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**Small Pupil**
Series

# ADVANCED CATARACT COURSE

#1 Small Pupil Surgical Planning

# 01

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*– Sérgio Canabrava –*

# INDEX

SMALL PUPIL SURGICAL PLANNING

*Sérgio Canabrava*

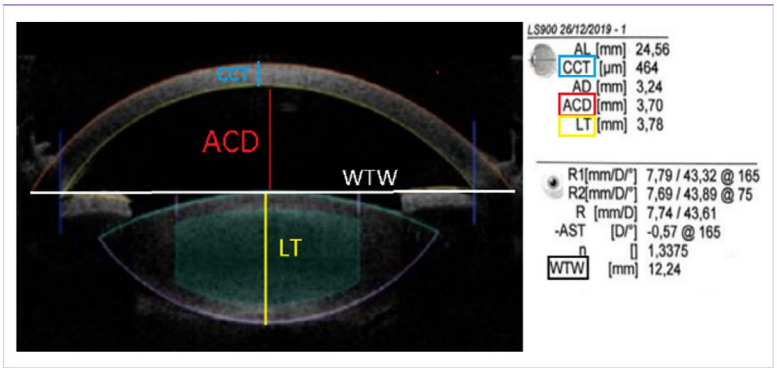
# SMALL PUPIL SURGICAL PLANNING

## 1. INTRODUCTION

In this e-book, we will discuss the most important steps to perform a good surgical planning for patients with small pupils. The steps are: **white-to-white distance, pupil size measurement, anterior chamber depth evaluation, iris anatomy evaluation and associated pathologies.**

## 2. WHITE-TO-WHITE DISTANCE (WTW)

I use the WTW distance measurement in patients with small pupils to decide whether to implant an expander ring or iris retractors.



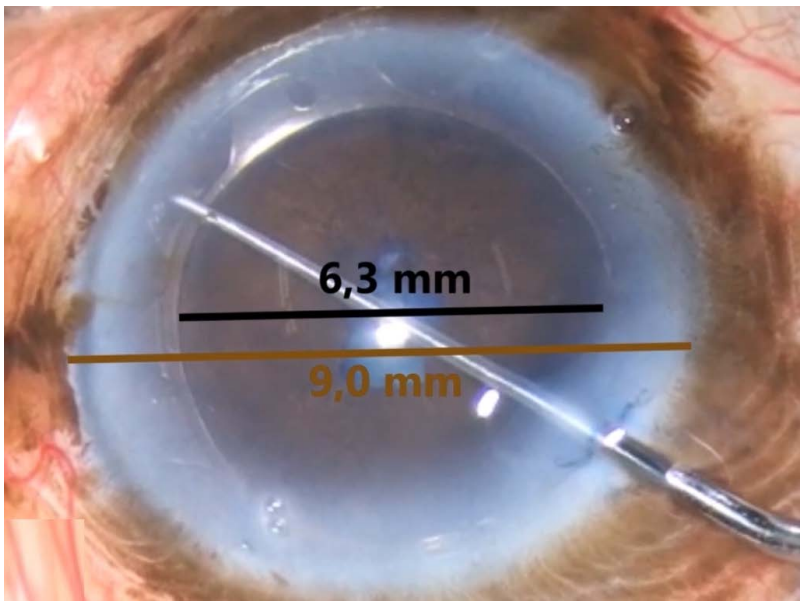

The WTW can easily be measured in optical biometers, as in this example or in the slit lamp.

