



NIGHTMARES IN SQUINT SURGERY

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It is said that the only surgeons who do not have complications are those who do not operate and those that lie.



All surgeries carry risks of **complications**, and there is no way to avoid ever having one. **Strabismus** surgery is no different in this regard. There are methods to reduce the risk of a complication during or after surgery, and these steps should always be taken. When a complication occurs, it is important to **first recognize** it and then manage it appropriately to allow for the best outcome possible.

NIGHTMARES IN SQUINT SURGERY

Anterior Segment Ischemia

Scleral Perforation

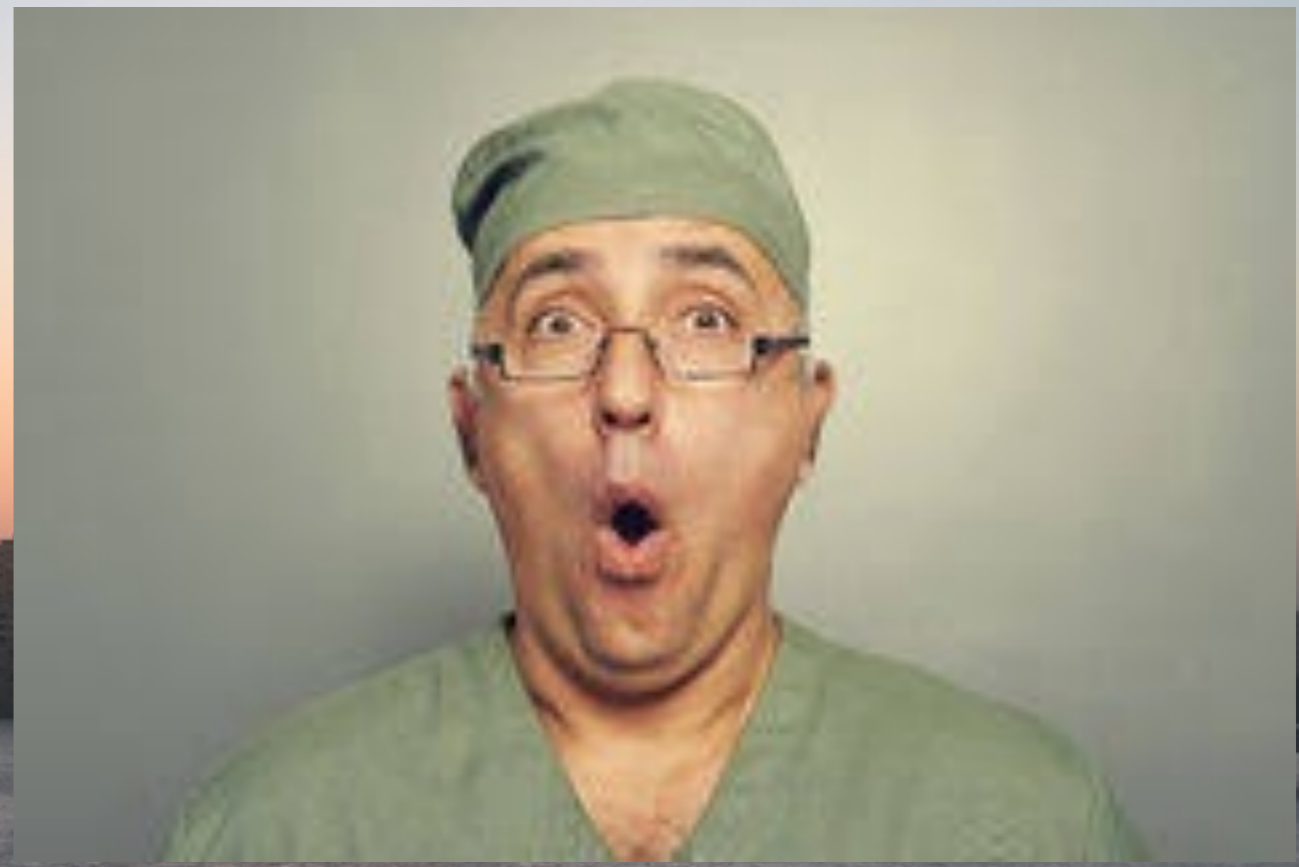
Slipped Muscle and lost Muscle

Anterior Segment Ischemia

is a **rare** but potentially **sight-threatening** complication following strabismus surgery. Risk factors include advanced age, previous rectus muscle surgery and history of a **vasculopathy**, such as diabetes and/or hypertension. Of these risk factors, advanced **age** and the **number of rectus** muscles being operated upon appear to be the most important. Detachment of **three** or **four** rectus muscles at one time carries a significant risk of compromising the vascular supply of the anterior segment in some patients.

