

# Corynebacterium Bovis: A Rare Case of Persistent Bacterial Keratitis and Corneal Perforation

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## Introduction

- Bacterial keratitis can lead to significant loss of vision.
- Corynebacterium bovis* is regarded as a normal bovine microbiota and a common cause of bovine mastitis [1].
- They are characterised by non-spore-forming, nonencapsulated curved or straight rods.
- The bacteria characteristically group together in a way which has been described as a 'V', 'palisades' or 'Chinese letters' [2] (Figure 1).
- Corynebacterium* species are found in the conjunctiva of 5% to 7% of healthy adults and are thus increasingly regarded as non-pathogenic bacteria [3].
- Corynebacterium* species have been reported as normal commensals of the conjunctival sac, rendering their pathogenicity uncertain. However, reports have highlighted the pathogenicity of *Corynebacterium* species isolated on the background of immunosuppression.
- Infections in humans caused by *Corynebacterium bovis* remains extremely rare [4,5].

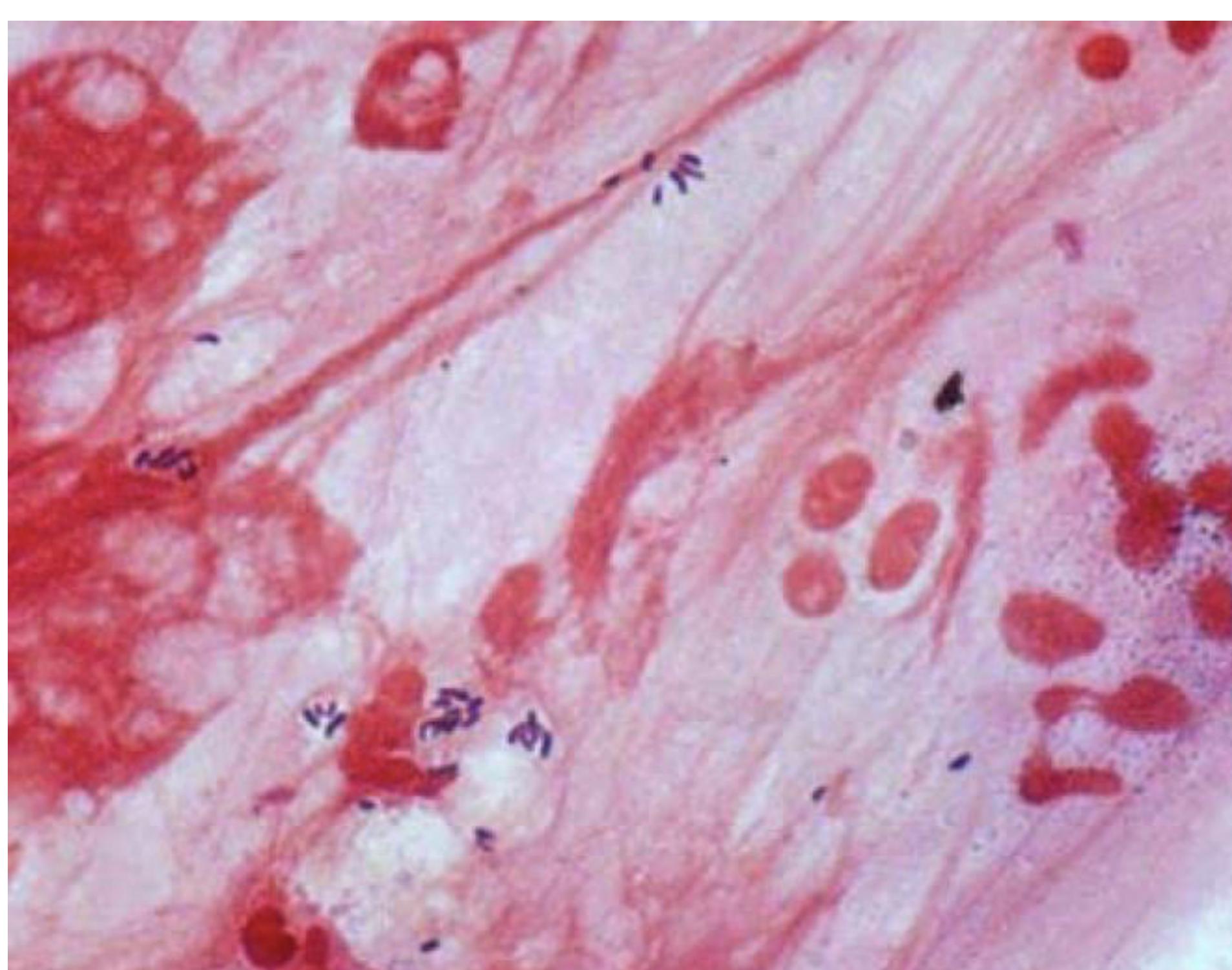


Figure 1. Corneal scraping showing gram-positive bacilli arranged in Chinese letter pattern suggestive of *Corynebacterium* spp (Gram stain,  $\times 1000$ ). Sujata Das 2016

