He denied any history of medication use, trauma, surgery, or other eye problems.

During the ophthalmologic examination, it was found that the visual acuity in the RE was 1/300, and in the LE was 6/40. There was a 4 mm lagophthalmos in the RE, leading to corneal exposure (Figure 1). The slit lamp examination revealed conjunctival hyperemia, and the fluorescent examination showed a 1.5 mm hypopyon with a 4x5 mm epithelial defect and infiltrate. Bell's phenomenon of the RE was negative. The intraocular pressure of both eyes was within normal limits. The examination of the facial nerve revealed that the patient was unable to close the RE tightly and had a weakened right corner of the mouth. Other cranial nerve examinations were normal. The diagnosis for this patient was corneal ulcer with an epithelial defect based on the fluorescent examination.



Figure 1. Lagophthalmos with corneal exposure in the RE.

The patient received treatment with cido lyteers, oral levofloxacin 500 mg a day, and moxifloxacin eye drops one drop per hour. After 4 weeks of medical therapy, the hypopyon and infiltrate showed a reduction, but persistent lagophthalmos with a vertical diameter of 4 mm, and an unimproved epithelial defect was observed (Figure 2). Subsequently, the patient received

intravenous levofloxacin 500 mg, and lateral tarsorrhaphy was performed on the right eye (Figure 3). A month after the procedure, examination results indicated successful re-epithelialization of the right eye cornea with a clean infiltrate, but cicatricial changes in the form of adherent leukoma were observed, and the tarsorrhaphy had opened (Figure 4).

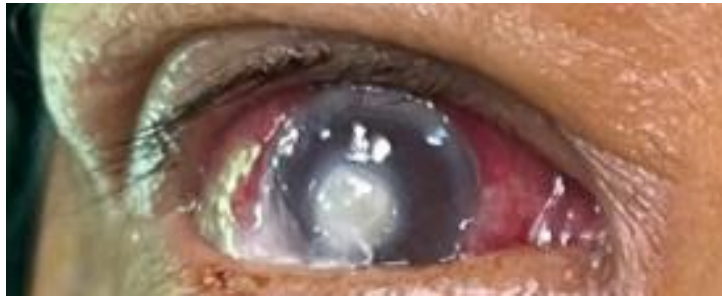


Figure 2. Corneal ulcer developed in the RE after one week of medical therapy.



Figure 3. Clinical image after temporary lateral tarsorrhaphy



Figure 4. After one month of follow-up, the ulcer had re-epithelialized, with clear infiltrates, and an adherent leukoma on the cornea of the RE.

DISCUSSION

Corneal ulcer is a critical eye condition that poses a threat to vision. The incidence of corneal ulcers is expected to rise annually. It is crucial to promptly identify this condition to initiate immediate treatment. The cornea consists of six layers: the epithelium, Bowman's membrane, stroma, Dua's layer, Descemet's membrane, and endothelium. star(Byrd LB, 2024)

Corneal ulcers are classified based on their causes, involvement of corneal layers, and location. Bacterial corneal ulcers result from bacteria penetrating the compromised corneal epithelium. Risk factors such as corneal edema, dry eye, and trauma heighten the susceptibility to infection. Invading microorganisms can adhere to the epithelium and infiltrate the stroma. Inflammatory cells from tears and limbal vessels release cytokines and

interleukins, exacerbating the ulcer. Subsequent bacterial phagocytosis generates free radicals and enzymes, leading to damage to the corneal tissue. Moreover, proteases, exotoxins, and endotoxins from bacteria further exacerbate the condition, resulting in ring infiltrates (Kenia et al., 2020).

There are various causes of incomplete closure of the eyes, also known as lagophthalmos, including paralysis of the eye muscles, injury, sleep disorders, and idiopathic cases. In this case, the patient was diagnosed with facial nerve palsy. When the eye is unable to close fully for an extended period, the cornea remains exposed, potentially leading to complications such as keratitis, corneal ulcers, open wounds on the cornea, and corneal thinning. In severe cases, these complications can result in corneal perforation and eventual scarring, often manifesting on the underside of the cornea. This patient also has a history of Type 2 Diabetes Mellitus, which is one of the systemic risk factors that can exacerbate the condition of corneal ulcers (Ozir & Hashim, 2024).

The patient received systemic and topical fluoroquinolone antibiotics. Fluoroquinolones are frequently prescribed due to their high efficacy against a wide range of bacteria, including both gram-positive and gram-negative strains. Moreover, these antibiotics have excellent penetration into eye tissues and a longer half-life. According to a study by Asrouddin et al. in 2015, most patients treated with fluoroquinolones demonstrated more significant clinical improvement compared to those treated with other classes of antibiotics. Commonly used fluoroquinolones include ofloxacin and levofloxacin, as well as moxifloxacin, which belongs to the fourth generation of quinolones (Asrouddin et al., 2015).

The eye's surface can become vulnerable as a result of facial paralysis, which may weaken or eliminate the function of the orbicularis oculi muscle. Once the condition of the ocular surface has been stabilized, various surgical treatment options are available based on the severity of the situation. These options include temporary or permanent

tarsorrhaphy, upper eyelid weight-bearing, and lateral canthoplasty. The primary goal of these procedures is to protect the ocular surface by optimizing eyelid position and function. A retrospective study conducted by Seunghyun Lee et al. in 2019, which involved 34 eyes of patients with facial nerve paralysis, revealed that 24 eyes (70.6%) exhibited lagophthalmos and 20 eyes (58.8%) had corneal epithelial defects. Among the 24 eyes with lagophthalmos, those who underwent invasive procedures such as tarsorrhaphy or filler injection demonstrated a higher rate of improvement compared to those who only received conservative treatment (Lew & Lee, 2019).

Temporary tarsorrhaphy is a beneficial option for patients experiencing acute facial nerve paralysis, lagophthalmos, and exposure keratopathy, as well as for comatose patients or those with severe facial trauma (Fagien, 2018). This procedure shares a similar healing mechanism with permanent tarsorrhaphy sutures but is only maintained for a few days or weeks, eliminating the need for a permanent surgical procedure. While tarsorrhaphy effectively protects patients with significant corneal thinning or at a high risk of perforation, it does have complications such as poor cosmetics and reduced visual field, making it unsuitable for long-term use (Sohrab et al., 2015). However, temporary tarsorrhaphy may be considered for cases where prompt healing is the goal. In some instances, adequate corneal protection can be achieved by partially closing the eyelid, leaving a small opening for corneal assessment and administration of topical medications. Nonetheless, there is a risk of sutures coming loose and leaving the ocular surface inadequately protected (Fu L, 2023). Managing corneal ulcers as a complication of idiopathic lagophthalmos remains a challenge due to the idiopathic nature of facial nerve palsy and the lack of standardized management guidelines.

CONCLUSION

The corneal ulcer presents an urgent threat to vision and requires immediate recognition and prompt treatment. Identifying risk factors in patients can aid in determining the best course of management and prognosis. Managing corneal ulcers caused by facial nerve palsy, particularly in cases of idiopathic, can be quite challenging. Alongside antibiotic treatment, surgical intervention such as temporary tarsorrhaphy is necessary to expedite the healing of the eye's surface and preserve visual function

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