My cutoff point for deciding between expander rings and iris hooks is 10.5 mm. See the chart below.

| | |
|---|---|
| WW distance > 10.5 mm | Iris expansion rings |
| WW distance < 10.5 mm | Iris hooks |

I use 10.5 mm because virtually all iris expander rings on the market have a total external diameter close to 9.5 mm. Thus, it is difficult to manage them in the anterior chamber in diameters smaller

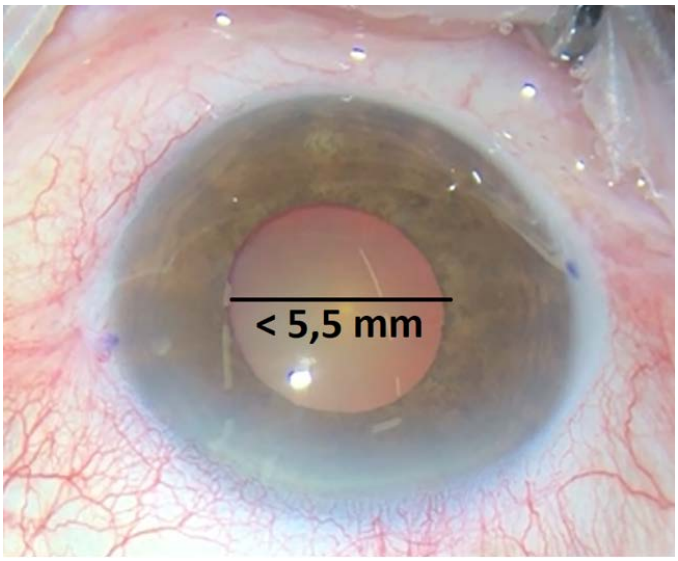
than 10.5 mm. It is important to mention that this cutoff point is a personal reference to avoid intraoperative complications and sometimes you will be able to implant an expander ring in patients with 10.5 mm.




Look at this example of a patient with a 9 mm WTW. Notice how the outside of the Canabrava Ring touch at the camerular angle.

## 3. PUPIL SIZE MEASUREMENT

With regard to pupil size, I use the cutoff point of 5.5 mm to define the use of an iris device. I know it's possible to do phacoemulsification with pupils that are smaller than this, but I like the comfort of having a good view.



