



Case report

Delayed-onset *Candida parapsilosis* cornea tunnel infection and endophthalmitis after cataract surgery: Histopathology and clinical course

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ABSTRACT

Purpose: To describe a patient with late post-operative endophthalmitis and clear cornea tunnel infection caused by *Candida parapsilosis* that was masquerading as chronic anterior uveitis.

Observations: A 62-year old woman with history of uncomplicated cataract surgery 7 months prior and chronic postoperative anterior uveitis, presented with an endothelial plaque, hypopyon, and infiltrates in the capsular bag and within the clear corneal tunnel. Anterior chamber cultures identified *C. parapsilosis* and pathology of the endothelial plaque showed fungus. Anterior chamber washout, scraping of the endothelial plaque, serial intracameral and intravitreal injections with amphotericin B (10 mcg) failed to control the infection. Pars plana vitrectomy, removal of the intraocular lens and capsular bag, a corneal patch graft, and administration of intravitreal antifungal agents were performed. One year later the patient remains free of recurrence and her best-corrected vision is 20/25 with a rigid gas permeable contact lens.

Conclusions: and Importance: Persistent intraocular and intracorneal inflammation after cataract surgery should raise suspicion of endophthalmitis caused by fungi non-responsive to topical and intravitreal antibiotics. Surgical intervention and removal of the nidus of infection, which is often the intraocular lens and capsular bag, may be necessary for a successful outcome.

1. Introduction

Candida parapsilosis has emerged as an opportunistic fungal pathogen over the last two decades especially in debilitated patients and low birth weight neonates.¹ Though typically a commensal of human skin, its capacity to form biofilms on catheters and implants accounts for its increased incidence within the nosocomial setting.² *Candida parapsilosis* is a well-known cause of delayed-onset postoperative endophthalmitis with at least 3 epidemics in the mid-1980s due to contaminated irrigating solutions used intraoperatively.^{3–5} It has also been described as the causative organism for suppurative fungal keratitis and crystalline keratopathy after corneal transplantation,^{6,7} laser in situ keratomileusis (LASIK),⁸ insertion of intracorneal ring segments,⁹ treatment of epithelial ingrowth post-LASIK,¹⁰ trauma with vegetable matter,¹¹ and Boston type 1 keratoprosthesis implantation.¹²

Herein, a case of *Candida parapsilosis* cornea tunnel infection with late-onset endophthalmitis is reported after cataract surgery via phacoemulsification and all similar cases in the literature of fungal tunnel infections post-cataract surgery are reviewed.

2. Findings

A 62-year old female self-referred to the Bascom Palmer Eye Institute (BPEI) Emergency Department for further management of chronic postoperative anterior uveitis in her left eye. The patient had history of uncomplicated cataract surgery with insertion of a posterior chamber intraocular lens (IOL) 7 months prior to presentation. She had been treated with topical difluprednate 0.05% and bromfenac 0.07% eye drops for recurrent inflammation in the anterior chamber. At least 3 attempts were made by her surgeon and an outside retina specialist to taper her anti-inflammatory regimen without success. Past medical history did not reveal other predisposing factors or increased risks for developing a *Candida* infection. An extensive uveitis work-up, which included a complete blood count, sedimentation rate, Quantiferon gold test, chest X-ray, rapid plasma reagin (RPR), fluorescent treponemal antibody (FTA-ABS), angiotensin converting enzyme, serum lysozyme, anti-nuclear antibody (ANA), toxoplasmosis IgM and IgG antibodies, HLA B27 antigen, HLA B51 antigen and Lyme titers, was performed and was negative.

Two weeks prior to presentation to us she experienced increased

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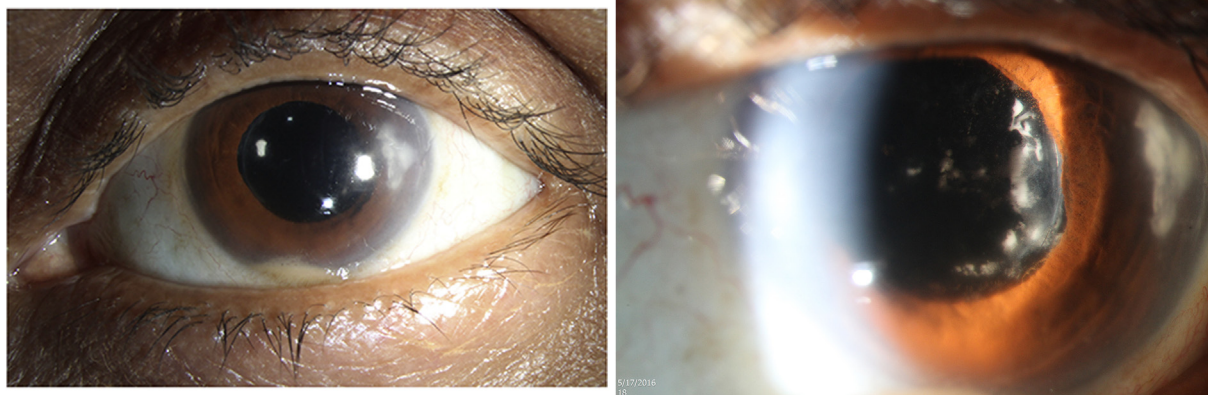


Fig. 1. Slit lamp photograph at presentation (7 months after cataract surgery in the patient's left eye). 1A - A stromal infiltrate along the clear cornea cataract tunnel is present temporally, while a 1 mm hypopyon and endothelial plaque are visible inferiorly. 1B - White fluffy-appearing deposits between the IOL and the capsular bag are seen temporally. There was no evidence of vitritis and the patient's visual acuity was 20/50.

redness and light sensitivity. Her outside retina specialist noted new keratic precipitates, 1 + cell in the anterior chamber, a new infiltrate along the clear cornea cataract incision tract and new focal deposits on the posterior surface of the IOL and inside the capsular bag. Given the concern for chronic postoperative endophthalmitis, an anterior chamber culture was sent by her outside physician and vancomycin and moxifloxacin were injected intracamerally and ceftazidime was injected intravitreally. On postoperative day 3, the patient experienced recurrence of the anterior chamber inflammation and reported to BPEI for further management.

