

# Strategie diagnostiche e terapeutiche nelle neoplasie della superficie oculare: dallo pterigio recidivante alle OSSN

**Laura De Luca, MD**

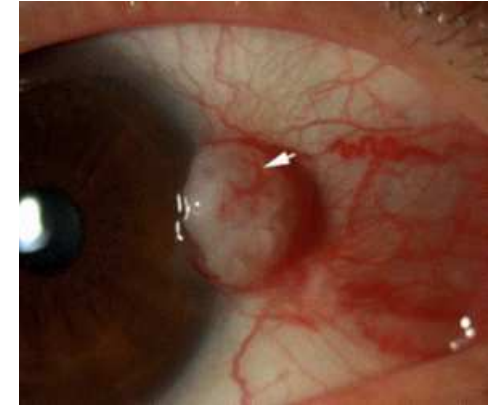
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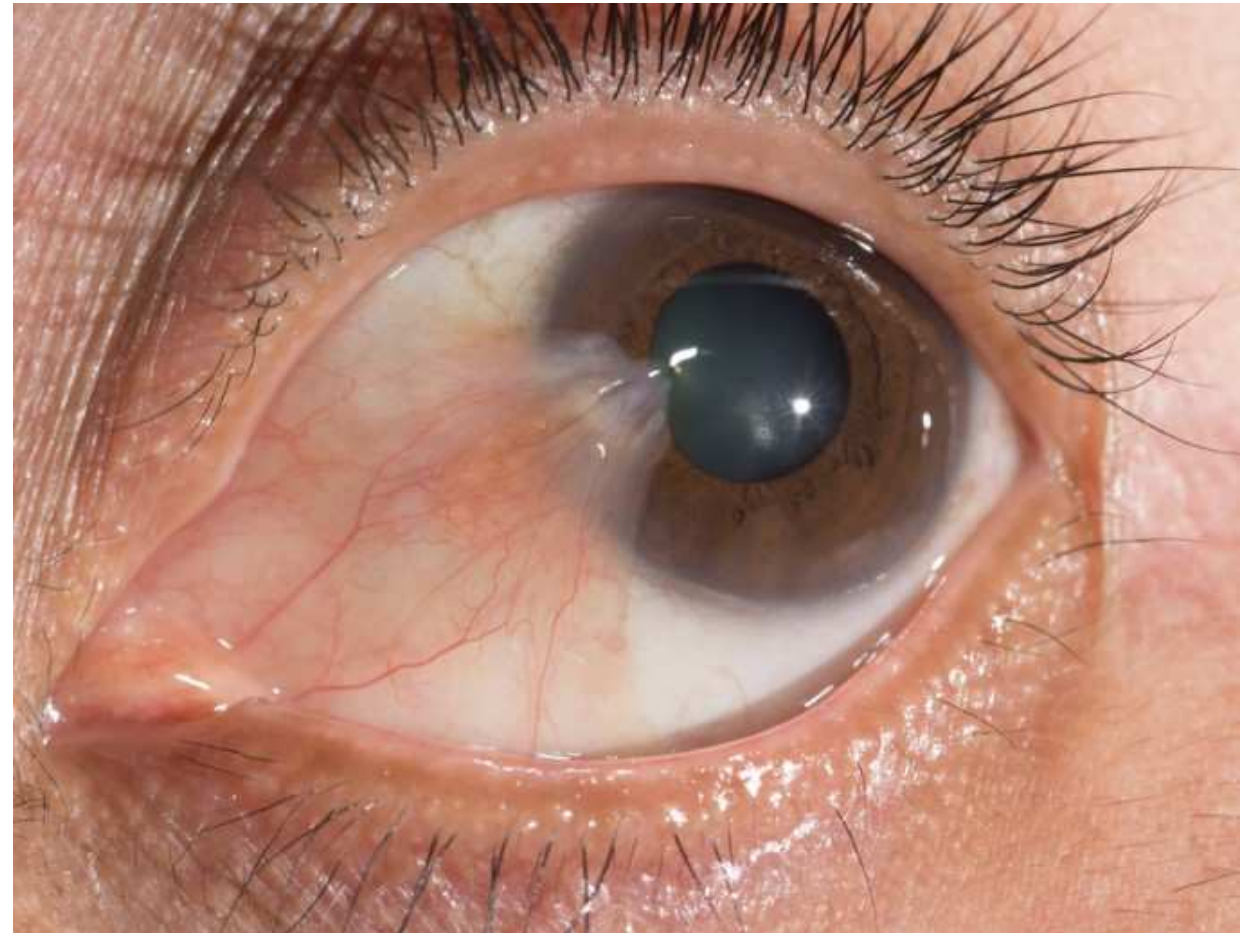
# Is it ALWAYS a pterygium?





