Case report

Peripheral Ulcerative Keratitis (PUK) in a Post-Cataract Surgery Patient

*Aiza Ansari[1, *], Mamnat Arshad[1], Sidra Jabeen[1]*

Abstract

Background: Peripheral Ulcerative Keratitis (PUK) is a serious ocular manifestation of systemic inflammatory diseases, particularly rheumatoid arthritis (RA). This case report presents a rare instance of corneal thinning secondary to RA following cataract surgery.

Case Presentation: A 50-year-old patient with a history of hepatitis C and RA underwent cataract surgery on the left eye in 2021. Three years later, the patient developed sudden-onset foreign body sensation, photophobia, and blurry vision. Examination revealed corneal thinning at the phacoemulsification incision site, with associated scleritis and hypopyon. Laboratory investigations confirmed elevated inflammatory markers and a positive rheumatoid factor, leading to a diagnosis of rheumatoid vasculitis with secondary PUK.

Management and Outcome: The patient received topical antibiotics, lubricants, oral steroids, and systemic immunosuppression with methotrexate. Surgical interventions, including conjunctival resection and peripheral tectonic keratoplasty, were performed to stabilize corneal thinning. Regular follow-ups showed improvement, with no further progression of corneal ulceration.

Conclusion: This case highlights the importance of early diagnosis and multidisciplinary management in PUK associated with RA. Systemic immunosuppressive therapy, combined with surgical interventions, plays a crucial role in preventing severe ocular morbidity and preserving vision.

Keywords: Peripheral Ulcerative Keratitis, Post-Cataract Surgery

[1] Ophthalmology department, Holy Family Hospital, Rawalpindi
*** Corresponding author:** Aiza Ansari (aiza.ansari@hotmail.com)
Received 17 February 2025; Accepted 22 February 2025

1. Introduction

A 50-year-old patient, with a history of treated hepatitis C, underwent cataract surgery elsewhere on the right eye in 2018. History taken from patient shows that the surgery itself was uneventful, but unknown post-operative complications in late postoperative period led to the loss of eye and a permanent tarsorrhaphy.

In 2021, the patient underwent cataract surgery for the left eye, achieving a post-operative visual acuity of 6/6. However, three years later, the patient presented with a sudden onset of foreign body sensation, photophobia, and blurry vision in the left eye.

Examination revealed corneal thinning at the site of the phacoemulsification main incision and hypopyon in the anterior chamber. Initial treatment included topical antibiotics, lubricants, and oral steroids, while laboratory investigations were sent.

Systemic evaluation showed elevated inflammatory markers and positive RA factor. A comprehensive rheumatological assessment confirmed the diagnosis of rheumatoid vasculitis. The patient was subsequently diagnosed with peripheral ulcerative keratitis (PUK) secondary to rheumatoid arthritis (RA).

2. Case Presentation

The patient presented with symptoms including sudden onset of foreign body sensation, photophobia, and blurry vision in the left eye. Examination findings included mild diffuse conjunctival congestion, scleritis and limbitis adjacent to the site of corneal thinning, corneal thinning about 4mmx 2.5mm at the phacoemulsification main incision site, 1 mm hypopyon in the anterior chamber, absence of vitritis and normal retinal examination findings.

Key findings from the diagnostic workup included erythrocyte sedimentation rate (ESR): 96 mm/hr (normal: <30 mm/hr), C-reactive protein (CRP): elevated and Rheumatoid Factor (RA Factor): 20.2 IU (normal: <10 IU). Other tests, including complete blood count, liver and renal function tests, antibody screening, X-rays, ultrasounds, and urine R/E, were normal. Differential diagnosis showed lupus vasculitis, rheumatoid vasculitis, rhupus syndrome (Overlap of RA and SLE) and rheumatoid arthritis with secondary Sjögren's syndrome.

Management included ocular treatment and systemic treatment. Ocular Treatment was carried out through surgical interventions and medications. Surgical interventions included conjunctival resection which is

surgical removal of inflamed conjunctiva over the affected area. Peripheral Tectonic Keratoplasty was performed one week later to restore corneal integrity and prevent perforation. Medications included topical therapy where antibiotics were given to prevent secondary infection and lubricants were prescribed to maintain ocular hydration and promote epithelial healing.

Systemic treatment was carried out in the form of immunosuppression where methotrexate was given to address the autoimmune pathology of rheumatoid vasculitis. Pulsed steroid therapy in the form of intermittent high-dose steroids was also given to control systemic inflammation. Tetracycline was given for its anti-inflammatory and collagen-stabilizing properties. Vitamin C was suggested to enhance collagen synthesis and corneal wound healing.

Outcome and Follow-Up: The patient was monitored regularly. Following conjunctival resection and peripheral tectonic keratoplasty, corneal thinning stabilized. Maintenance therapy with ocular lubricants continues, and systemic immunosuppressive therapy is ongoing in collaboration with the rheumatology team.

3. Discussion

Peripheral ulcerative keratitis (PUK) is a serious ocular complication of long-standing, seropositive rheumatoid arthritis.[1] Although PUK is typically associated with systemic inflammatory diseases, its presentation post-cataract surgery is rare[2].