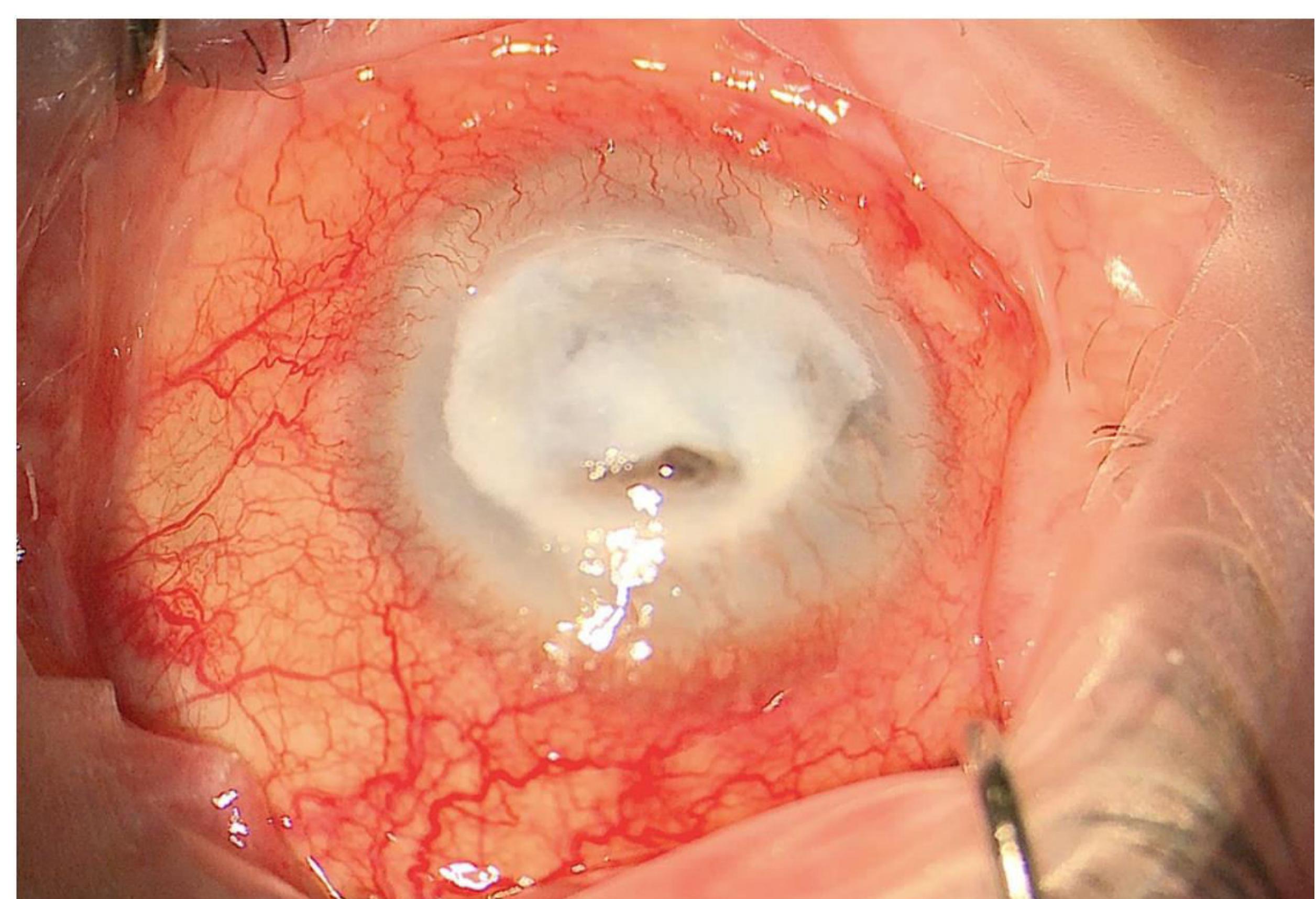


Figure 2. A large central epithelial defect covered with dense white infiltrate, and a superior localised area of perforation with iris prolapse. Elsheikh 2021

## Surgery

- In light of the persisting perforation and large central epithelial defect (Figure 2), the decision was made to perform Gundersen conjunctival flap surgery.
- Further intraoperative corneal scraping were obtained.
- Intraoperative corneal scraping did not isolate any organisms and in view of this, antimicrobial therapy was tapered.
- Iridectomy of the prolapsed iris was performed.
- Cyanoacrylate glue was subsequently utilised to seal the corneal perforation.
- The cornea was enclosed with a conjunctival flap (Figure 3).

