Letters to the Editors

A Novel Preoperative Planning Approach for Strabismus Surgery

To the Editors:

Clinical success for strabismus surgery requires utmost care in the surgical technique, which, although crucial, is of secondary importance to the surgical planning. To carefully plan for strabismus surgery, the surgeon must take into consideration many factors. Tracking all relevant information can be confusing. This is particularly true in complex patients or those having reoperations. However, it is imperative to assess all of these variables before, during, and after surgery.

As an example, consider the case of a hypothetical but not unusual 65-year-old patient with a right hypertropia and bothersome vertical diplopia due to thyroid eye disease with previous orbital decompressions. Her ocular surgical history includes bimedial recession of 4 mm with infraplace, recession of the left inferior rectus, posterior fixation of the right inferior rectus, three injections of botulinum toxin to the left inferior rectus to temporize diplopia prior to stabilization following surgical intervention, bilateral refractive surgeries, two glaucoma surgeries (glaucoma drainage device in the right eye and trabeculectomy in the left eye), and recent cataract surgeries. Aside from detailed refractive status and alignment measurements not discussed here, taking into consideration such a complex surgical history can be challenging.

To this end, over the years a technique has been developed by the senior staff, fellows, and residents of the Ratner Children’s Eye Center of the Shiley Eye Institute at the University of California, San Diego, in which the relevant information for surgical decision making is presented to the surgeon in a straightforward manner on a one-page template shown in Figure A (available in the online version of this article).

The technique emphasizes visual simplicity and helps even the most complicated strabismus cases be more visually apparent while ensuring that all relevant data are presented. The template includes the pertinent systemic and ophthalmologic information. Of most importance is a simplified illustration of the expected location of the extraocular muscles if a strabismus surgery (or any other ocular/periocular surgery) was previously performed using a special “code” for each surgical intervention shown hand-drawn as it would be in a clinical setting (Figures B-C, available in the online version of this article, with Figure Ca being the template of the patient discussed above). Additionally, the “sensory” component of a strabismus evaluation is part of the preoperative worksheet. Then the surgical plan or plans are added. Sometimes this will include an “if/then” algorithm in case a predictable or unexpected variation in the surgical process is found.

In general, strabismus surgeons have trained and become visual learners based on the repetition of examining patients and performing eye surgery. This preoperative planning worksheet takes advantage of this visualization skill, allowing the patterns of strabismus to be “seen” on the page and visualizing previous surgery.

Recently it was found that the self-reported error rate in strabismus surgery is 1 in 2,506 cases.1 As suggested by the authors, strabismus surgeons should adopt more error-prevention strategies. We feel that displaying the surgical plan as shown here in the operating room serves that purpose. Although this might be unnecessary in straightforward cases with no surgical history and low complexity, it simplifies even the most complicated cases and improves surgical decision making.

REFERENCE


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The authors have no financial or proprietary interest in the materials presented herein.

The authors thank the past pediatric fellows at the Ratner Children’s Eye Center of the Shiley Eye Institute at the University of California, San Diego, for their contribution to the current surgical planning worksheet: Lydia Banuelos, Suzie Nemmers, Jean Shein, Leslie Baker, Chantal Boisvert, Anya Trumler, Salina Khayati, Christopher O’Brien, Brenda Breidenstein, Kweku Grant-Acquah, Rick Ventura, Sunil Vasani, Marilther Sangalang-Chuaivan, Zhengyu Wang, Cintia Gomi, Fay Cruz, Ronald Reyna, Adell Ba, Mahmoud El Sabry, and Preeti Patil.

doi:10.3928/01913913-20150929-19
Figure A. An empty surgical planning sheet for strabismus surgery from the Ratner Children’s Eye Center of the Shiley Eye Institute at the University of California, San Diego.
Figure B. Suggested illustrations representing the state of the eye before strabismus surgery. All illustrations represent the right eye.
Figure C. Examples of preoperative surgical history templates of three different patients. (a) Bilateral orbital decompression surgeries, bimedial recession of 4 mm with infraplacement of both medial rectii, posterior fixation of the right inferior rectus, three injections of botulinum toxin to the left inferior rectus, bilateral refractive surgery, two glaucoma surgeries (glaucoma drainage device in the right eye and trabeculectomy in the left eye), and bilateral cataract surgery. (b) Bilateral cataract surgeries, right inferior rectus recession of 5 mm, and two botulinum toxin injections, left decompression surgery, left lateral rectus resection of 7 mm, and left medial rectus recession of 8 mm. (c) Left inferior oblique Z-myotomy and left lateral rectus central tenotomy.