

Incomitant strabismus correction through combined resection and recession of the same rectus muscle

Correção de estrabismo incomitante por cirurgia de recuo-ressecção combinadas do mesmo músculo reto

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ABSTRACT

The present study reports a case of a patient, 38-year-old man, with incomitant strabismus and consequent diplopia, submitted to debilitating surgery with recession and strengthening resection of the right inferior rectus muscle. This surgical technique aims to correct the deviation in its greater incomitence position, without impairing the ocular alignment in the primary position of the eye (PPO). The satisfactory result, in agreement with data of current literature, contributes to make this technique an option in the treatment of challenging incomitant strabismus.

Keywords: Exotropia/surgery; Eye movements; Oculomotor muscles/surgery; Ophthalmologic surgical procedures; Case reports

RESUMO

O presente trabalho relata o caso de um paciente, masculino, 38 anos, com estrabismo incomitante e consequente diplopia, submetido à cirurgia debilitadora com recuo e fortalecimento com ressecção do músculo reto inferior direito. O objetivo desta técnica cirúrgica é a correção do desvio em sua posição de maior incomitância, sem prejudicar o alinhamento ocular na posição primária do olhar (PPO). O resultado satisfatório, em concordância com os dados da literatura atual, contribui para fazer desta técnica uma opção no tratamento de estrabismos incomitantes de difícil manejo.

Descritores: Esotropia/cirurgia; Movimentos oculares; Músculos oculomotores/cirurgia; Procedimentos cirúrgicos oftalmológicos; Relatos de casos

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INTRODUCTION

Surgical treatment of incomitant strabismus remains a challenge for specialists. The main causes of horizontal misalignments are muscle paresis, ocular restraints, dissociated horizontal divergence, the relation accommodative convergence / accommodation (AC / A), or previous surgeries.⁽¹⁾ Few surgical techniques were proposed for the correction of such, and eventually the results are unsatisfactory - presenting ipsilateral hypocorrection to the previously affected muscle and hypercorrection in the contralateral field.⁽²⁾

Patients with incoming strabismus may present diplopia in only a few positions of the glance, thus presenting different complaints. For example, patients with diplopia in lateroversions may have difficulty in driving or reading infraversion.⁽³⁾

Traditionally these patients have undergone Faden's surgery (retroequatorial myoscleroplexy), proposed by Cuppers in 1976, which consists of a fixation of the extraocular muscle in the sclera posterior to the equator without having the deinsertion of the sclera.^(4,5) Faden's surgery aims at decreasing the maximal rotation of the eye by fixing the posterior muscle to the equator, thus creating a new insertion for the rotation action of the muscle. With minimal or no influence on the other positions other than the action of this muscle.^(4,5)

Although effective, it has some limitations such as alteration of the ocular alignment in the primary position of the glance, which normally presents no deviation. In addition, it cannot be performed with adjustable suture in the immediate intraoperative or postoperative period, and does not have good results for the lateral rectus muscle, probably because of the great arc of contact of this muscle, and also because of its proximity to the insertion of the inferior oblique muscle and of the macular region. It is technically difficult due to the very posterior access required, and mainly in previously operated cases, besides being able to cause hemorrhage of the posterior suture.⁽⁶⁾

Scott described in 1994 the "Faden-adjustable surgery" without posterior suture, which combined resection and retraction of the same muscle with a suture in a rein, facilitating the technique and enabling postoperative adjustment for the alignment of the primary position of the glance. He described the technique in horizontal straights of three patients with good results.⁽⁷⁾

The objective of the present study is to report the case of a 38-year-old patient previously operated on because of a IV cranial nerve palsy, and who currently presents diplopia only at the time of reading in infraversion. He underwent surgery for the correction of incoming strabismus through the technique of retraction and resection of the same extraocular muscle.

CASE REPORT

On May 20, 2013, a 38-year patient complaint of diplopia to look down for 4 months. He was treating sinusitis for 15 days, with pain in the left eye on palpation and movement of the eyes. Brain tomography was performed, and the results were normal. At the moment, he was prescribed a Fresnel prism with a base of 10 prismatic diopter (PD) in the right eye.