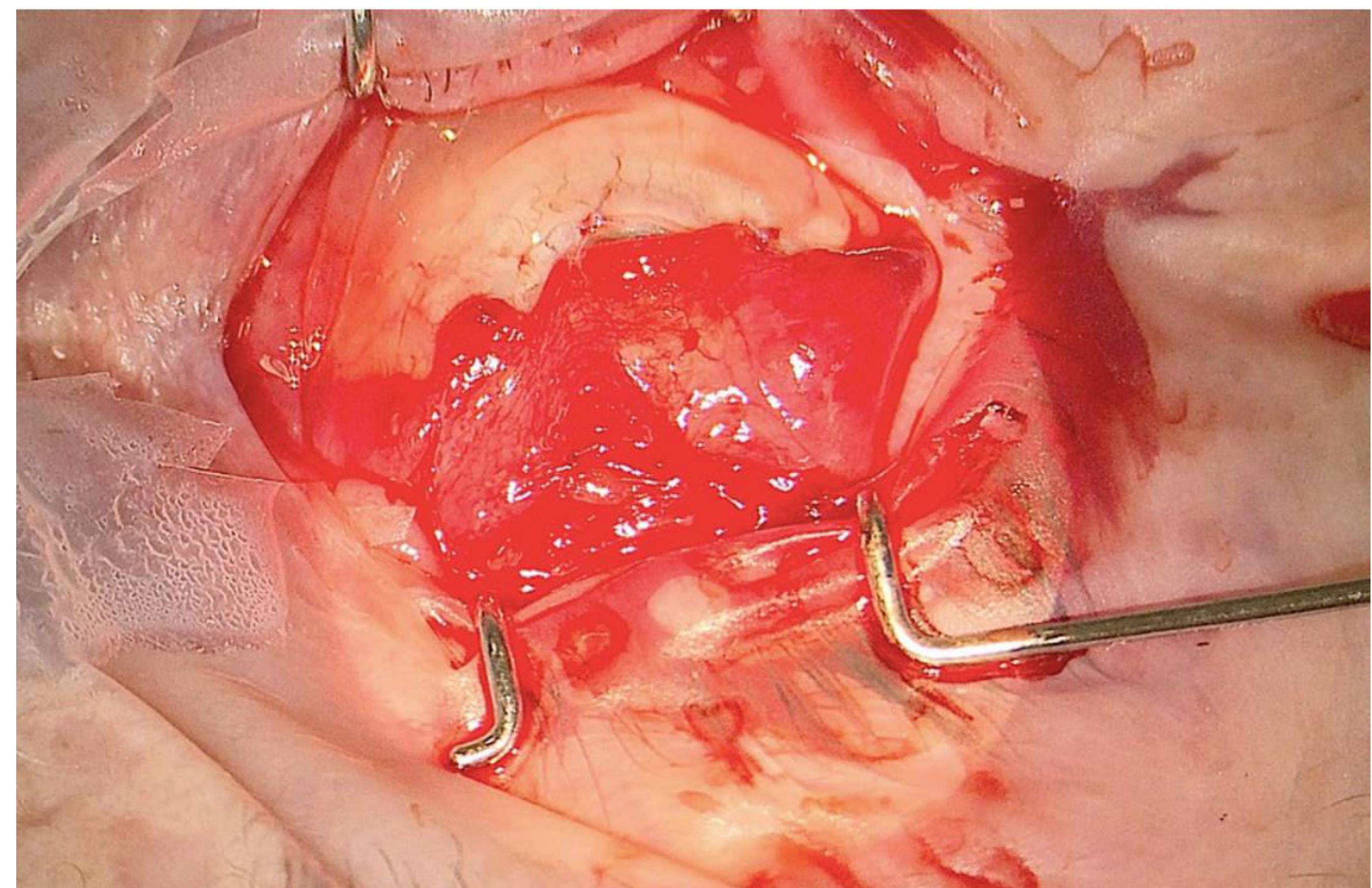