A literature search revealed no prior reports of spontaneous corneal perforation post-cataract surgery in RA patients[3]. In previously reported cases of rheumatoid keratolysis, the mean RA duration at presentation was 15 years, with the majority of ulcers being peripheral. Surgical interventions such as penetrating keratoplasty, combined with systemic immunosuppression, have shown promise in preserving ocular integrity despite a poor visual prognosis[4].

This is an unusual case of corneal thinning secondary to rheumatoid arthritis post routine phacoemulification procedure. The primary goals of treatment in PUK are to promote epithelial healing, halt any further stromal lysis by minimizing inflammation, and prevent superinfections The current case highlights the critical role of early diagnosis and the multidisciplinary management of PUK to prevent severe ocular morbidity[5].

4. Conclusion

A rare but potentially dangerous side effect of cholecystectomy is intrahepatic pseudo aneurysm. Surgeons and radiologists should be aware of its symptoms. Our case study emphasizes the value of early diagnosis using imaging methods such as IV-contrast CT angiography. Nowadays, the standard of care is minimally invasive procedures guided by radiology, since trans-arterial embolization is the most effective therapeutic option.

References

1. Li, Z.-Z.; Guan, L.-J.; Ouyang, R.; Chen, Z.-X.; Ouyang, G.-Q.; Jiang, H.-X., Global, regional, and national burden of gallbladder and biliary diseases from 1990 to 2019. World Journal of Gastrointestinal Surgery 2023, 15 (11), 2564.
2. Islam, S. M. R., Rationale to achieve Critical View of Safety in Laparoscopic Cholecystectomy. The Journal of Ad-din Women's Medical College 2023, 11 (1), 61-63.
3. Finley, D. S.; Hinojosa, M. W.; Paya, M.; Imagawa, D. K., Hepatic artery pseudoaneurysm: a report of seven cases and a review of the literature. Surgery today 2005, 35, 543-547.
4. Milburn, J.; Hussey, J.; Bachoo, P.; Gunn, I., Right hepatic artery pseudoaneurysm thirteen months following laparoscopic cholecystectomy. EJVES Extra 2007, 13 (1), 1-3.
5. Hewes, J.; Baroni, M.; Krissat, J.; Bhattacharya, S., An unusual presentation of hepatic aneurysm as a complication of laparoscopic cholecystectomy. The European journal of surgery 2002, 168 (10), 566-568.
6. Yelle, J.-D.; Fairfull-Smith, R.; Rasuli, P.; Lorimer, J. W., Hemobilia complicating elective laparoscopic cholecystectomy: a case report. Canadian journal of surgery 1996, 39 (3), 240.
7. Tessier, D. J.; Fowl, R. J.; Stone, W. M.; McKusick, M. A.; Abbas, M. A.; Sarr, M. G.; Nagorney, D. M.; Cherry, K. J.; Gloviczki, P., Iatrogenic hepatic artery pseudoaneurysms: an uncommon complication after hepatic, biliary, and pancreatic procedures. Annals of vascular surgery 2003, 17, 663-669.
8. Lampropoulos, C.; Markopoulos, G.; Tsochatzis, S.; Bellou, A.; Amanatidis, T.; Kehagias, D.; Papadopoulos, G.; Kehagias, I., Symptomatic pseudoaneurysms following laparoscopic cholecystectomy: Focus on an unusual and dangerous complication. Journal of Minimal Access Surgery 2021, 17 (4), 450-457.
9. Rivitz, S. M.; Waltman, A. C.; Kelsey, P. B., Embolization of an hepatic artery pseudoaneurysm following laparoscopic cholecystectomy. Cardiovascular and interventional radiology 1996, 19, 43-46.
10. Nakase, Y.; Takagi, T.; Fukumoto, K.; Kassai, K.; Yamagami, T.; Itani, K.; Miyagaki, T., Hemobilia and cystic artery stump pseudoaneurysm associated with liver abscess after a

laparoscopic cholecystectomy: report of a case. Surgery Today 2008, 38, 567-571.
11. Sansonna, F.; Boati, S.; Sguinzi, R.; Migliorisi, C.; Pugliese, F.; Pugliese, R., Severe hemobilia from hepatic artery pseudoaneurysm. Case Reports in Gastrointestinal Medicine 2011, 2011 (1), 925142.
12. Hendriks, M. P.; Wanten, G. J.; Drenth, J. P., Management of hemobilia and pancreatitis after liver biopsy: a key role for endoscopic retrograde cholangiopancreaticography. Liver transplantation 2009, 15 (11), 1653-1654.
13. Falkoff, G. E.; Taylor, K.; Morse, S., Hepatic artery pseudoaneurysm: diagnosis with real-time and pulsed Doppler US. Radiology 1986, 158 (1), 55-56.
14. Diani, A.; Raboua, M.; Elhajjami, A.; Boutakiout, B.; Ouali, M. I.; Ganouni, N. C. I., Hepatic Artery Pseudo Aneurysm as Complication of Cholecystectomy: A Case Report. Sch J Med Case Rep 2023, 5, 797-800.
15. Davies, O.; Batt, J.; Bethune, R.; Courtney, E., Hepatic artery pseudoaneurysm post laparoscopic cholecystectomy. JSM Clin Case Rep 2014, 2 (5), 1050.
16. Slaba, S.; Nassar, J.; El Murr, T.; Saba, M.; Ghayad, E., Distal glue embolization in a patient with gastrointestinal hemorrhage. Journal de Radiologie 2002, 83 (5), 656-658.