# Pterygium – Surfer's disease

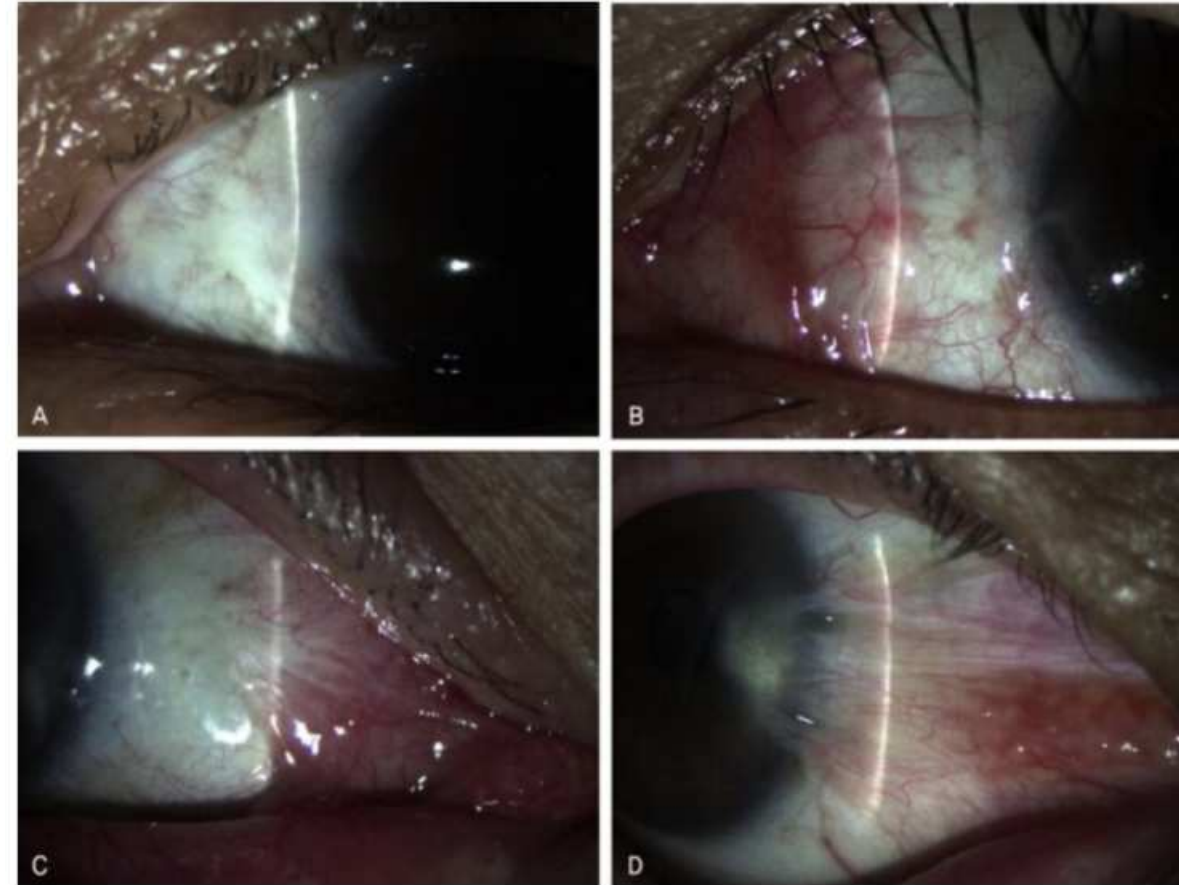
- Common ocular surface pathology
- **Fibrovascular overgrowth** of the **subconjunctival tissue** (especially on the nasal location)
- UV light exposure / microtraumas / IgE irritants / Hypoxia / Viral
- Expression of VIMENTIN / **p53 overexpression**
- Histopathology
  - Epithelial covering of atrophic conjunctiva
  - Degenerated connective tissue (abnormal collagen)
  - Vascular element among hyperthrophied collagen fibers



# Treatments and Recurrences

- **Surgery** (bare scleral; conj autograft; sliding flap; rotational flap;
- **Lubricants eye drops**
- **MMC**
- **5-FU**

Grading of recurrence after pterygium surgery. (A) Grade 0, normal appearance of the operated site. (B) Grade 1, fine episcleral vessels in the excised area. (C) Grade 2, fibrovascular tissue in the excised area, reaching to the limbus, but not invading the cornea (conjunctival recurrence). (D) Grade 3, fibrovascular tissue invading the cornea (corneal recurrence)

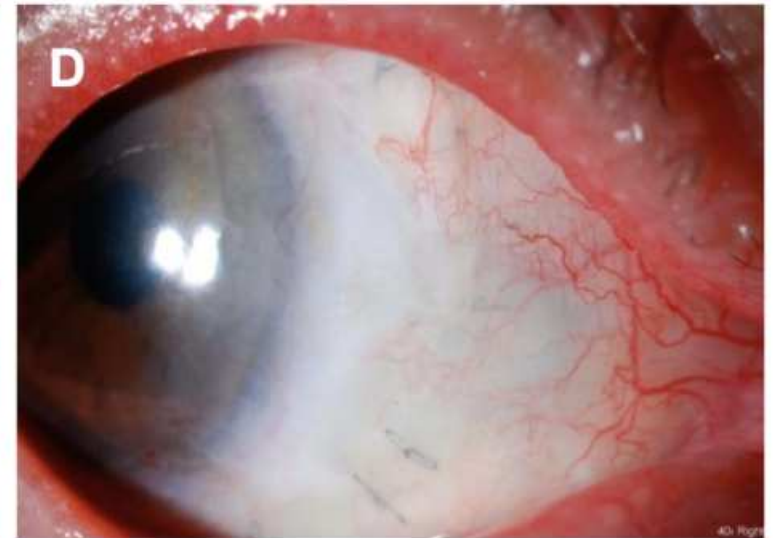
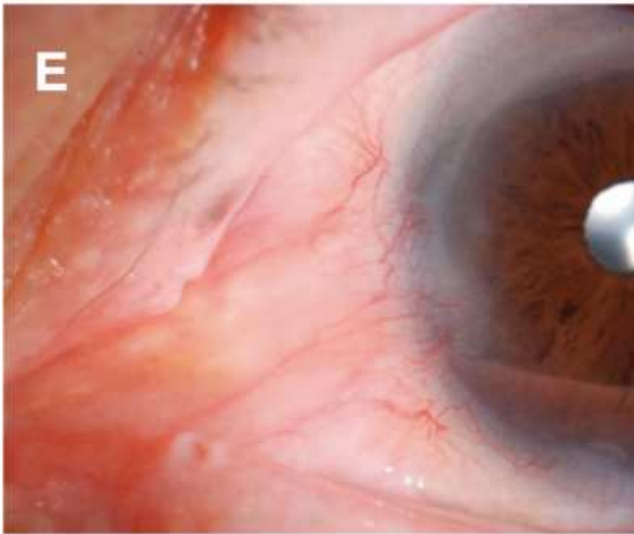


Liu J, Fu Y, Xu Y, Tseng SC. New grading system to improve the surgical outcome of multirecurrent pterygia. *Arch Ophthalmol.* 2012;130(1):39-49. doi:10.1001/archophthalmol.2011.328