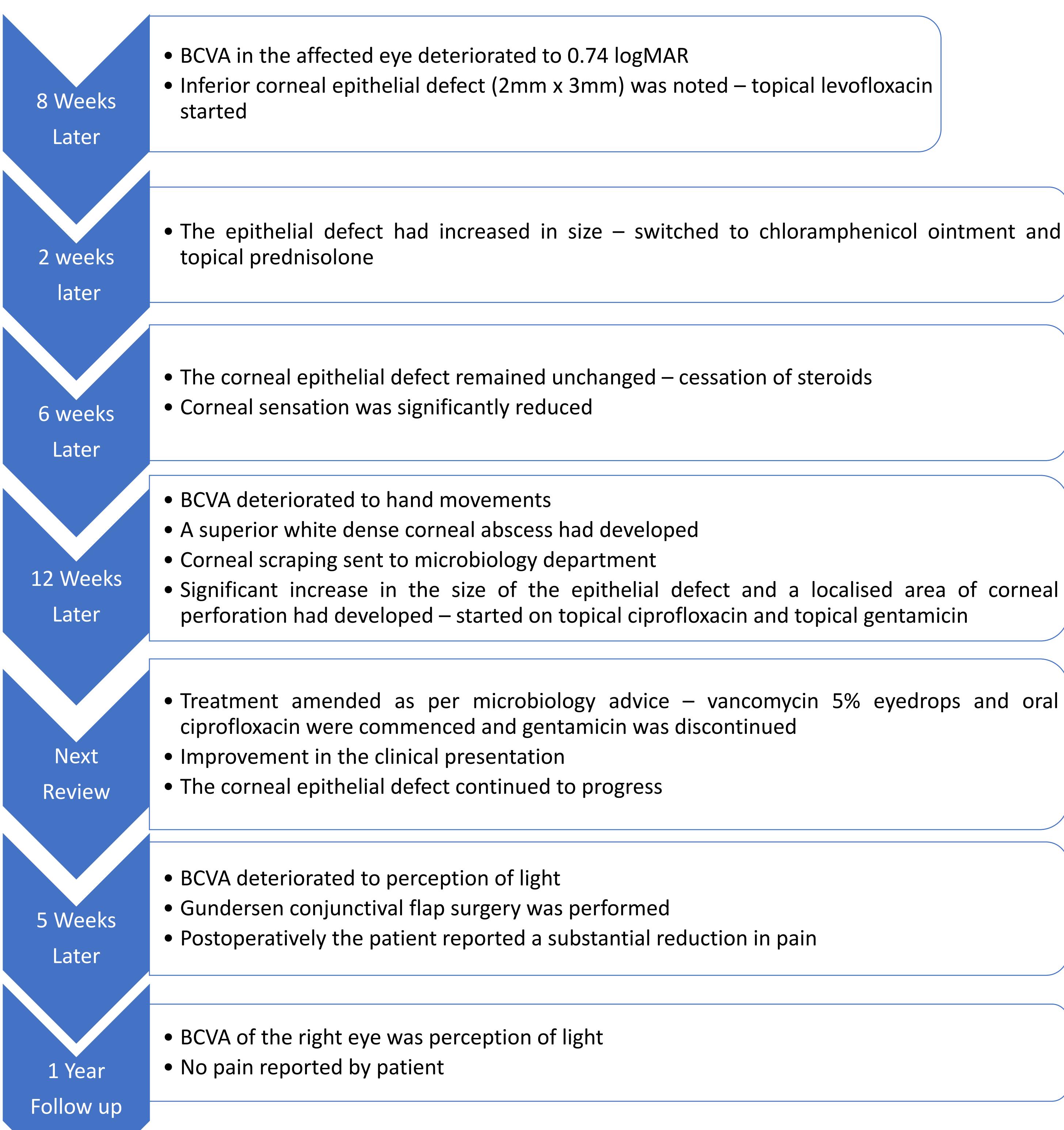