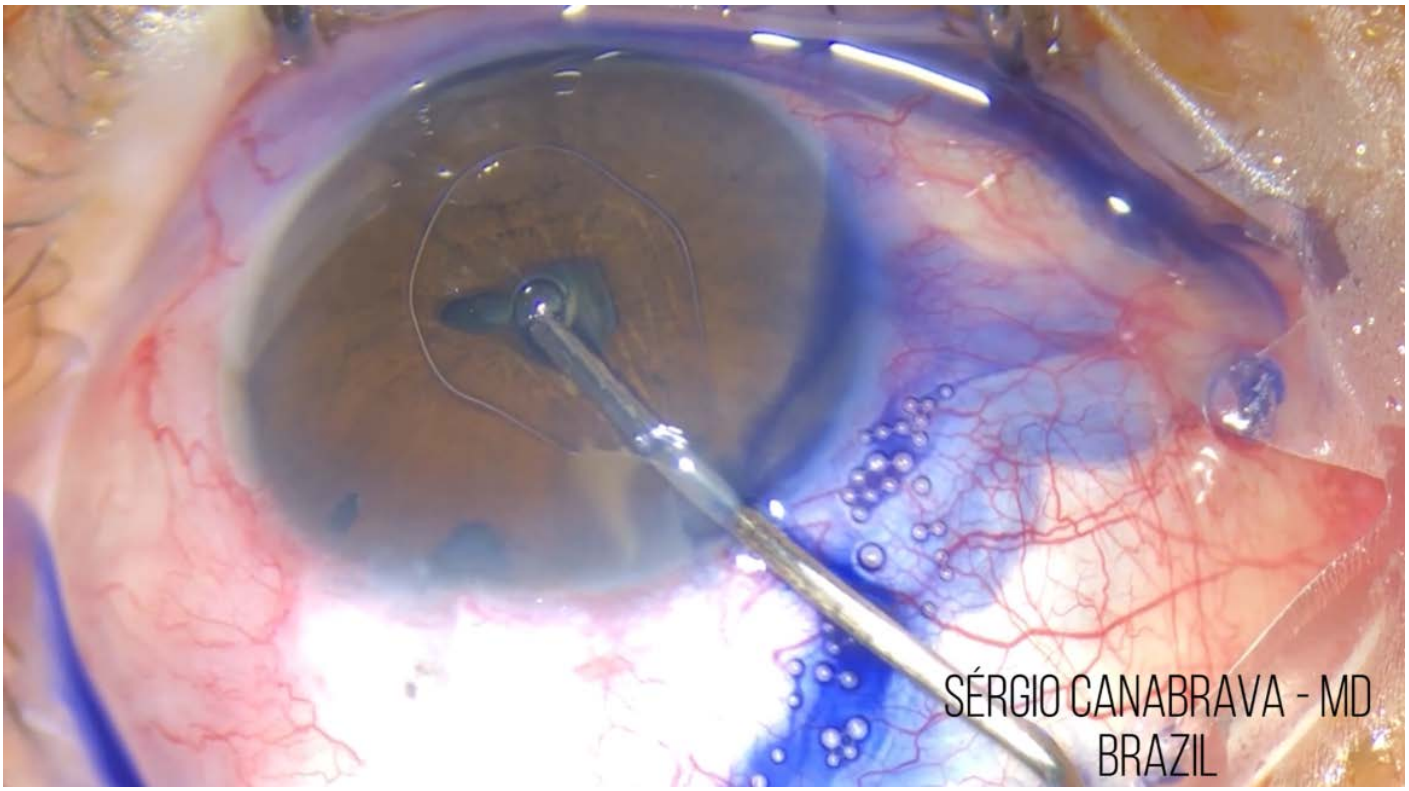

**Iris devices**

**Hooks**

**Rings**

## 4. ANTERIOR CHAMBER DEPTH (ACD) EVALUATION

With regard to the ACD evaluation, I do not define a cutoff number. In these cases, I prefer to define intraoperatively whether it will be possible to implant an iris device or not.