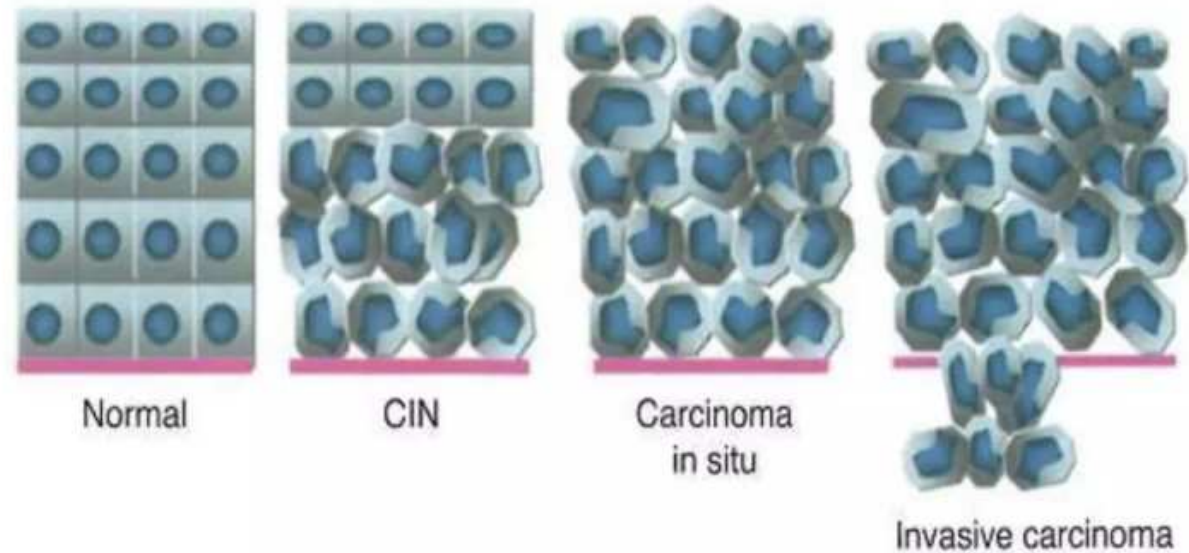


# OSSN accounts for 10% of all pterygia excised

- Not always easy to distinguish between a recurrency and a dysplastic transformation
  - Location
  - Vascular pattern
  - Symblefaron presence



# OSSN – replacing CIN



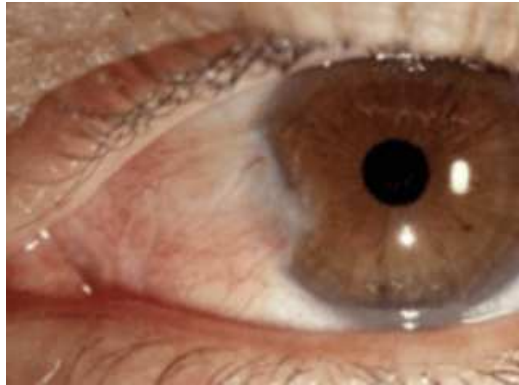
**Figure 5-17** Schematic representation of the progression of OSSN. The first panel represents normal epithelium with basement membrane (*pink line*). In conjunctival intraepithelial neoplasia (CIN), a portion of the epithelium is replaced with dysplastic cells. Carcinoma in situ is the complete replacement of epithelium by dysplastic cells, with the basement membrane still intact. In invasive squamous cell carcinoma, note the invasion through the basement membrane into the stroma. (Courtesy of Patricia Chévez-Barrios, MD.)



# OSSN

- **BENIGN DYSPLASIA**

- Papilloma
- Pseudoepitheliomatous hyperplasia
- Bening hereditary intraepithelial diskerosis



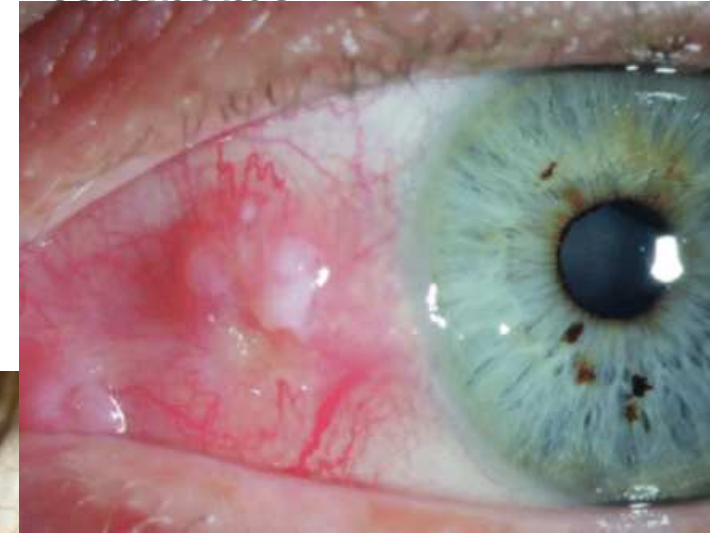
- **PREINVASIVE OSSN**

- Conjunctival/corneal carcinoma in situ



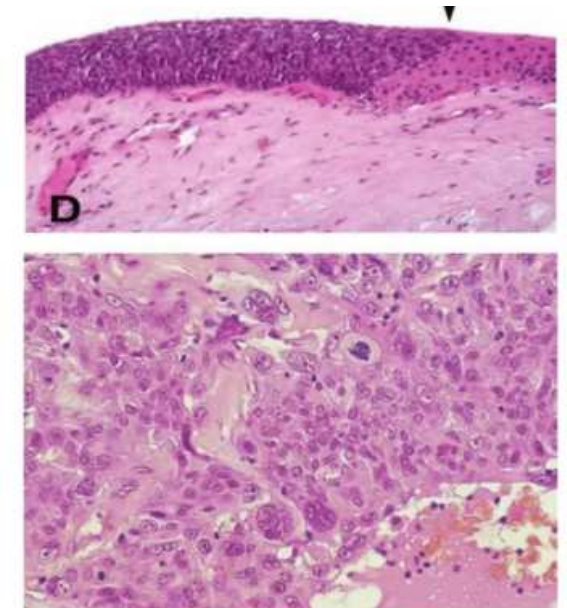
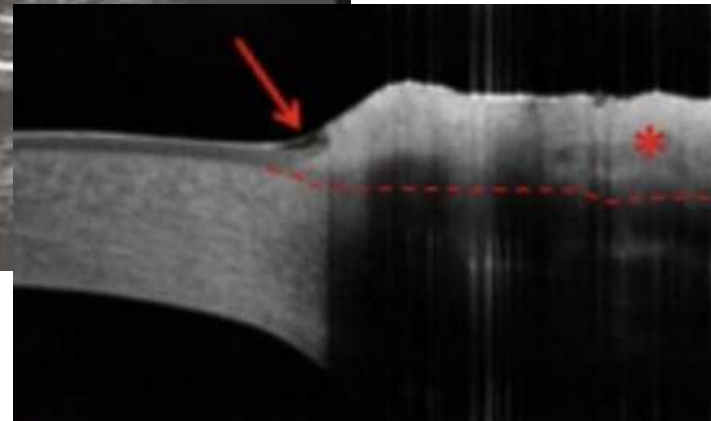
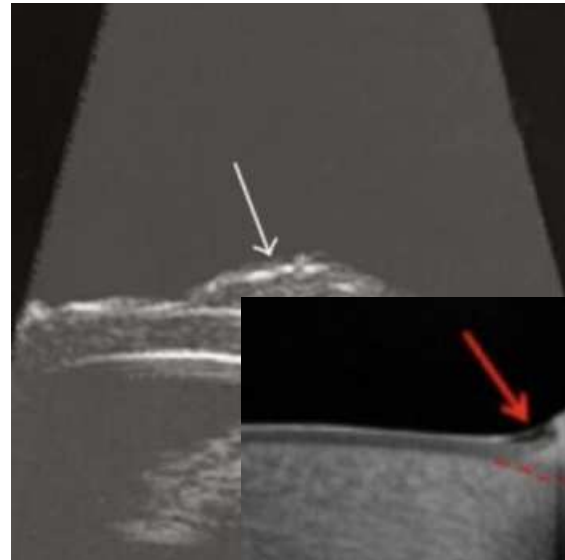
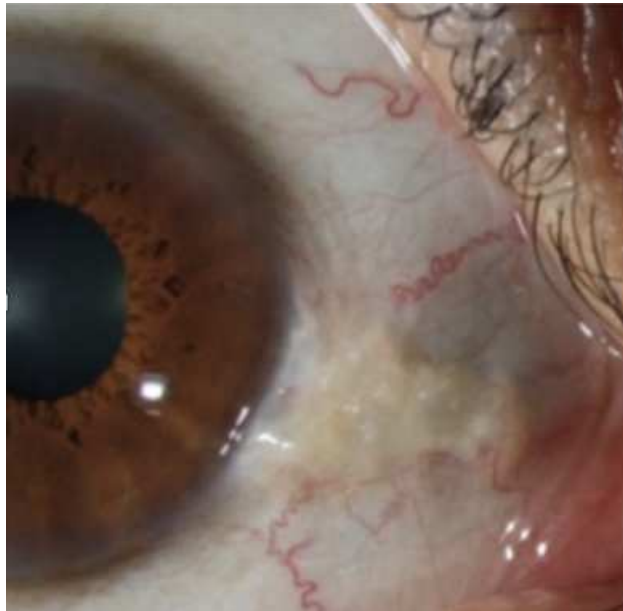
- **INVASIVE OSSN**

