

Adjustable Sutures in Strabismus Surgery

WHAT IS AN ADJUSTABLE SUTURE IN STRABISMUS SURGERY?

Adjustable suture strabismus surgery is a type of eye muscle surgery that allows the surgeon to be able to fine-tune the eye muscle position in the immediate postoperative period. By being able to adjust the muscle position, a surgeon may be able to maximize the probability of successful eye alignment. The adjustable suture strabismus operation is performed in two steps. First, a standard strabismus surgery involving weakening or tightening one or more eye muscles is performed. During the procedure, an adjustable suture or "slip" knot is placed on one or more of the muscle sutures [See figure 1]. Second, eye alignment is checked by the surgeon within a few days of the surgery. If needed, the muscles can be moved or "adjusted" by sliding the adjustable suture knot. With certain techniques, the adjustable stitches need to be trimmed and tied into a permanent position after the final adjustment.

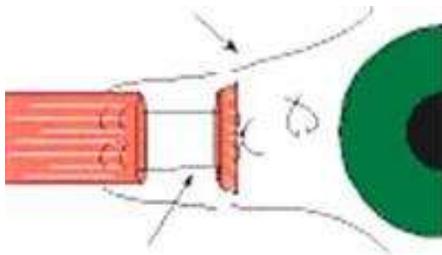


Fig. 1: The operation is performed in two steps. The muscle position on the eye can be changed by sliding a movable knot shortly after the surgery.

WHO CAN HAVE ADJUSTABLE SUTURE SURGERY?

Anyone who can cooperate with the technique can have an adjustable procedure. For the most part, cooperative adults, and occasionally teenagers are good candidates. Those patients who may tolerate this can be checked in the office pre-operatively by simulating the adjustable experience and seeing how the patient reacts. Young children and poorly cooperative patients only tolerate adjustments if further anesthesia is used after the initial surgery.

IS THE PATIENT ASLEEP OR UNDER ANESTHESIA DURING THE SUTURE ADJUSTMENT?

In most cases the patient is awake for the adjustment. Most adults have the muscles adjusted on the same day or the day after surgery. The adjustment may take place in the recovery room shortly after surgery or in the doctor's office later the same day or the next day. With certain techniques, delayed adjustments are also possible. Topical anesthetic drops are used to numb the



eye. Full sedation is avoided so the patient can “focus” with their eyes together as best as possible to help the surgeon determine the optimal alignment.

IS SUTURE ADJUSTMENT PAINFUL?

Most patients describe suture adjustment as annoying or uncomfortable but not necessarily painful. The anesthetic drops help to numb the surface of the eye, but sometimes there is a pressure sensation when the muscle moves.

IS ADJUSTABLE SUTURE SURGERY NEW?

An adjustable suture technique was first described in 1941; popular use became more widespread after 1975 and has evolved since.

WHAT ARE SOME OF THE BENEFITS OF ADJUSTABLE SUTURE SURGERY?

The benefit of adjustable suture surgery is the ability to fine-tune the immediate surgical outcome. This technique, hopefully, leads to reduced re-operation rates and improved surgical success. It is especially useful in more complicated strabismus surgery such as re-operations, trauma or eye movement disorders such as Graves disease (thyroid eye disease).

WHAT ARE THE DISADVANTAGES OF ADJUSTABLE SUTURE SURGERY?

In an adjustable suture surgery, there is a possibility that a muscle can shift its position in the healing process. The muscle is not actually sutured directly to the sclera (wall of the eye) as in standard strabismus surgery. Therefore, eye muscles can both slip back farther than desired or “creep” forward after the adjustment period. Changes in eye alignment, however, can occur during the healing period with adjustable and non-adjustable techniques even when a muscle is sutured directly to the wall of the eye.

WHAT ARE SOME POSSIBLE COMPLICATIONS OF ADJUSTABLE SUTURE SURGERY?

Breakage of the suture or cutting of the knot can occur during an adjustment. If this happens, some patients may need to go back to the operating room to secure the muscle.

Sometimes the muscle won't move forward or backward as desired. This complication is due to healing of the muscle to the sclera, especially for late adjustments, scarred muscles, or muscles that have lost some of their elasticity.



While it is normal to feel a little anxious about the adjustment procedure, the heart rate can slow down in some people when an eye muscle has tension put on it, and some people feel faint and nauseous. These reactions are usually very short lived and not serious or severe.

Sometimes the measurements are variable right after surgery, and it is difficult to know what the “real” measurement is. Blurred vision and discomfort can limit the patient’s ability to cooperate with both the measurements and the adjustment procedure. Your surgeon may have you return for additional visits in the postoperative period. It is best to have a family member bring you to these postoperative visits in case your vision becomes too blurry to drive afterwards.

The adjustable suture knot can cause more redness and discomfort after surgery and takes longer to dissolve than in standard strabismus surgery.

DO ALL STRABISMUS SURGEONS USE ADJUSTABLE SUTURES?

Not all strabismus surgeons use adjustable sutures. This is largely due to the personal preference of your ophthalmologist. Currently there is no data that proves adjustable suture strabismus surgery is better than standard surgical technique.

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