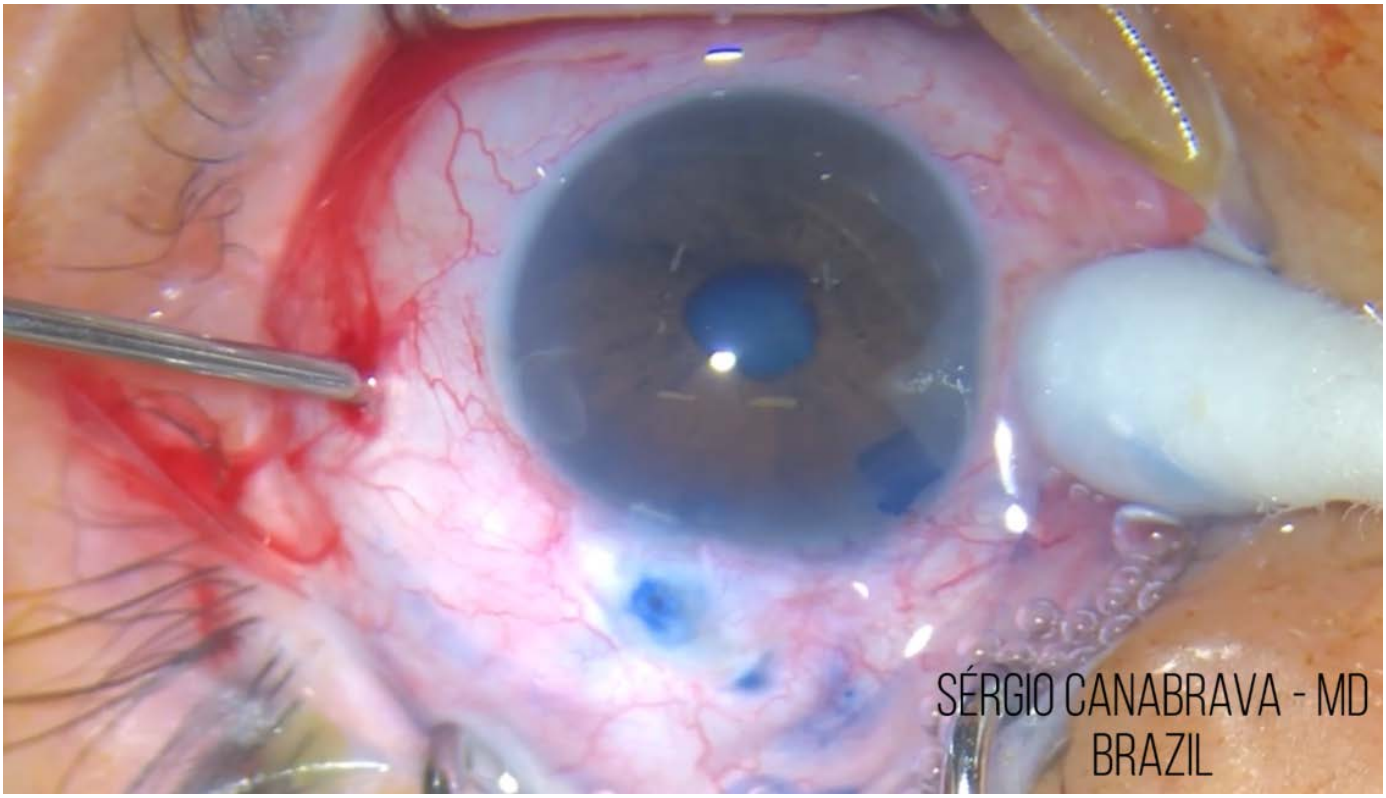



Note in this example that it is not possible to insert a cannula into the anterior chamber to inject trypan blue. Therefore, it will also not be possible to implant any iris device. In these cases, my recommendation is to perform a “blind vitrectomy”.

When performing a “blind vitrectomy”, the vitrectomy tip must be directed towards the posterior pole of the eye, to avoid any contact with the crystalline lens. Parameters must be at low flow rate, low vacuum and no irrigation. It is important to be without irrigation, as the intention is precisely to remove vitreous from the posterior segment so that the anterior chamber is formed.

See in the table below the step by step for the “blind vitrectomy”.

**Blind Vitrectomy**




See the step by step for “blind vitrectomy”:

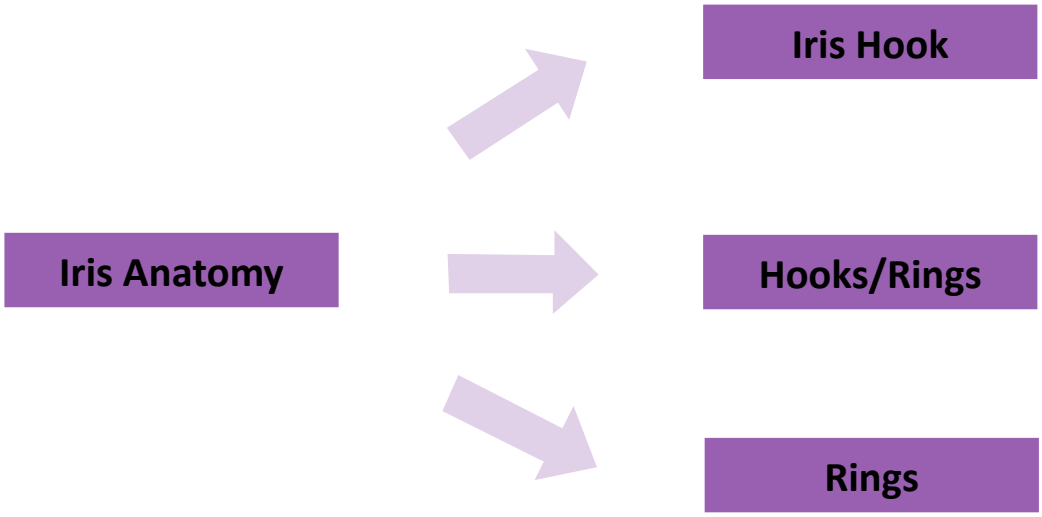
1. 4 mm incision from the limbus, as the patient is phakic
2. The vitrectomy tip should be directed towards the posterior pole of the eye
3. Parameters must be low flow rate, low vacuum and no irrigation. See a parameter example:

   - Vacuum: 200 mmHg
   - Flow: 20 cc/min
   - Cut: 2000

4. Suture the sclerectomy at the end of the surgery.

## 5. IRIS ANATOMY EVALUATION

The next step is to evaluate the anatomy of the iris, as in some cases it will not be possible to implant an expander ring. I always suggest thinking carefully about whether or not to implant an expander ring when the iris anatomy is not fully maintained.