- Squamous carcinoma
- Mucoepidermoid



# DIAGNOSIS

- CLINICAL SUSPECT
  - Recurrent pterygium
  - Different textures / colors
  - neoangiogenesis
- IMAGING
  - UBM
  - AS-OCT
- HISTOLOGY
  - EXCISION
  - INCISION





# AS-OCT in OSSN

Original article

Original article

## Diagnosis and Management of Conjunctival and Corneal Intraepithelial Neoplasia Using Ultra High-Resolution Optical Coherence Tomography

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Rodrigo Hoffmann MD<sup>1</sup>, Roberta Ventura MD<sup>1</sup>, Victoria Chang BS<sup>1</sup>, Sander R. Dubovy MD<sup>1,3</sup>,  
Jianhua Wang MD, PhD<sup>1</sup>

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### Purpose

To report a novel diagnostic technique and a case series of conjunctival and corneal intraepithelial neoplasia (CCIN) diagnosed and followed up using prototype ultra high-resolution (UHR) optical coherence tomography (OCT).

## High resolution anterior segment optical coherence tomography for differential diagnosis between corneo-conjunctival intraepithelial neoplasia and pterygium<sup>☆</sup>

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### ARTICLE INFO

#### Article history:

Received 12 February 2019

Accepted 6 January 2020

Available online xxx

#### Keywords:

Conjunctival intraepithelial neoplasia

Ocular surface squamous neoplasia

Pterygium

AS-OCT

High-resolution OCT

CIN

### ABSTRACT

**Objective:** To assess if AS-OCT is a noninvasive diagnostic method suitable to differentiate benign corneo-conjunctival lesions (pterygium) from premalignant lesions (corneo-conjunctival intraepithelial neoplasia, CIN).

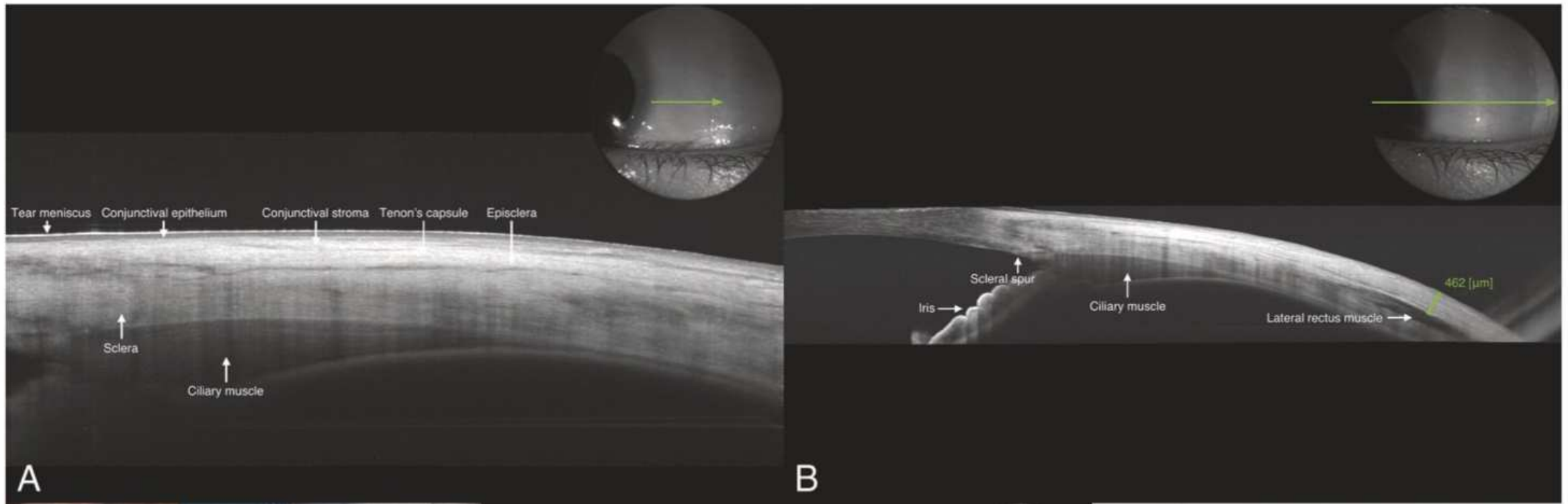
**Material and methods:** An observational, analytical and cross-sectional study was conducted in 22 eyes with conjunctival lesions clinically suspicious for pterygium and CIN during two years. Morphological differences between both lesions were studied with AS-OCT; epithelial thicknesses (EE) and extension length on corneal surface (GIC) were compared between both groups. A surgical excision of the lesion was performed for histopathological diagnosis.

