Management of lens subluxation is one of the most challenging anterior segment situations that the surgeon may encounter starting from clinical evaluation to surgical approach.
Lens Subluxation

Any displacement or malposition of the crystalline lens

- **Minimal to mild:** Lens edge uncovers 0% to 25% of the dilated pupil
- **Moderate:** Lens edge uncovers 25% to 50% of the dilated pupil
- **Severe:** Lens edge uncovers greater than 50% of the pupil
Causes:

- Marfan syndrome / Homocystinuria / Ehlers-Danlos syndrome / Hyperlysinemia / Sulfite oxidase deficiency / Simple primary ectopia lentis / Congenital aniridia syndrome

- Adult onset: Pseudoexfoliation syndrome

- Acquired or iatrogenic: Blunt external trauma

Clinical Evaluation
- Family History
- Relevant Trauma
- Onset and types of visual symptoms:
  (Decrease of visual acuity, Monocular diplopia, Poor near vision)
- Pediatric patients most likely to have metabolic disorders.
- Adult patients mostly will present with Marfan Syndrome.

Ophthalmic Examination
1. Degree of zonular loss
2. Evaluation of subluxated lens edge
3. Comparing between slit lamp and supine position
4. Ultrasound biomicroscopy

- The Degree of Zonular Loss:
  - Focal trauma or congenital defects
  - Systemic conditions such as Marfan or ocular conditions such as PXF
    - Localized zonular compromise
    - Global weakness to the zonular fibers
The Status of The Remaining Fibers

Flat: the remaining zonular fibers should be fairly healthy and strong.

Round: an area of absent or stretched zonular fibers sign that the adjacent intact fibers may not have sufficient strength.

Comparing the position of the crystalline lens with the patient seated at the slitlamp and in the supine position:

No zonular issue:
- No change in position with change of head.

With zonular issue:
- Deepening of the anterior chamber.
- Posterior dislocation of the crystalline lens is seen in the supine position.
Ultrasonic Biomicroscopy (UBM)

- assessing the degree of zonular compromise.
- Simulating the condition of the crystalline lens during the surgical procedure.

- In cases of trauma, the lens capsule should be examined for evidence of damage or puncture
- Prolapsed vitreous
- Increased iop in cases of pxf or trauma (recession)
- Posterior segment for break or tear deal with it first.
Surgical Approach

▶ Planning:
- zonular abnormality is less than 3 contiguous clock hours.
- A posttraumatic eye has a small focal area of dialysis.

No Capsular tension ring needed
With a progressive pathologic state such as PXF, and Marfan Syndrome, zonular problems can be expected to worsen over time.

A CTR should be placed

surgeons should be cautious for greater damage than is readily apparent.
Steps to be considered are:

1. Capsulorrhexis
2. Stabilization of the bag
3. Choice of CTR
4. Phacoemulsification
5. Iol implantation

Courtesy of Prof. Khaled Abdel Rahman (Experts eye Hospital)
Take home message

- A decision of using CTR should be done during examination not in OR.
- Be always prepared for greater damage.
- Place the CTR as late as you can and as early as you must.