Scleral Perforation

The reported incidence of scleral perforation varies widely. Retrospective studies and surveys are likely to greatly underestimate the number of scleral perforations and deep passes that actually occur. One prospective study found the incidence of scleral perforation to be **5.1%**.



**THE MOST FRIGHTENING EVENT IN
STRABISMUS SURGERY IS LOST MUSCLE**



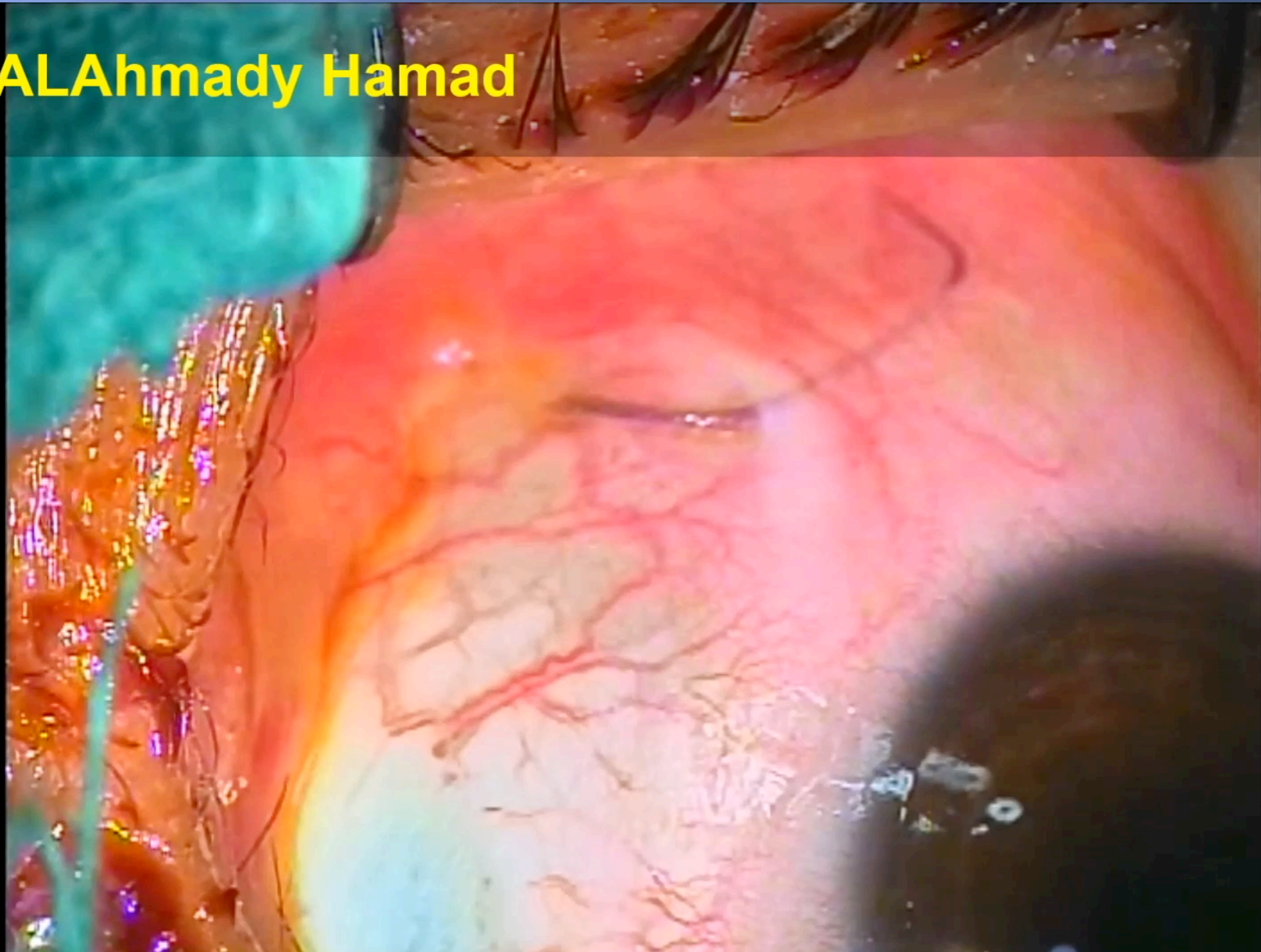
4 years old girl
Alternating concomitant
convergent squinty 30 degree
Emmetropia