**Results:** Mean age of patients with pterygium (n=18) was 52,67 ± 15 y.o and 74 ± 12 y.o in subjects with CIN (n=4) (p<0,021). In pterygia, AS-OCT showed typical features (normal, thinning or slightly thickened EE; 77,4 ± 26 μm), in addition to an increase in wedge-shaped subepithelial tissue. Patients with CIN had a mean thickened EE (262,5 ± 124 μm) and strongly hyperreflective, with abrupt transition between normal and pathological epithelium. Analysis of EE between subjects with pterygium and CIN revealed statistically significant differences (p<0,002). ROC curve revealed a 100% sensitivity and specificity of OCT-SA in differentiation between CIN and pterygium, using 141 μm as cutoff point of EE.

**Conclusions:** AS-OCT is a useful tool for the differentiation between pterygium and CIN able to provide typical morphological characteristics. An EE greater than 141 μm in AS-OCT suggests a sensitivity and specificity of 100% for the diagnosis of CIN.

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# Normal epithelium and conjunctiva

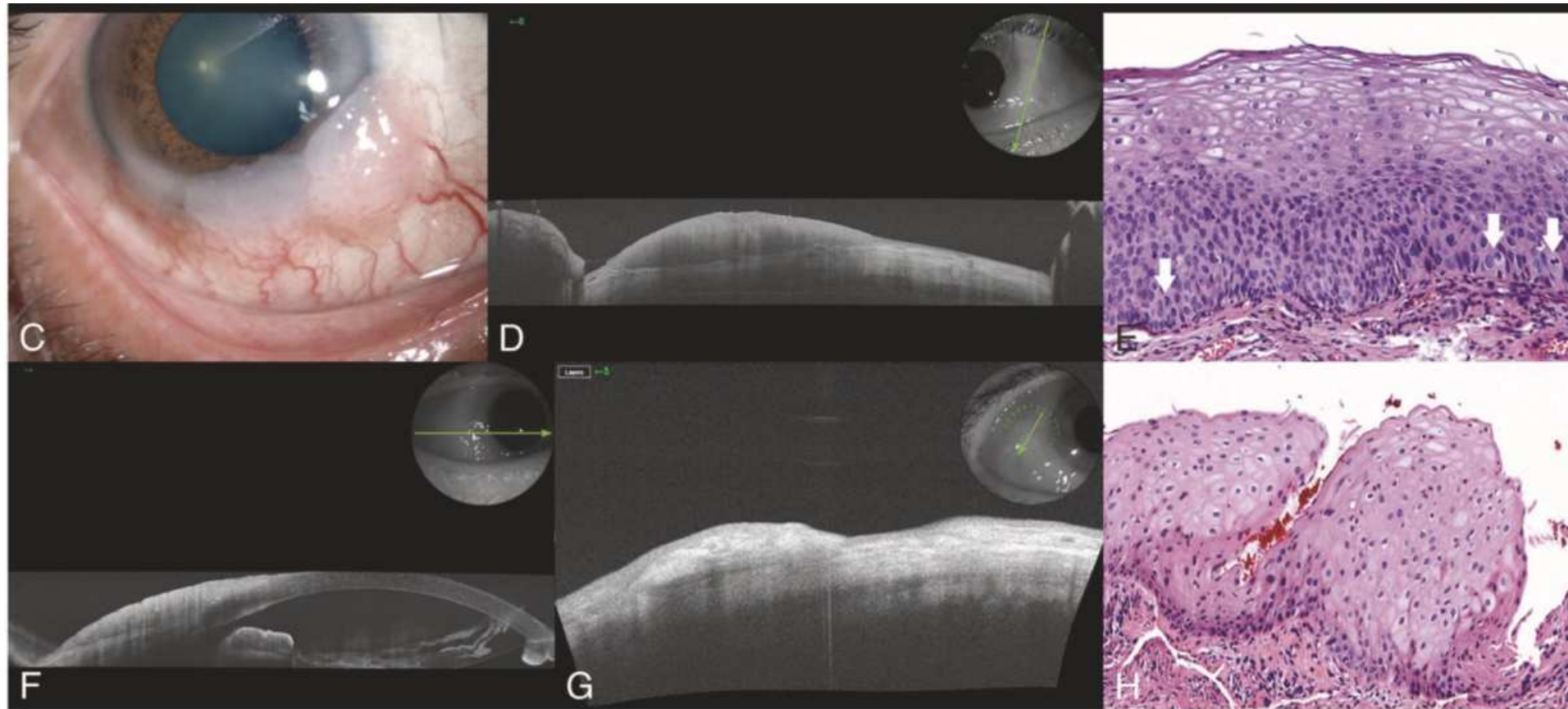




# Pterygium-pinguecula- pseudopterygium

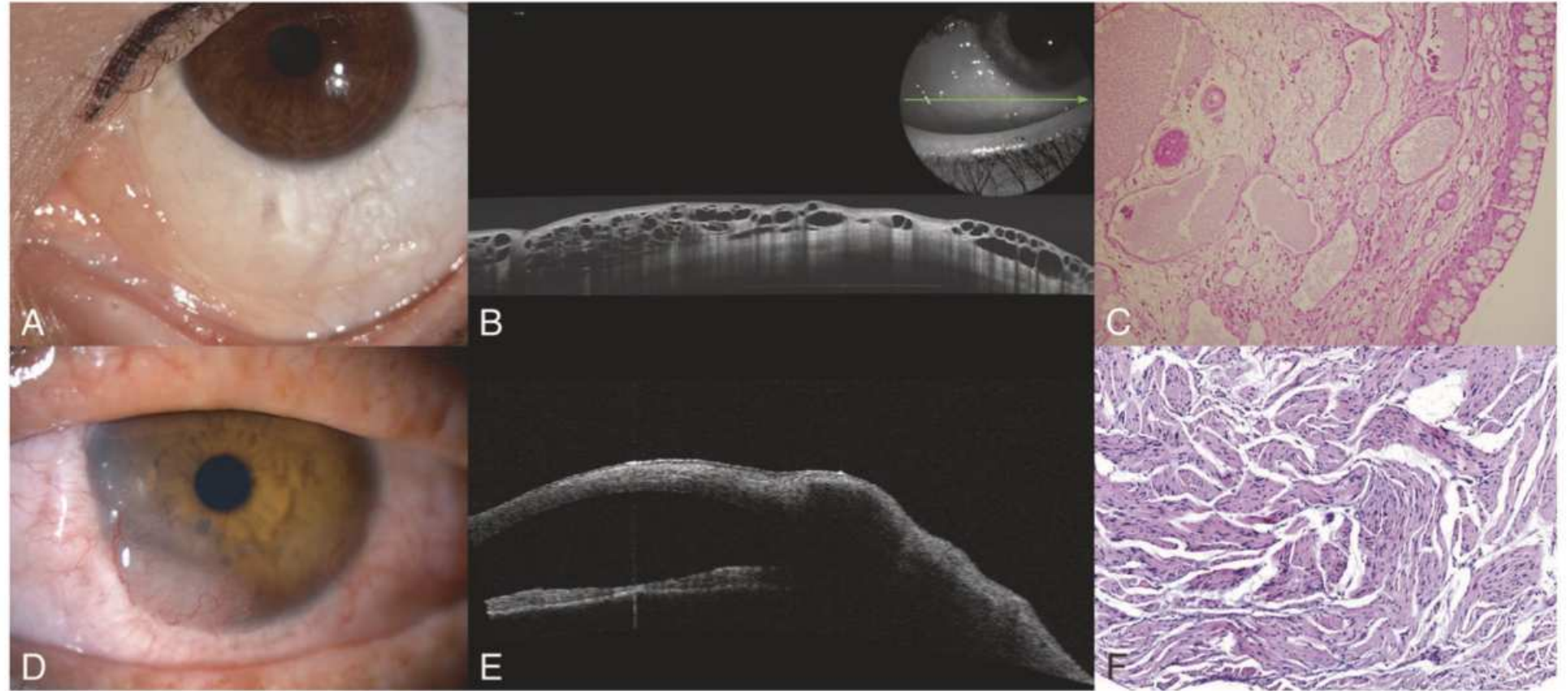


# OSSN- CIN





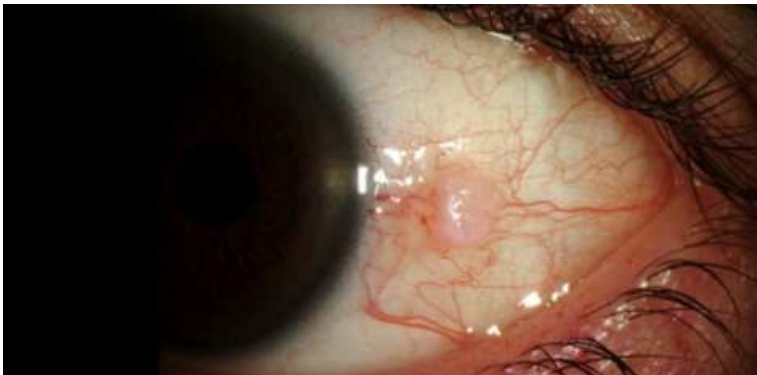
# Conjunctival lymphoma- Schwannoma



# Treatment of CIN and OSSN

## - SURGICAL EXCISION

- At least 4mm free margin (specimen to pathology)
- **NO TOUCH technique**
- Conjunctival / HAM closure
- Cryotherapy
- If corneal component → NOT VIOLATE BOWMAN'S



