FULL AUTOMATED STRABISMUS SURGERY MANAGEMENT TRIAL

El Amine Kahouadji.md.Phd
pediatrics hospital –Oran- ALGERIA
The diagnosis and assessment of strabismic deviation based on the study of pupillary reflections and the use of prism with a significant margin of error up to 25% so not enough precise.

Shen E in a 2011 study shows that the risk of error in the management of strabismus is 6 times higher for surgeons who have less than 1,500 squint interventions to their active (Errors in strabismus surgery. JAMA Ophthalmol. 2013 Jan;131(1):75-9).

De Jongh E & all notice a variability of 4Δ in the examination of squint deviation for the same ophthalmologist and a difference of about 10Δ between several surgeon for the same patient (Inter-examiner variability and agreement of the alternate prism cover test (APCT) measurements of strabismus performed by 4 examiners. Strabismus. 2014 Dec;22(4):158-66. )

In our current practice of strabology we notice that almost 95% of the examined or operated patients do not have any difficulties in assessment and management apart cases like micro strabismus, high myopia, Graves, restrictive syndrome post traumatic and post retinal detachment surgery.

Using new technologies help to improve the level quality of assessment with computerized devices and the management of strabismus and the surgery result outcome with the helpful 3d softwares.

No financial disclosure
The assessment of the ocular deviation in strabismus can be difficult, especially for a young inexperienced ophthalmologist as like as try to seek a satellite signal to a satellite dish without any good direction to follow.

GAZELAB

A ccd camera in each side of the glasses device with a special software can give us a precise angle of deviation of the squint in all position especially when we have a complex deviation (horizontal+ vertical and toric)

3d software to help and advice a surgeon for the result outcome and the value of the surgery protocol
Small deviation in a case of 18 years old girl 8 diopters horizontal and 4° in vertical not easy to evaluate

- Reoperation (Diplopia due to muscle hemorrhage)
  20° de horizontal deviation & 20° vertical

15° de deviation horizontal et 04° vertical 2 weeks after reoperation

11° de deviation horizontal & 01° vertical 4 weeks after reoperation
Our retrospective series of 20 patients from 3 to 18 years old with strabismus recruited at our consultation unit in the Canastel pediatrics Hospital (Oran-Algeria) from May 2014 to November 2014.

We used a standard examination evaluation of ocular deviation by Krimsky prisms then comparing it with using a computer assisted device (GAZELAB). The calculation of the strabismus surgery was done preoperatively compared surgical assays using classical charts and a trial with a specialized 3d software (SEE ++) to give us an advice in preoperative time and it’s very helpful to modify our surgery protocol. The 20 patients were divided with 14 girls (70%) and 6 boys (30%), 16 convergent strabismus (80%), 3 divergent (15%), 1 hyperopia (5%).
Without much gap between girls and boys, with 79.6% of esotropia, 18% divergent strabismus, and 2.4% paralytic strabismus (sixth nerve palsy).

The margin of error is between 30 and 40% for strabismus under 20 diopters overestimation by conventional methods in comparison with the Gazelab device and just under 15% for up to 45 diopters deviation.

• A success rate of up to 85% by orthophoria with just one case of reoperation in our study,

• 10% scheduled reoperation for strabismus more than 50 diopters deviation

• 5% had over or under corrected especially in deep unilateral amblyopia.
The apprehension of postoperative outcome or the possibility of diplopia despite a negative preoperative test put off more than a surgeon especially early in their careers is why using technology in the diagnosis process and predictability of results is very significant given that the rate of reoperation for strabismus to the United States reached 50% in comparison. In our study, one case of reoperation (5%).

The margin of error in the appreciation of strabismic deviation can increase to 25% with 20% for parallax errors and lack of prisms practice assessment and 5% with the superposition of prisms when the deviation is higher than 50Δ.

All our patients are rehabilitated quickly after their surgery with a short convalescence 48 hours by micro incision surgery.
Strabismus is a common condition in children need to know to diagnose and properly manage because it follows the aesthetic problems, negative psychological and binocular visual function disrupted with the risk of amblyopia.

The management of strabismus is not a disease to be underestimated but rather to encourage and develop all means necessary to optimize it for better reproducibility of surgical procedures related to specific indications. We have to improve our way of working in strabismology in terms of surgery as well as cataract, which took every time advantage of the newest technological advances.

Next step will be miss with use of plasma blade.