Article

PanAfrican Medical Journal

Case report

Sudden transient blindness following ureteroscopy: an uncommon complication of a common procedure (a case report)

Wael Gazzah, Sedki Masmoudi, Hamza Chakroun, Rayen Lahouar, Bacem Zaidi, Badreddine Ben Khalifa, Sahbi Naouar, Braiek Salem

Corresponding author: Wael Gazzah, Department of Urology, Ibn El Jazzar Hospital, Kairouan, Tunisia. waelgazzah@gmail.com

Received: 12 Feb 2024 - **Accepted:** 19 Feb 2024 - **Published:** 22 Apr 2024

Keywords: Blindness, ureteroscopy, intraoperative complications, urology, case report

Cite this article: Wael Gazzah et al. Sudden transient blindness following ureteroscopy: an uncommon complication of a common procedure (a case report). Pan African Medical Journal. 2024;47(201). 10.11604/pamj.2024.47.201.42952

Available online at: https://www.panafrican-med-journal.com//content/article/47/201/full

Sudden transient blindness following ureteroscopy: an uncommon complication of a common procedure (a case report)

Wael Gazzah[1,&], Sedki Masmoudi[1], Hamza Chakroun[2], Rayen Lahouar[1], Bacem Zaidi[3], Badreddine Ben Khalifa[1], Sahbi Naouar[1], Braiek Salem[1]

[1]Department of Urology, Ibn El Jazzar Hospital, Kairouan, Tunisia, [2]Department of Ophthalmology, Ibn El Jazzar Hospital, Kairouan, Tunisia, [3]Department of Surgery, Ibn El Jazzar Hospital, Kairouan, Tunisia

[&]Corresponding author
Wael Gazzah, Department of Urology, Ibn El Jazzar Hospital, Kairouan, Tunisia

PanAfrican Medical Journal

Abstract

Perioperative vision loss following non-ophthalmic surgical procedures represents a rare but potentially serious complication. Although its occurrence in urology is infrequent, the consequences for patients and legal implications are significant. We present the case of a 53-year-old woman with no notable medical history, treated for renal lithiasis. Following the ureteroscopy, the patient experienced a sudden reduction in visual acuity. The diagnosis made was that of posterior ischemic optic neuropathy. This case illustrates a rare complication associated with ureteroscopy, highlighting the importance of increased awareness and rigorous postoperative monitoring, especially in patients with risk factors such as anemia or hypertension. Fortunately, the patient's rapid and complete recovery is encouraging, suggesting that early identification and appropriate management can lead to a favorable prognosis.

Introduction

Perioperative visual loss (POVL) following non-ocular surgery is a relatively rare and devastating complication, causing considerable distress for patients. Although infrequent, its impact on patient quality of life and the legal implications for practitioners make it a significant concern. This complication has been documented in various surgical procedures, including spinal, cardiac, and orthopedic surgeries [1]. However, its occurrence in urological surgeries is less frequently reported, with only a handful of cases noted after procedures like nephrectomy [2], robotic-assisted prostatectomy [3], and percutaneous nephrolithotomy [4].

Visual loss following non-ocular surgery can be associated with ischemic optic neuropathy, retinal vascular occlusion, or cortical blindness [1]. Unfortunately, routine assessment of visual acuity and optic nerve blood flow is not a standard part of clinical practice, posing challenges in the prevention and early diagnosis of this complication.

Ureteroscopy, a procedure deemed relatively simple and safe, is commonly performed in urology. While considered safe, it is not devoid of risks, with complications generally including ureteral avulsion or perforation, bleeding, clot formation, and postoperative infections. To the best of our knowledge, this is the first reported case of transient POVL following ureteroscopy.

Patient and observation

Patient information: a 53-year-old woman with no significant medical or surgical history presented to the urology department with left renal colic. A 21mm radiotransparent pyelic stone was identified and successfully managed with a double-J stent under local anesthesia. Following stent placement, the patient underwent ultrasound-guided extracorporeal shock wave lithotripsy (SWL) to fragment the stone. This resulted in partial fragmentation and elimination of several fragments.

Clinical findings: during a follow-up appointment, the patient complained of lower urinary tract irritative symptoms. Ultrasound revealed a distally calcified double-J stent tip in the bladder and left pyelocaliceal dilation. It was decided to remove the double-J stent and perform a ureteroscopy for stone removal. Preoperative blood tests showed anemia, with a hemoglobin level of 8.1 g/dl. In the operating room, initial blood pressure (BP) was 135/85 mmHg and heart rate (HR) was 68 beats per minute. Spinal anesthesia was administered with 8mg of hyperbaric bupivacaine (0.5%) and 25µg of fentanyl at the L3-4 level.