## - TOPICAL CHEMOTHERAPY

- MMC
- 5 FU
- INTERFERON



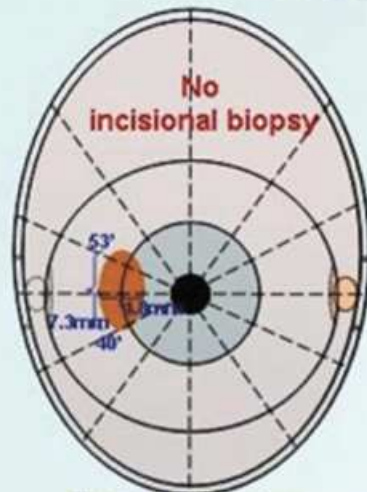
## - RADIOTHERAPY

- Plaque brachitherapy (Ru106)
- 5 FU
- INTERFERON

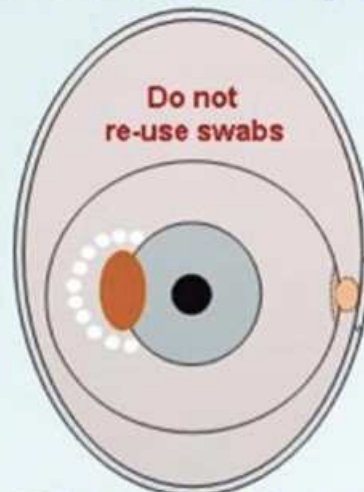




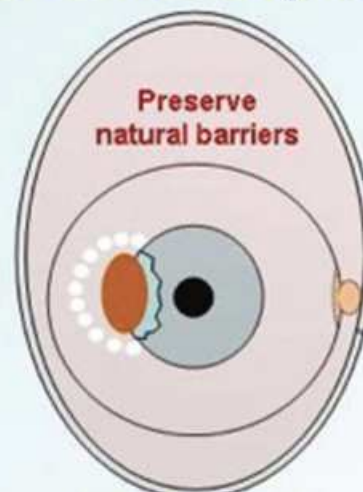
## Treatment of conjunctival neoplasms



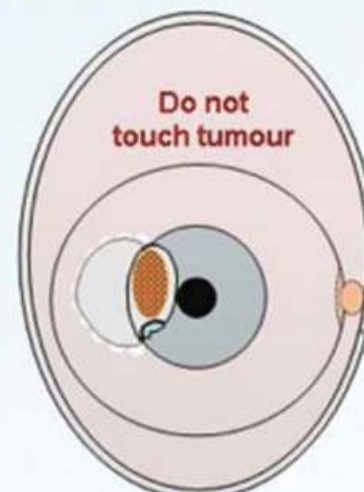
Tumour mapping



Diathermy around tumour



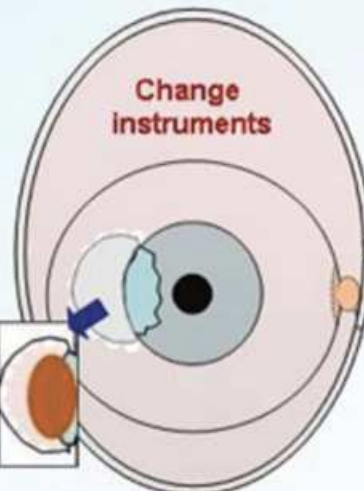
Alcohol epithelial  
débridement



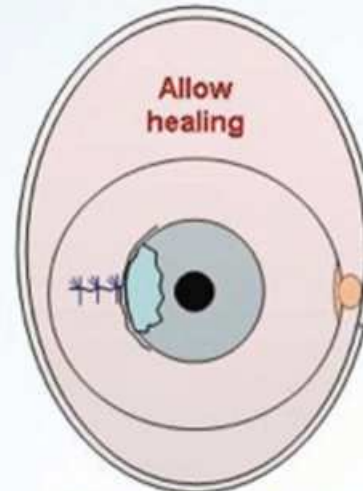
*en bloc*  
tumour excision



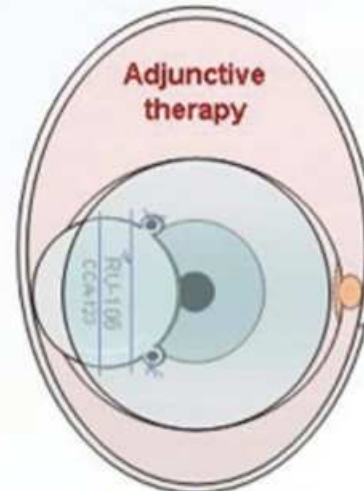
Specimen mounted on paper  
before resection completed



