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INDIRECT CYLOPEXY IN CASES WITH CYCLODIALYSIS USING FLANGED PROLENE CYLOPEXY TECHNIQUE

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Introduction:

Cyclodialysis is defined as a separation of the longitudinal muscle of the ciliary body (CB) from the scleral spur which creates connection between the anterior chamber and the suprachoroidal space. This unrestricted aqueous outflow leads to severe visual loss with hypotony maculopathy, and even phthisis in cases with chronic hypotony. It is most commonly caused by blunt ocular trauma and complicated intraocular surgery.

Currently, there are no established guidelines for the treatment of cyclodialysis. Various medical and surgical methods have been proposed in attempts to close the cleft. Conservative treatments and minimally invasive techniques have been used for relatively smaller clefts. However, surgical intervention with direct cyclopeky or indirect cyclopeky is particularly required in cases with large cyclodialysis clefts and trauma cases.

Although several techniques of indirect cyclopeky have been described before, the search for a simple, inexpensive and effective alternative continues.⁵⁻⁸ In this context, the use of prolene may be plausible.

In this study, a new technique using prolene and flanges to achieve indirect cyclopeky is presented and preliminary results are discussed.

Materials and methods:

Pseudophakic and aphakic individuals who had cyclodialysis cleft for more than 3 clock hours and did not respond to medical treatment for more than a month with cycloplegics and rapid tapering of steroids for were selected for this study. In these cases, the need for surgical intervention secondary to trauma and the presence of hypotonic maculopathy were evaluated among the surgical criteria. In this technique, FPC procedure was performed using pars plana infusion under retrobulbar anesthesia. 6-0 prolene was used for its durable and non-absorbable nature. FPC was performed in a limited fashion in relatively small or discontinuous cyclodialysis clefts, however 360 degree circumferential application of the technique was used in large and continuous cyclodialysis cases. All maneuvers in or through the sclera were performed using a 26 gauge needle 1.5 mm behind the limbus. In this technique, several local and internal CB suspenders were furnished and 360 degree encirclement of the prolene was provided. In this study, FPC was applied together with pars plana vitrectomy and silicone tamponade to benefit from the buoyant effect of silicone oil in all cases

Results:

Five cases (4 male, 1 female) with a mean age of 58.0 + 13.5 years were included in this study. Complicated intraocular surgery (n=3) and trauma (n=2) were the leading etiologies. Hypotony maculopathy were present in all cases. Extend of cyclodialysis ranged from 4 to 9 clock hours. According to the subjective assessment with UBM, CB thinning was present in the affected eye of 2 cases when compared to their healthy eye. In addition to FPC, cases underwent pars plana vitrectomy

with silicone oil injection. Postoperatively, best-corrected visual acuity increased in 4 cases, but remained unchanged in 1 case. No complications were noted in the follow-up and UBM showed improvement of cyclodialysis in all 5 cases. Mean preoperative intraocular pressure (IOP) of cases increased from 6.2 ± 0.8 to 12.4 ± 6.6 mmHg. During the follow-up, silicone oil was removed in 3 cases, but silicone oil could not be removed in 2 cases with ongoing hypotony.

Conclusions:

Early treatment of cyclodialysis is critical to prevent potentially devastating complications. Resistance to medical treatment requires surgical treatment with direct or indirect cyclopeky. Indirect cyclopeky is advantageous in eliminating the need for scleral lamellar dissection and suturing in the hypotonic eye, as well as preventing anterior segment ischemia that can be caused by direct cyclopeky. The results of our study show that the FPC technique is a flexible procedure that can be applied in various scenarios. This technique, helps to maintain firm and continuous fixation of the CB by circumferentially adjusting the prolene tension through a combination of ab interno and ab externo maneuvers in extensive clefts. To our knowledge, this the first study to describe a technique to achieve indirect cyclopeky using prolene flanges. Here, the prolene in between the flanges provide ab interno support and a sealing effect. It seems as an ergonomic, reproducible, cost-effective and uncomplicated approach that can be used in repairing cyclodialysis clefts. Recovery of aqueous humor production may be fulfilled with this technique. Further improvements in the technique may be achieved with studies using advanced imaging technology and focusing on methodology.

Sources:

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- 2- Selvan H, Gupta V, Gupta S. Cyclodialysis: an updated approach to surgical strategies. *Acta Ophthalmol.* 2019;97:744-751