Second day post operative
With history of rubbing eyes
lost conjunctival sutures
incomitant divergent squint





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Slipped Muscle

A slipped muscle is a disinserted rectus muscle, which, after reattachment to the globe, retracts posteriorly **within its muscle capsule**, while the empty capsule remains **attached** to the sclera at the intended new insertion site.

A slipped muscle should be differentiated from a **lost muscle** in which **no portion** of the muscle, including its capsule, remains attached to the sclera.

Typically, the patient presents shortly after strabismus surgery with a moderate to **large consecutive** deviation and a small to medium duction deficit.

Although the patient may have a large consecutive deviation, the **duction deficit** may be **less** than would be expected if the muscle was completely detached from the globe. At the time of surgical exploration, the surgeon should anticipate finding the **muscle capsule attached** to the globe at or near the intended location for muscle placement during the previous surgery.

Once the muscle capsule is located, it is carefully followed posteriorly where the muscle/tendon itself will be found attached to muscle capsule. The muscle should be isolated, secured with sutures, and brought back in contact with the globe.

In theory, a slipped muscle should be a **preventable** event. **Full** thickness locking bites which incorporate the muscle, and not just the muscle capsule, should prevent the muscle from slipping within its muscle capsule. If the muscle capsule is thick, making clear identification of the muscle difficult, the anterior portion of the muscle tendon should be **cleaned** of fascial attachments to allow more precise placement of sutures in the muscle tendon.

The lost muscle

Unlike a slipped muscle, when an extraocular muscle is lost, **no** direct attachment remains between the muscle tendon and the globe. The muscle and its capsule **both** retract posteriorly into the orbit. A patient with a lost muscle generally presents within **hours** or **days** after surgery with a **large** consecutive strabismus and an associated large **duction deficit** in contrast to the small duction deficit usually seen with a slipped muscle.

If an extraocular muscle is lost during surgery, it should be retrieved **immediately** if possible. The surgeon should **avoid** purposeless exploration in search of a lost muscle, a practice that can significantly **worsen** the situation, resulting in hemorrhage, fat herniation into the surgical site, and other complications.

If the operating surgeon is **not familiar** with the techniques of exploration to locate a lost extraocular muscle, it is the best to **finish** the intended surgical procedure and **refer** the patient to a skilled strabismus surgeon as soon as possible. Though optimal to make the repair during the initial operation, later repair is far superior to the damage that may occur during aimless exploration

The surgeon should identify the **potential space** within Tenon's capsule through which the muscle has retracted. Repair is optimally carried out through a **large limbal** incision. The basic steps required to locate a lost muscle in this situation involve retraction of the conjunctival flap and Tenon's capsule **anteriorly** to expose the global surface of Tenon's capsule.

A common mistake is to attempt to locate the lost muscle along the surface of the **globe** posteriorly. Rather, the surgeon should recognize that the paths of the extraocular muscles are guided by Tenon's capsule instead of coursing along the globe, the rectus muscles course posteriorly and toward the adjacent orbital wall to enter the pulley mechanism

If the surgeon is unable to locate the lost muscle during the course of the exploration, a decision must be made whether to proceed with alternative treatment, such as a **muscle transposition** procedure, or to defer surgery to another day when further evaluation and other treatment modalities may be available to assist in the repair.

The Best Management is to Avoid

Take home message



If the operating surgeon is not familiar **refer** to a skilled strabismus surgeon as soon as possible. Though optimal to make the repair during the initial operation, **later** repair is far superior to the damage that may occur during aimless exploration

Take home message



If this complication occurredThis is the time for the surgeon to collect his thoughts, draw on his experience and overcome the anxiety or panic inherent in this situation. It is important to understand that the muscle will often retract into Tenon's capsule along the orbital wall, and not “hug” the globe posterior to the equator.



THANK YOU

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