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Eye-quiz
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Growing pearls in the eye

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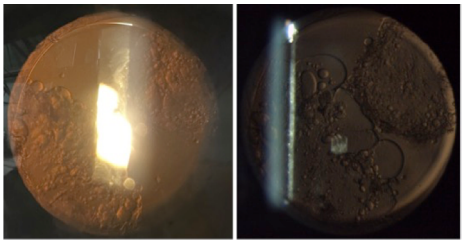
Clinical context

An 18-year-old female with underlying idiopathic intermediate uveitis developed cataract. She had an uneventful lens aspiration and intraocular lens implantation (IOL) surgery. Two years after the surgery, her vision deteriorated due to posterior capsule opacity (PCO). The rapid progression of PCO from Figure 1a to 1b occurred over a period of 2 weeks.



Question 1
What is the pathophysiology of the condition seen in Figure 1?

Question 2
What are the preventive measures for PCO formation?

Answer 1
The wound-healing response post-cataract surgery triggers the residual lens epithelial cells (LEC) to proliferate and migrate across the posterior capsule, where they undergo lens fibre regeneration and epithelial-to-mesenchymal transition that gives rise to Elschnig pearls.[1]

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Answer 2

The preventive measures for PCO formation are:

- Surgical technique: Thorough cortical removal by polishing the lens capsule.[2]
- Pre- and post-cataract operation control of inflammation: Patients with concomitant uveitis are prone to an intense inflammatory response due to the impaired blood-aqueous barrier. The resulting chemical mediators stimulate LECs mitotic activity, which eventually leads to the formation of PCO.[3]
- IOL design and material:
  - IOL design with a square, truncated optic edge acts as a mechanical barrier, hindering LEC migration across the posterior capsule.[4]
  - Hydrophobic IOLs have a lower rate of PCO formation compared to hydrophilic IOLs.[5]

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