

Commentary: Adjustable strabismus surgery

The earliest description of adjustable strabismus surgery was given by Beilschowsky and later popularized by Jampolsky in mid-1970s.^[1] In the last few decades, despite the absence of strong evidence, especially in primary squint surgery, adjustable technique has been increasingly adopted by ophthalmologists to improve the surgical outcomes in adult strabismus. Accepted indications for adjustable sutures are reoperations, muscle pathology such as thyroid ophthalmopathy, and innervational abnormalities. However, ambiguity lingers upon its use in pediatric cases. This is attributed to factors such as poor postoperative cooperation, need for anesthesia during adjustment, additional cost, and increased operating room time. There are few retrospective studies that have evaluated the outcome of adjustable technique in children with success rate ranging from 74 to 88%.^[2-4] Conflicting reports exist in literature on comparing the results of adjustable versus nonadjustable techniques in children.^[5,6]

There are two basic types of muscle reattachment techniques in adjustable strabismus surgery: bowtie technique where the muscle sutures are tied in a bowtie fashion and sliding noose technique where a separate suture is tied around the two muscle sutures to create a noose. Main disadvantage of both the techniques is that a second stage intervention becomes mandatory to trim and bury the sutures even if adjustment is not needed. To overcome this limitation, "short tag noose technique" was described by Hunter *et al.*,^[7] which is similar to the sliding noose technique but has short tags of muscle sutures and noose that can be easily tucked under the conjunctiva. This is especially useful in children where an additional anesthetic procedure can be avoided.

On similar lines, Engel and Rousta described the use of additional scleral pass of the muscle sutures and a slip knot in children <14 years. Using this technique, the need for second stage intervention was reduced to 36%.^[2] Adjustment is usually timed within first 24 hours of surgery.

In this issue Rajamani, *et al.*^[8] report the results of similar adjustable technique but with delayed adjustment performed on the third postoperative day in children <12 years. According to the authors, as they buried sutures under the conjunctiva, they needed to intervene in only 22% children who required some form of adjustment. Moreover, they delayed the intervention to the third postoperative day which allowed time for sensory adaptation, better patient cooperation, and accurate assessment of deviation.

Complications associated with the pediatric adjustable strabismus surgery are few – slipped muscle, difficulty in adjustment, oculocardiac reflex, bradycardia, nausea, and vomiting. Most of these complications can be avoided by aptly timing the adjustment and use of age-appropriate anesthesia.

Thus, based on the available literature, adjustable suture techniques seem to be an increasingly acceptable option in the management primary as well as recurrent strabismus in children that can improve surgical outcomes with only modest increase in the need for some form of anesthesia.

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