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Cyclodialysis Treatment after Airsoft Gun Injury – Innovative Use of Double-flange Technique in Eye Hypotony

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Introduction and Background: Cyclodialysis is a rare but serious consequence of blunt force trauma to the eye, which can often occur during sports or other recreational activities (such as airsoft). The cleft between the ciliary body and sclera causes persistent hypotony, which can lead to hypotonic maculopathy and permanent vision impairment. When classic interventions, like treatment with cycloplegics and transscleral cryocoagulation, are ineffective, surgical reconstruction is necessary – cyclopexy.
Case Description: A 31-year-old patient suffered cyclodialysis due to an airsoft gun injury. Topical therapy with cycloplegics and anti-inflammatory agents was ineffective. Hypotony was first recorded 12 days after the injury, and hypotonic maculopathy with a reduction in visual acuity was observed 2 months after the injury. The ciliary body remained detached even after therapy with transscleral cryocoagulation. We decided on an innovative approach:
1. Identification of the site of cyclodialysis with gonioscopy, ophthalmoscopy and ultrasound imaging (UBM).
2. Use of a Prolene 6-0 suture with thermal cauterization of a flange ("double-flange" technique) to suture the ciliary body back to the sclera.
3. Argon laser trabeculoplasty to create scarring at the site of the injury.
Results: Two weeks after the successful reconstruction, intraocular pressure normalized, and hypotonic maculopathy gradually improved. Based on OCT imaging, CRT decreased from 357 to 271 microns. After 7 weeks, only slight macular chorioretinal folds were observed, ultrasound showed normal anatomy. Visual acuity improved from 0.63 to 1.0 with proper refractive correction. The patient, who had previously depended on frequent examinations due to unstable intraocular pressure, is now in regular yearly follow-ups without the need for further surgical interventions.
Conclusion: This case demonstrates that direct suturing of the dialyzed ciliary body to the sclera using the double-flange technique can be useful and safe, even in phakic patients. It presents the possibility of preserving eye function and preventing permanent vision loss in hypotony, which would otherwise lead to maculopathy, metamorphopsia, and irreversible changes. The innovative use of Prolene sutures in such reconstructive surgery proves that the flange technique can also be successfully applied in complex and rare pathologies, not only in IOL fixation.

Zdravljenje dialize ciliarnika po poškodbi z airsoft puško – Inovativna uporaba double-flange tehnike pri hipotoniji očesa

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Uvod in ozadje: Dializa ciliarnika je redka vendar lahko zelo resna posledica tope poškodbe očesa, kakršna se zgodi tudi pri športnih in rekreacijskih aktivnostih (npr. airsoft). Nastali premik ciliarnega telesa od sklere povzroča vztrajno hipotonijo, ki lahko vodi v hipotonično makulopatijo in trajno poslabšanje vida. Kadar standardni postopki, kot je zdravljenje s cikloplegiki in npr. transskleralna kriokoagulacija, odpovejo, je potrebna kirurška rekonstrukcija – ciklopeksija.
Opis primera: Predstavljamo primer 31-letnega bolnika, ki se je poškodoval z airsoft puško in utrpel dializo ciliarnika. Po topikalnem zdravljenju s cikloplegikom in protivnetno terapijo nismo dosegli želenega izboljšanja. Hipotonijo smo prvič beležili 12 dni po poškodbi, hipotonično makulopatijo s poslabšanjem vidne ostrine pa 2 meseca po poškodbi. Kljub transskleralni kriokoagulaciji se ciliarnik ni nalegel. Odločili smo se za inovativen pristop:
1. Identifikacija mesta dialize s pomočjo gonioskopije, oftalmoskopije in ultrazvočnega pregleda (UBM).
2. Uporaba Prolene 6-0 šiva s termokavterizirano prirobnico ("double-flange" tehnika), s katero smo ciliarnik prišili nazaj na sklero.
3. Argon laserska trabekuloplastika z namenom povzročanja brazgotinjenja na prizadetem delu zakotja.
Rezultati: Po uspešni rekonstrukciji smo po 2 tednih beležili normalen intraokularni tlak, postopno se je izboljševala tudi hipotonična makulopatija. Na podlagi OCT preiskav je CRT v 3 tednih upadel iz 357 na 271 mikronov, po 7 tednih smo beležili le še blažje gube mrežnice, slika UZ zrkla se je normalizirala. Vidna ostrina se je popravila iz 0,63 na 1,0 z ustrezno

korekcijo. Pacient, ki je bil prej odvisen od pogostih kontrol zaradi nestabilnosti očesnega pritiska, je zdaj v rednem letnem spremljanju brez potrebe po dodatnih kirurških posegih.
Zaključek: Ta primer kaže, da je neposredno šivanje dializiranega ciliarnega telesa na sklero z double-flange tehniko lahko učinkovito in varno tudi pri fakih pacientih. Predstavlja možnost za ohranitev funkcije očesa in preprečevanje trajne okvare vida pri hipotoniji, ki bi sicer vodila v makulopatijo, metamorfopsijo in nepovratne spremembe. Inovativna uporaba prolenskih šivov pri takšnih rekonstruktivnih posegih kaže, da se koncept prirobnice (flange) lahko uspešno preslika tudi iz fiksacije IOL v reševanje drugih, redkejših očesnih patologij.