I personally prefer to divide the iris implant devices according to the anatomy of the iris into 3 ways:

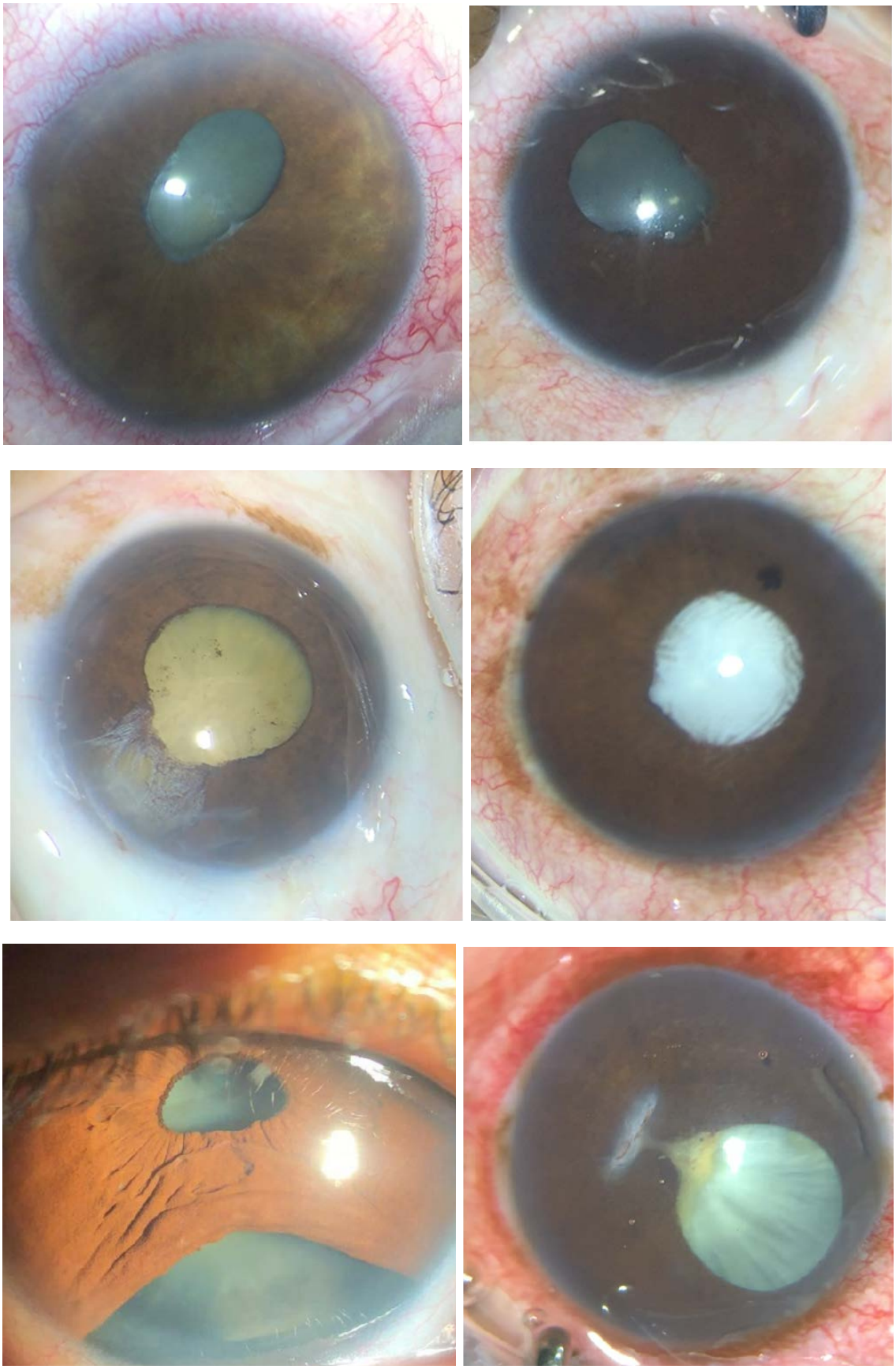
1. Total recommendation for Hook iris
2. Iris in which we can implant hooks or rings
3. Iris in which the preference is for the implantation of rings