In a new ophthalmological evaluation in December 2013, about six months after using the prism, he presented

- **Visual acuity: 1.0 bilateral**
- **Prism and Cover: Close - HTE 6DP in PPO**
- **Far - HTE 10DP in PPO**
- **Binocular fixation: he prefers the right eye**
- **Diagnostic Positions:**

No movement E/D (*)  HTE/D 14 ET4

HTE 2DP	Orthotropy	Orthotropy
ET 4DP HTE 10DP	HTE 10DP	HTE 5DP
ET 6DP HTE 20DP	ET 8DP HTE 20DP	HTE 14DP

- **Versions: no changes in the right eye**
Hypofunction of the superior oblique muscle of the left eye (-2)
- **Ductions: no changes**
- **Sensory evaluation: Fusion in supraversion and levosupraversion**

Diagnostic hypothesis: Paresis of IV cranial nerve to the left.

On April 4, 2014, a surgery was performed to correct strabismus through reefing of the superior oblique muscle of the left eye of 7 mm. Postoperative orthoptic measures:

- **Visual acuity: 1.0 bilateral**
- **Prism and Cover: no movement for near and far sight in primary position of the glance**
- **Binocular fixation: he prefers the right eye**
- **Diagnostic Positions:**

No movement E/D(*)  H(T)E/D4

No movement	No movement	No movement
No movement	No movement	No movement
HTE /D9 ET	HTE /D6 ET7	HTE/D4ET5

- **Versions: no changes in the right eye**
Hypofunction of the superior oblique muscle of the left eye (-1)
- **Ductions: no changes**
- **Sensory evaluation: Fusion in all positions of the look, except in extreme infraversion.**
Stereo 40" of arc.

On June 03, 2014 he returned for evaluation with no complaints. Refraction: RE cil -3.25 to 180 / LE cil -3.00 to 180. Bilateral visual acuity 20/20.

At the medical appointment on October 20, 2016 occasionally he complained of diplopia and lowered his right eye after some reading time.

In 2017, he started his follow up in Rio de Janeiro, referring to diplopia while looking down, disturbing the reading, without complaint in the primary position of the glance. (Figure 1)

- **Diagnostic Positions:**

Ortho		HTE/D30
Orthotropy	Orthotropy	Orthotropy
Orthotropy	Orthotropy	Orthotropy
HTE 30DP	ET 10DP HTE 30 DP	ET10DP HTE>30DP

- **Maddox: extortion 5° LE**
- **Versions: hypofunction of the left superior oblique muscle (-3)**

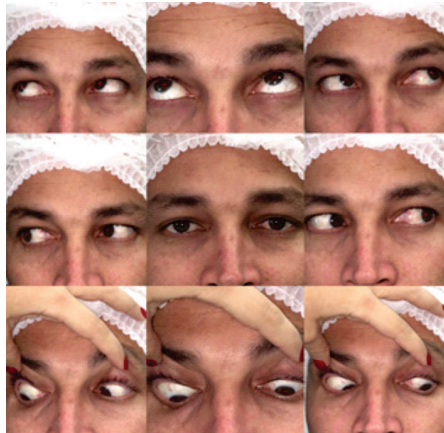


Figure 1: Diagnostic positions in preoperative consultation in 2017.

Patient was then submitted to 7 mm recoil and 5 mm resection of the right lower rectus muscle with sclera suture in reins. He evolved postoperatively with improvement of the complaint of diplopia in infraversion, improving the reading quality and without decompensation of the ocular alignment in the primary position of the eye. (Figure 2)



Figure 2: One postoperative week showing ocular alignment in POP.

DISCUSSION

Surgery using the technique of recoil and resection of the same muscle initially proposed by Scott has become a safe alternative for cases of incomitant, horizontal and vertical strabismus. It aims to weaken the muscle in its field of action without any significant change in the primary position of the glance.⁽⁷⁾

The patient undergoing this procedure had difficulty reading because diplopia occurred only in infraversion, with no complaints in other positions. The technique was modified by Bock et al., performing a greater retreat than the inferior rectus muscle resection, based on data found in the literature following these measures.⁽⁸⁾

The postoperative result is in agreement with what has already been described in the literature.^(2,8-10)

Although promising, data are still lacking in a larger number of patients and with a longer-term segment evaluating the stability of this technique and the need for reoperation in the patients submitted to it.

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