Timeline of the current episode: the patient was placed in the lithotomy position, leading to an increase in BP to 160/85 mmHg. The procedure involved the removal of the double-J stent followed by rigid ureteroscopy up to the pyeloureteral junction. No calculi were identified during the procedure. At the procedure´s end, the patient experienced a sudden decrease in visual acuity, blurring, headache, and vomiting. She remained conscious without other neurological deficits. Her

BP was 210/140 mmHg, HR was 90 beats per minute, and $SpO_2$was 100%.

Diagnostic assessment: the symptoms suggested cerebral edema, especially since light perception was preserved along with non-reactive pupil dilatation. A head CT scan ruled out structural neurologic injury. Fundus examination revealed no papilledema but showed bilateral serous retinal detachment with hemorrhages and cotton-wool spots. Early-phase retinal angiography showed choroidal ischemia and hemorrhagic points, indicative of retinal ischemia (Figure 1, Figure 2). The late phase showed delayed diffusion, indicating compromised blood flow. Macular optical coherence tomography confirmed the serous retinal detachment, consistent with hypertensive choroidopathy. A slight improvement in visual acuity was observed on the first postoperative day. The patient's condition gradually improved, culminating in complete recovery within a week. After a thorough investigation and exclusion of other causes, the patient's symptoms were ultimately attributed to posterior ischemic optic neuropathy (PION). This hypertensive episode triggers a temporary breakdown in the blood-brain barrier's autoregulation, leading to vasogenic edema, endothelial dysfunction, and the observed symptoms.

Diagnosis: the rapid recovery trajectory observed in this case highlights the potential for spontaneous resolution in some instances of PION.

Patient perspective: in this case, the patient's post-ureteroscopy experience highlights the psychological and emotional dimensions of unexpected medical complications. Initially anticipating a routine recovery, she encountered a significant and distressing complication in the form of sudden visual loss. Her initial response was characterized by apprehension, transitioning gradually to relief as her vision improved. The proactive and empathetic approach of the medical team was instrumental in mitigating her anxiety, underscoring the critical role of effective communication and patient-centered care in clinical outcomes. This case exemplifies the profound influence of medical team support on a patient's psychological and physical recuperation from unanticipated perioperative complications, emphasizing the need for holistic patient care in medical practice.

Informed consent: written informed consent was obtained from the patient for the publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal upon request.

Discussion

Perioperative visual loss following non-ocular surgery, though rare, represents a devastating complication. The earliest documented case dates back to 1948 and involved a patient who likely suffered ocular pressure due to improper headrest positioning during surgery. Over the decades, awareness of POVL has increased, with its incidence of 0.0002% across all surgeries, escalating to as high as 0.2% in higher-risk surgeries like spinal and cardiac operations [**5**]. Three principal entities have been identified as potential causes of POVL.

Ischemic optic neuropathy (ION): recognized as the predominant cause of sudden post-surgical vision loss [6,7], ION can result from elevated intraocular pressure (IOP) and occluded ophthalmic veins, often due to prone or Trendelenburg positioning during surgery [8]. The American Society of Anesthesiologists (ASA) Postoperative Visual Loss notes that 89% of post-spinal surgery vision loss cases are attributed to ION, with posterior ION (PION) constituting 60% of these cases [6].

Central retinal artery occlusion (CRAO): this occurs when the main artery supplying the retina is blocked, leading to abrupt and severe vision loss.

Cortical blindness: a rare condition resulting from damage to the brain´s visual cortex, causing total vision loss without ocular damage. Posterior ischemic optic neuropathy is predominantly linked

to prone positioning and extended surgical duration [7]. Patients typically report painless vision loss upon emerging from anesthesia. Although anemia and hypotension are common in PION cases, the exact ischemic mechanism remains elusive. Despite various identified risk factors, a singular causative factor for ION across different surgical contexts is yet to be determined.

Diagnosing PION is primarily clinical, based on exclusion criteria. There are reported instances of successful vision recovery in PION cases through various interventions: Quraishi et al. reported a case where prompt management of hemoglobin, hematocrit, and blood pressure levels facilitated vision improvement in a PION case [9]. Hassani *et al.* reported successful vision restoration in a PION case post significant blood loss and a 6-hour surgery through the administration of recombinant human erythropoietin [10].