See some suggestions:

**Recommendation of Iris Hooks:** Patients with many synechiae and fibrosis between the iris and lens capsule.

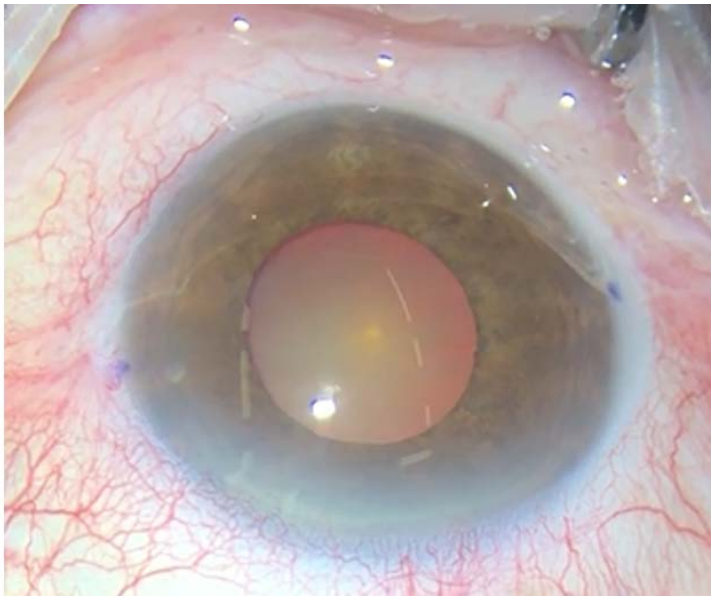
In these cases, it is very difficult to preserve the anatomy of the iris sphincter, which makes it difficult to implant expander rings. Therefore, in these cases, I suggest using iris hooks.

**Iris hooks or iris expansion rings:** In cases where we do not have a large posterior synechiae, fibrosis or a very small pupil,



In these cases, it is possible to evaluate the implantation of iris hooks or expander rings.

**Recommendation of iris expansion rings**



When we have a patient with the anatomy of the iris completely normal, my personal recommendation is the implantation of iris expander rings.

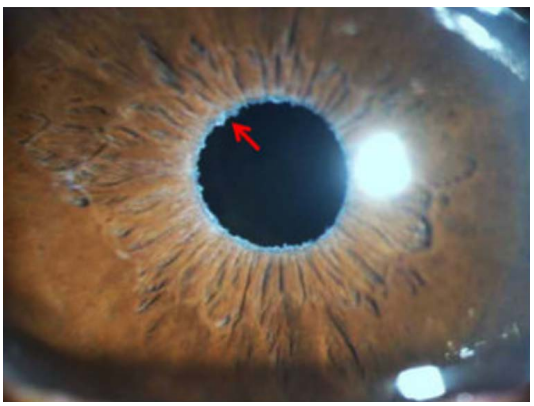
## 6. ASSOCIATED PATHOLOGIES WITH SMALL PUPIL

Finally, always pay attention to pathologies and medications that are associated with small pupils. The main pathologies are uveitis, narrow-angle glaucoma and diabetes.

With regard to medication, the most important is the use of Tamsulosin in patients with prostate disease, as it may predispose to floppy syndrome.

Finally, see the box below with a synopsis on pseudoexfoliation.

**Pseudoexfoliation** → **Subluxation Lens**



If we find a pupil that looks like pseudoexfoliation syndrome, it is important to be aware of the risk of lens subluxation, because in this pathology, in addition to the small pupil, we find zonular weakness. In these cases, implantation of a capsular tension ring is also important.