Upon presentation to us, her left eye had mild perilimbal injection, a noticeable infiltrate along the clear cornea cataract tunnel temporally, a small hypopyon and endothelial plaque inferiorly, and white fluffy-appearing deposits between the IOL and the capsular bag temporally (Fig. 1). There was no vitritis and her vision was 20/50. At this time, the anterior chamber cultures from the outside physician center came back positive for *Candida*. A repeat anterior chamber washout and cultures, scraping of the endothelial plaque and injections of intracameral and intravitreal amphotericin B (0.2 mL of 5 mcg/0.1 mL) were performed. She was also started on hourly topical amphotericin B 0.5 mg/mL drops and topical steroids were stopped. Cultures showed *C. parapsilosis* and pathology of the endothelial plaque that was removed revealed fungal elements.

Despite a repeat intracameral amphotericin B injection 3 days after the anterior chamber washout, the hypopyon, capsular/IOL deposits and intrastromal wound infiltrate persisted (Fig. 2). Thus, 7 days after the washout at BPEI, the patient was brought back to the operating room for definitive surgical management of the *C. parapsilosis* endophthalmitis. A 23-gauge pars plana vitrectomy was performed, the IOL and the capsular bag were removed *in toto* through a superior 7 mm long scleral tunnel incision 2 mm posterior to the limbus and a 6.5 mm corneal patch graft was performed temporally at the site of the prior cataract wound. The patient was left aphakic and intravitreal voriconazole (0.2 mL of 100 mcg/0.1 mL) and amphotericin B (0.2 mL of 5 mcg/0.1 mL) were injected at the end of the procedure. In view of persistent ocular infection despite prior treatment with intravitreal amphotericin-B, a combination approach was utilized at the time of the definitive surgical procedure. Her post-operative regimen included topical amphotericin B 0.5 mg/mL, voriconazole 1% and cyclosporine 0.5% drops which were slowly tapered (Fig. 3). Histopathology examination revealed budding yeast along the cornea tunnel (Fig. 4A) and within the capsular bag (Fig. 4B). At her 1-year follow up visit her best-corrected vision in that eye is 20/25 with a rigid gas permeable lens and she remains free of recurrence (Fig. 5).

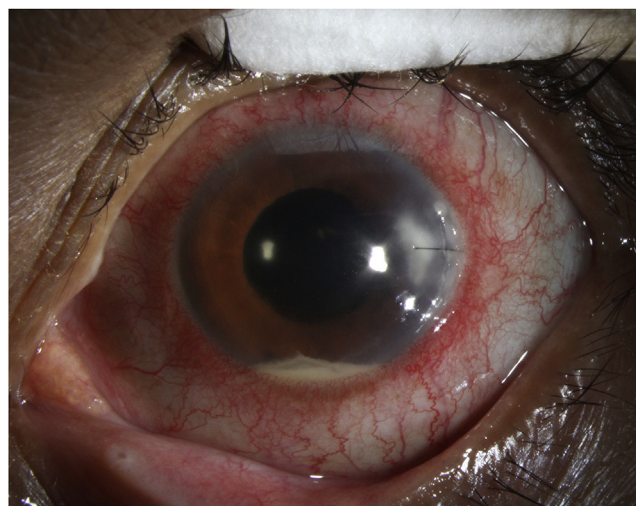


Fig. 2. Slit lamp photograph of the patient's left eye 6 days after anterior chamber washout, scraping of the endothelial plaque, and two intracameral and intravitreal amphotericin B (5 mg/mL) injections. The stromal infiltrate along the cornea tunnel and the hypopyon persisted.

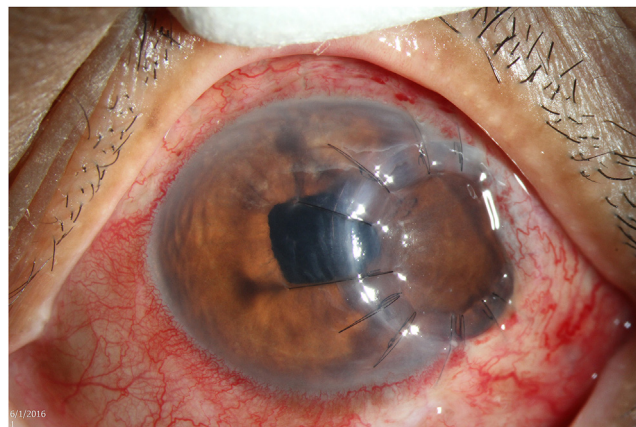


Fig. 3. Slit lamp photograph of the patient's left eye 1 week after pars plana vitrectomy, removal of the intraocular lens and capsular bag, cornea patch graft and intravitreal voriconazole and amphotericin B injections.

3. Discussion

Candida endophthalmitis after cataract surgery typically has a

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