The ASA Task Force on Perioperative Visual Loss recognizes the absence of comprehensive treatment guidelines. They advise informing high-risk patients about the small yet unpredictable risk of POVL and recommend preventative strategies like avoiding prone positioning when feasible and ensuring adequate blood pressure and oxygenation during surgery [11]. Immediate ophthalmological evaluation is imperative for any post-surgical vision changes, as POVL treatment efficacy diminishes over time. As highlighted by Contractor and Hardman, patients displaying POVL symptoms require urgent ophthalmologist consultation to optimize vision recovery chances.

Conclusion

This case report highlights a rare but significant complication of ureteroscopy, a commonly performed urological procedure. Despite its infrequency, the occurrence of perioperative visual loss, particularly posterior ischemic optic neuropathy, in this context raises important considerations for clinical practice. Our findings underscore the need for heightened awareness among urologists and anesthesiologists about the potential risk of POVL in patients undergoing routine urological procedures. This case illustrates that even procedures considered low-risk can lead to unexpected complications, emphasizing the importance of comprehensive preoperative assessment and careful intraoperative monitoring, especially in patients with predisposing factors such as anemia or hypertension.

The rapid and complete recovery observed in our patient is encouraging and suggests that with prompt recognition and appropriate management, there is potential for a favorable outcome in cases of POVL. However, this case also serves as a reminder of the unpredictable nature of this complication and the need for prompt ophthalmological intervention when symptoms arise. Further research is warranted to better understand the pathophysiology of POVL in urological surgeries and to develop effective prevention and management strategies. This case contributes to the growing body of literature on POVL and serves as a call to action for enhanced vigilance and patient care in the field of urology.

Competing interests

The authors declare no competing interests.

Authors' contributions

All the authors have read and agreed to the final manuscript.

Figures

Figure 1: fundus photograph and fundus fluorescein angiography of the left eye, showing serous retinal detachment and macular hyperreflective thickening

Figure 2: fundus photograph and fundus fluorescein angiography of the right eye, showing macular ischemia with capillary leakage

References

1. Lin JC, French DD, Margo CE, Greenberg PB. Epidemiology of postoperative visual loss for non-ocular surgery in a cohort of inpatients. Eye (Lond). 2022 Jun;36(6): 1323-1325. **PubMed**| **Google Scholar**
2. Al-Maghlouth AK, Bin Ajjaj A. Post operative visual loss after nephrectomy performed in lateral position in female patient with congenitally left blindness. Urol Case Rep. 2020 Jul 25: 33: 101356. **PubMed**| **Google Scholar**
3. Kan KM, Brown SE, Gainsburg DM. Ocular complications in robotic-assisted prostatectomy: a review of pathophysiology and prevention. Minerva Anestesiol. 2015 May;81(5): 557-66. **PubMed**| **Google Scholar**
4. Agah M, Ghasemi M, Roodneshin F, Radpay B, Moradian S. Prone Position in Percutaneous Nephrolithotomy and Postoperative Visual Loss. Urol J. 2011 Summer;8(3): 191-6. **PubMed**| **Google Scholar**
5. Berg KT, Harrison AR, Lee MS. Perioperative visual loss in ocular and nonocular surgery. Clin Ophthalmol. 2010 Jun 24;4: 531-46. **PubMed**| **Google Scholar**
6. Lee LA, Roth S, Posner KL, Cheney FW, Caplan RA, Newman NJ *et al*. The American Society of Anesthesiologists Postoperative Visual Loss Registry: analysis of 93 spine surgery cases with postoperative visual loss. Anesthesiology. 2006 Oct;105(4): 652-9; quiz 867-8. **PubMed**| **Google Scholar**
7. Kla KM, Lee LA. Perioperative visual loss. Best Pract Res Clin Anaesthesiol. 2016 Mar;30(1): 69-77. **PubMed**| **Google Scholar**
8. Baig MN, Lubow M, Immesoete P, Bergese SD, Hamdy EA, Mendel E. Vision loss after spine surgery: review of the literature and recommendations. Neurosurg Focus. 2007;23(5): E15. **PubMed**| **Google Scholar**
9. Quraishi NA, Wolinsky JP, Gokaslan ZL. Transient bilateral post-operative visual loss in spinal surgery. Eur Spine J. 2012 Jun;21 Suppl 4(Suppl 4): S495-8. **PubMed**| **Google Scholar**
10. Hassani V, Homaei MM, Shahbazi A, Zamani MM, Safari S, Nadi S *et al*. Human erythropoietin effect in postoperative visual loss following spine surgery: a case report. Anesth Pain Med. 2014 Apr 6;4(2): e7291. **PubMed**| **Google Scholar**
11. American Society of Anesthesiologists Task Force on Perioperative Visual Loss. Practice advisory for perioperative visual loss associated with spine surgery: an updated report by the American Society of Anesthesiologists Task Force on Perioperative Visual Loss. Anesthesiology. 2012 Feb;116(2): 274-85. **PubMed**| **Google Scholar**