Specimen on mount  
placed in formalin



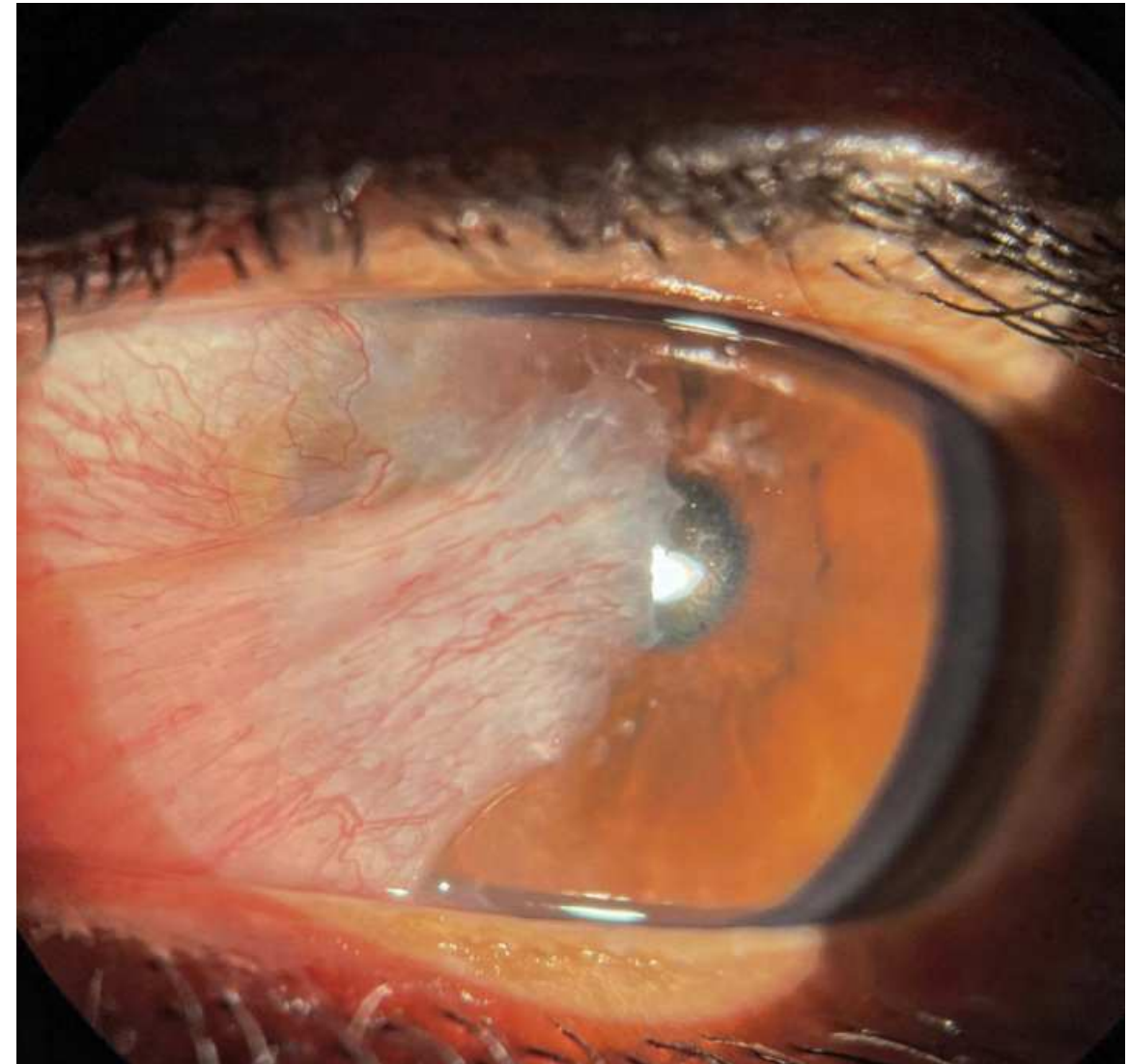
Conjunctiva sutured



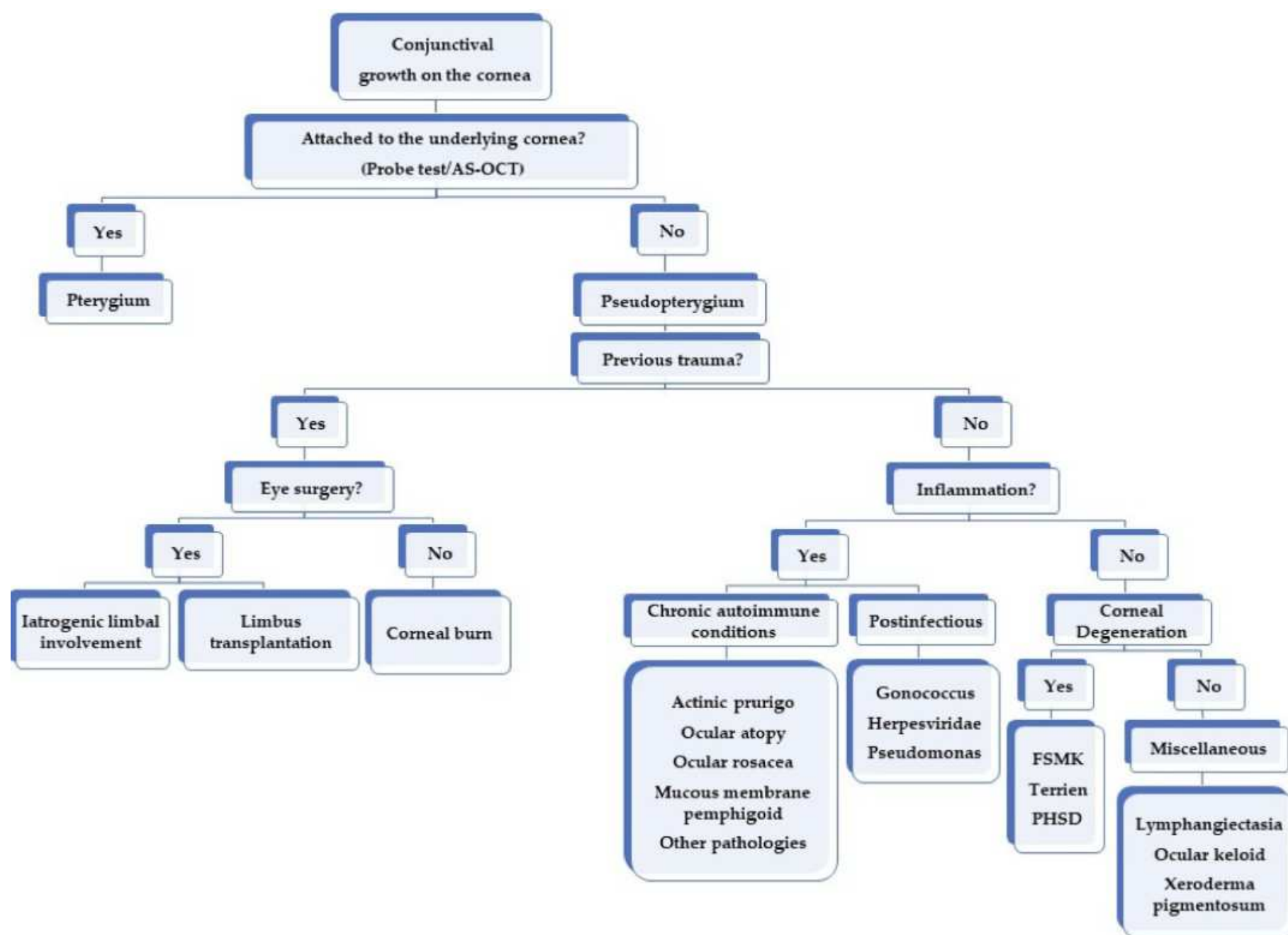
Brachytherapy  
with bandage lens  
+/- topical chemo

# Caso clinico 1

- Pt sent for pterygium excision
- At first visit → clinical suspicion
- AS OCT / confocal BM

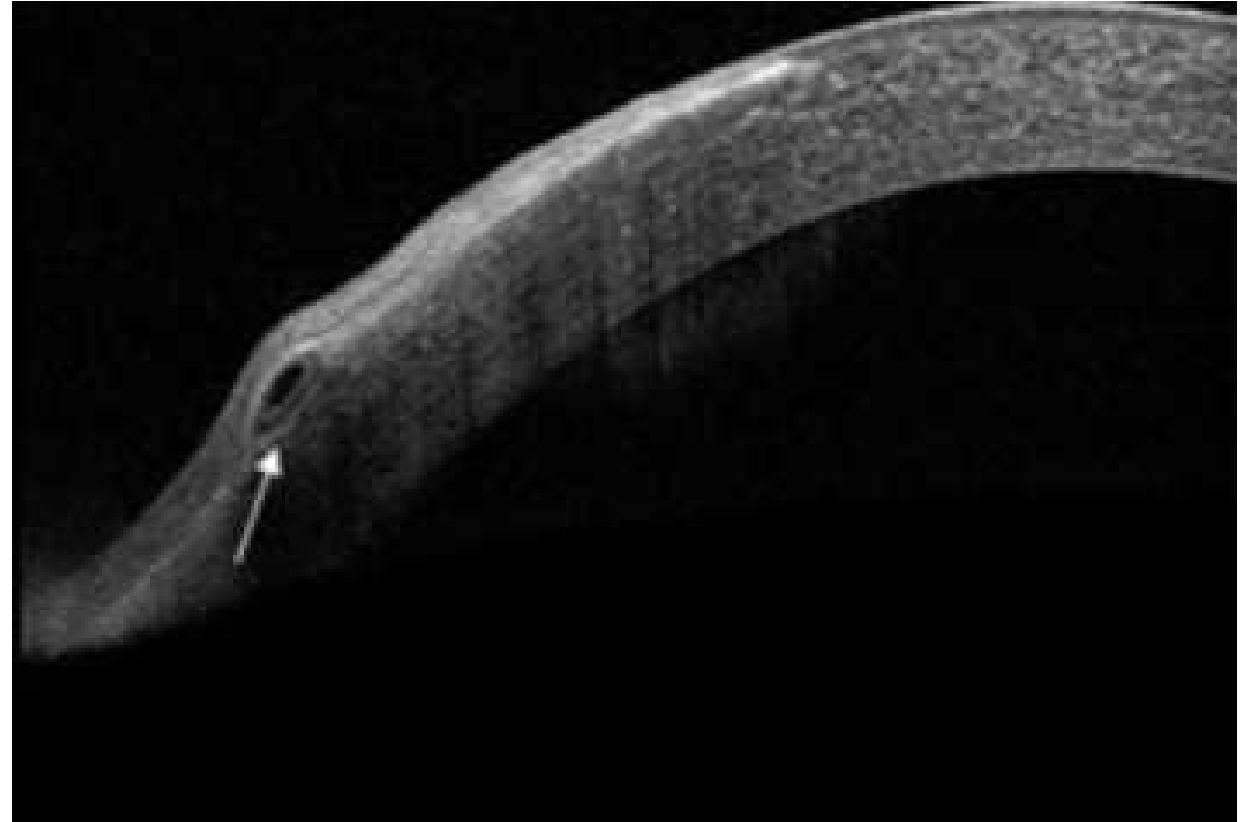






# AS-OCT

- An overgrowing membrane that is not really attached to the underlying cornea. In fact, there is a real plane of cleavage between the pseudopterygium mass and the underlying corneal epithelium. Furthermore, the central point of attachment to the cornea showed invasion below the epithelium and destruction of Bowman's membrane





# TAKE HOME MESSAGES

Not every  
conjunctival/corneal  
overgrowth are  
simple pterigia

Non invasive  
imaging techniques  
are useful in ddx

Excision in the  
presence of a  
suspect/recurrence  
is mandatory



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