Figure 3. The conjunctival flap secured onto the anterior surface of the cornea. Elsheikh 2021

## Initial Presentation

- 89 year old female
- No relevant past medical history
- Presented with reduced vision in her right eye associated with pain for 3 days
- Examination findings;
  - Best corrected visual acuity (BCVA) 0.36 logMAR right eye and 0.24 logMAR left eye
  - Right sided periorbital oedema
  - Vesicular lesion over right eyebrow
  - Anterior and posterior chambers examination was normal in both eyes
  - Clear cornea and normal intraocular pressure in both eyes
- Initial diagnosis of Herpes Zoster Ophthalmicus was made and treated accordingly

## Case Progression



## Conclusion

- Of note was the clinical improvement following the addition of vancomycin 5% eye drops to the treatment regimen.
- Fluoroquinolone antibiotics offer broad-spectrum activity in treating microbial keratitis; hence they are frequently used in the treatment of microbial keratitis.
- Despite the initial sensitivities to ciprofloxacin, in this case, fluoroquinolones monotherapy inadequately treated the bacterium, followed by subsequent complications such as corneal perforation.
- Hand-to-eye contact from infected cattle was the mode of transmission and source of this organism, as confirmed by the patient's recent contact with cattle.
- This case suggests a likely transmission route from cattle to humans via direct contact or via fomites, with subsequent pathogenicity.
- The report highlights the potential pathogenic spectrum of *Corynebacterium bovis* from a normal commensal of the conjunctival sac to severe corneal infection with vision threatening sequelae.
- Possibly the first reported case of profuse bacterial keratitis, on a background of viral keratitis, resulting in corneal perforation with *Corynebacterium bovis* infiltration.
- This case highlights both the clinical and management challenges endured in treating this rare cause of bacterial keratitis and describes various characteristics of this unusual pathogen.

## References

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