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The transposition of the superior and inferior recti muscles combined with the intraoperative application of botulinum toxin in paralytic strabismus can have a favorable postoperative effect

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PURPOSE The purpose of this paper is to present the method of vertical recti muscle transposition with intraoperative injection of botulinum toxin in the ipsilateral medial rectus in the treatment of paralytic strabismus after chronic paresis of the sixth cranial nerve.
METHODS In severe paresis of the sixth cranial nerve, transpositions of the upper and lower rectus muscles against the paralytic lateral rectus have been particularly useful. There are different techniques for performing these transpositions, such as the Hummelscheim, O'Connor, Foster, Jensen, or Nishida technique. The first four techniques mentioned above have an increased risk of anterior segment ischemia. The etiology of sixth cranial nerve paresis is diverse: traumatic, congenital, neoplastic, vascular, and idiopathic. The abduction deficit was evaluated by quarters of duction to the primary line and from the primary line (from -4 to +4; in this case, 0 is the primary position). Preoperatively, we always perform a passive duction test, which in our case ruled out restriction of the extraocular muscles.
Here, we present a case of a patient with long-term left-sided chronic paresis of the sixth cranial nerve. The etiology of the paresis is unknown. At the first examination, the patient said that at least 4 years ago, her left eye started turning inward. Upon examination, we found that the abduction deficit was between -1 and 0, i.e., the paralytic eye did not cross the primary line. The patient underwent an MRI and CT of the head and diagnostic tests such as heart ultrasound and carotid vessels Doppler ultrasound to rule out any other causative factors for the abducens paresis. Her thyroid hormones were normal, and she had slight hypercholesterolemia, which she had under control with diet. Myasthenia was excluded. Duane syndrome was less probable because she had normal eye movements and no squint before 4 years.
RESULTS The patient's preoperative objective squint angle was +34 . She had no fusion or stereo. The left eye was suppressed or amblyopic. Optic media were clear, and the fundi were unremarkable. The best corrected visual acuity on the right was 1,0 cc and on the left 0,3 cc. Due to the risk of ischemia of the anterior segment, we could move only two extraocular muscles at the same time, and the medial rectus, which was in contracture, was weakened with botulinum toxin type A. We administered 10 IU of botulinum toxin into the left medial rectus muscle. 3 months postoperatively, the squint angle was -15 ; 6 months postoperatively -8 and 9 months postoperatively -1 . The patient had no fusion or stereo.
CONCLUSION Many muscle transposition techniques have been described, but we must be careful not to cause ischemia of the anterior segment with these procedures. Applying botulinum toxin in the muscle we want to weaken and not surgically move can be very useful in this case.

Transpozicija zgornjega in spodnjega rektusa v kombinaciji z intraoperativno aplikacijo botulinskega toksina pri paralitičnem strabizmu ima lahko močan in ugoden pooperativni učinek

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NAMEN prispevka je predstaviti metodo transpozicije navpičnih rektusov z intraoperativno aplikacijo botulin toksina A v ipsilateralni medialni rektus pri zdravljenju paralitičnega strabizma po kronični parezi šestega možganskega živca.
METODE Pri težkih parezah šestega možganskega živca so se izkazale za koristne operativne transpozicije zgornjega in spodnjega rektusa ob paralitični lateralni rektus. Poznamo številne tehnike za izvajanje teh transpozicij, kot so tehnika po Hummelscheimu, O'connorju, Fosterju, Jensenu ali Nishidi. Prve 4 zgoraj omenjene tehnike imajo povečano tveganje za ishemijo sprednjega segmenta. Etiologilja pareze 6. možganskega živca je raznolika: travmatska, prirojena, neoplastična, vaskularna ali idiopatska. Primanjkljaj abdukcije (pogled vstran) smo vrednotili po četrtinah dukcije do primarne črte in od primarne črte (od - 4 do + 4; v tem primeru primarno lego označimo z 0). Predoperativno vedno izvedemo pasivni dukcijski test, ki je v našem primeru pri bolnici izključil restrikcijo obočenih mišic.
V prispevku je predstavljen primer bolnice z dolgotrajno levostransko kronično parezo šestega možganskega živca. Etiologija pareze ni bila znana. Ob prvem pregledu je bolnica navedla, da je pred približno 4 leti levo oko čedalje bolj začela odklanjati navznoter. Ob pregledu smo ugotovili, da je primanjkljaj abdukcije med -1 do 0, torej paralitično oko ne gre čez primarno črto. Gospa je opravila MR glave, CT glave, UZ vratnega žilja in UZ srca. Ščitnični hormoni so bili v mejah normale. Niso

ugotavljali motenj v živčnomišičnem prenosu. Ugotovljeno je imela blago hiperholesterolemijo, ki jo je uspešno kontrolirala z dieto. Vsi ostali izvidi so bili v mejah normale. Klinično bi pri gospe lahko šlo tudi za Duanov sindrom, vendar je trdila, da so se težave z omejeno bulbomotoriko in škiljenjem začele pred 4 leti.
REZULTATI Pri bolnici smo pred operativnim posegom izmerili objektivni škilni kot +34 . Fuzije in globinskega vida ni imela. Na levem očesui je bila vidna ostrina slabša (nimamo podatka od kdaj, možna je supresija ali slabovidnost od prej). Sprednji očesni deli, optični mediji in očesno ozadje so bili primerni. Najboljša korigirana vidna ostrina pred operacijo desno je bila 1,0 cc in levo 0,3 cc. Zaradi tveganja za ishemijo sprednjega segmenta smo lahko operativno prekinili le dve obočesni mišici, moč medialnega rektusa, ki je bil v kontrakturi pa smo oslabili z botulinskim toksinom, v mišico smo injicirali 10 IU botulin toksina A. Objektivni škilni kot je bil 3 mesece po operaciji - 15 , 6 mesecev po operaciji - 8 , 9 mesecev po operaciji pa -1 . Fuzije in globinskega vida ni imela.
ZAKLJUČEK Transpozicija zgornjega in spodnjega rektusa ima lahko zadovoljiv funkcionalni in pooperativni učinek. Opisane so številne tehnike transpozicije mišic, vendar zaradi nevarnosti ishemije sprednjega segmenta ne smemo prekiniti hkrati treh obočesnih mišic, zato je aplikacija botulina v mišico, ki jo želimo oslabiti, lahko v tem primeru zelo uporabna.