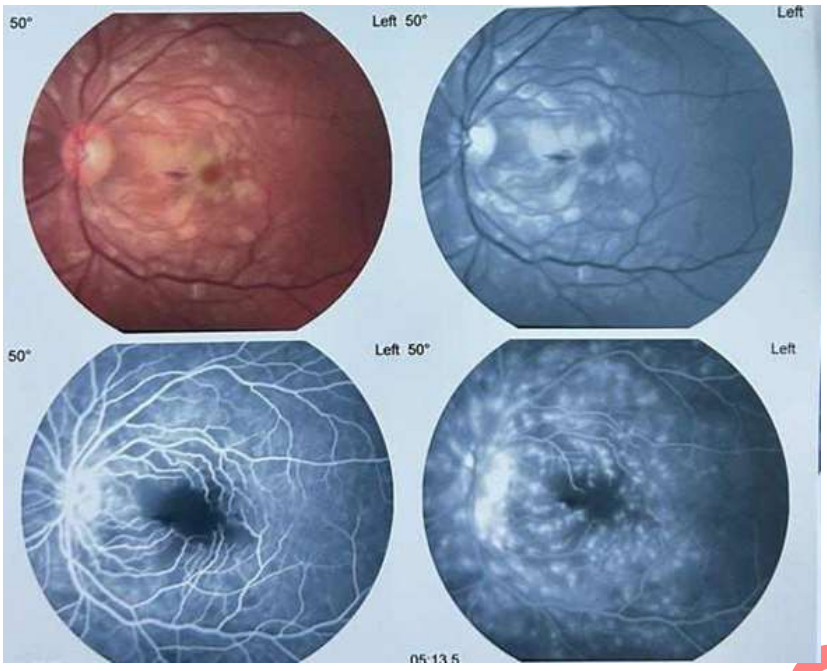

Figure 1: fundus photograph and fundus fluorescein angiography of the left eye, showing serous retinal detachment and macular hyperreflective thickening

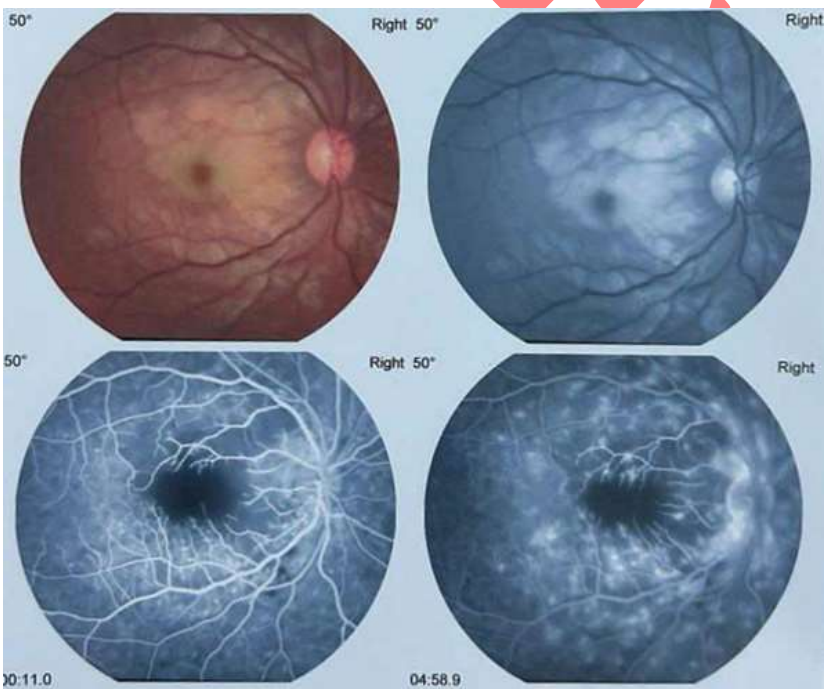

Figure 2: fundus photograph and fundus fluorescein angiography of the right eye, showing macular ischemia with capillary leakage