

Eye 2019: One- Are the horizontal muscles spontaneous reattach and adjust after non suture surgery for huge squint?

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Abstract

To evaluate and consider an alternative surgical technique for huge horizontal strabismus of more than fifty-five prism diopter (55> PDs) instead of the traditional technique and to improve that the muscles are spontaneously reattached without suture.

Methods and Material:

A retrospective case-series on forty cases at different hospitals, non-suture surgery was done in both eyes under local anesthesia which is more than 14 years old children. We documented forty cases, thirty-six primary strabismus patients (Exotropia-Esotropia) and only 4 secondary cases were re-operated. All patients were evaluated after surgery clinically with good results, images were taken preoperatively and postoperatively. The follow-up visit was conducted after the first month and then every 6 months for up to 3 years.

By coincidence twenty years ago I lost a patient with loose adjustable suture after the recession of both medial rectus surgeries for ten days and He came back with good ocular motility and there was no need to readjust the suture !!...then. I observed ten cases of the loose adjustable suture during the first week of surgery (a loose adjustable suture is a loop created from the disinserted muscle to the original insertion of it out of conjunctival incision margins).

Introduction:

Huge squint is a grey zone for most surgeons and there are no clear surgical rules as to which type of technique you may use for the squint surgery, and frequently re-operation is the option when operations fail many times. The protocol of the classical strabismus surgery is determined mostly by changing the mechanical actions of the horizontal muscles by resections or recessions and on how many muscles you operated. Far from this concept the check ligaments and intermuscular membrane play a role, or there is a neurological supranuclear pathway that controls the ocular muscle movement including the pathway in the brainstem and cerebellum and their connection to utricles and saccules of the inner ear and visual cortex and posterior cingulate cortex. Indication indicates a cause for strabismus may lie with the input providing to the visual cortex. This allows for strabismus to happen without the direct impairment of any cranial nerves (or) extraocular muscles.

All patients had an oral and written agreement and the patient's privacy was preserved. The surgical technique was as follows: under local anesthesia drops and subconjunctival (lidocaine 2%) injection 0.5 ml to 1ml with adrenaline near the muscle, (for children light general anesthesia were also done). We injected all patients with Atropine by an anesthesiologist through Intramuscular (IM) or intravenous (IV) 1 mL/0.5 mg, eight (8 mm) conjunctival and tenon's wound incision was done over the insertion of the muscle, and by muscle hook losing the muscle was done from the eyeball carefully than by the Mosquito clamps held the muscle prior to severing to avoid bleeding, full myectomy 2 mm from insertion was done no cutting of check ligament, no suture in the situation. I asked the patient to move his eyes to left and right after every step of surgery to estimate and to see whether he need tractional suture or need some dissection (not more than two mm) (traction suture is U shape 5-0 suture from the limbus to the outer canthal area in the opposite direction of the strabismus was performed for one or two weeks and for one or two muscle as needed to adjust the final position of the eye), the conjunctival incision is closed by bipolar diathermy. Orbital CT scan was performed within hours after the surgery to evaluate the adjustment of the muscles and confirm that it is in place and did not slip and that was due to saving the check ligament and the intermuscular membrane and tenon capsule, and also there was no resection to the antagonist's muscles. Essentially, I used the Krinsky test to calculate the degree of strabismus, and some extreme cases by the Hirschberg test. The number of each case of those made, the type of strabismus, the preoperational degree, the procedure and other techniques, outcome, and the distance of resection.

Results:

38 (95%) out of 40 cases, were successful and less than 10 PD with good ocular motility within one month. We found that under-correction only in 2 cases (5%). No overcorrection, one case re-operated (because she lost tractional suture early and became orthotropic. The other patient refused reoperation. The other procedure tractional suture (62%) was done, with no major complications during or after the surgeries, no persistent diplopia in the central 30° field, outcomes were documented by figures and video.

Discussion:

The main point is to say that the ocular muscles are reattaching spontaneously after free myectomy, I found a similar like myectomy technique has been done in 1983 by Prof. Caleb Gonzalez of bilateral sixth nerve palsy with strabismus fixus,

disinsertion, and myectomy of OU medial rectus and released it in the orbit without sutures and also many others in last two century (18th - 19th) did like this technique and I found that too many American doctors were doing like this procedure in the 19-century, as Samuel David Gross, and James Bolton, and they published it with good results. Also, an important study (myectomy of large-angle strabismus in patients with Graves' ophthalmopathy) is done by dr. Liao SL and others at -Eye (Lond) Jur. 2017- and they said in conclusion that "complete rectus muscle myectomy technique is effective and predictable" also don't forget that the inferior oblique is attached again to the sclera after myectomy. Also, on 9/20/2018 the "journal of pediatric ophthalmology and strabismus" published a nice original article in post-natal monkeys about "spontaneous reattachment of the medial rectus after free tenotomy" if we considered our success rate 98% While the best rate ranges from 68% to 85% when we were using the traditional techniques, residual or recurrent strabismus was a common problem found after large-angle strabismus operations.

Conclusion:

This technique is remarkable in our ophthalmic field because it did not interrupt the natural integrity of the normal ocular motility, it is simpler, with a high success rate, requires a shorter time, under local anesthesia for adult, without suturing, much more efficient, with lesser complications, and shorter learning curve, the horizontal muscles spontaneous reattach and adjust after surgery.

This work is partly presented at [World Eye and Vision Congress on December 09-10, 2019](#)