

Pars Plana Vitrectomy for Vitreomacular Traction Syndrome

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ABSTRACT

The vitreomacular traction syndrome (VMTS) is a clinical entity in which incomplete posterior vitreous detachment is causing traction on the macula. Since in some cases the traction may resolve spontaneously when complete posterior vitreous detachment occurs, vitrectomy is indicated when the duration of traction is longer than 4–6 months and is causing severe visual impairment. The purpose of this study was to investigate the efficacy and safety of pars plana vitrectomy in the treatment of macular disorders caused by vitreomacular traction. In our case the outcome of the vitrectomy and the number and severity of the surgical complications did not differ from the complications when vitrectomy was performed in eyes without vitreomacular traction. With the development of new drugs for nonsurgical treatment of vitreomacular traction by enzymatic vitreolysis, in the future vitrectomy could become restricted only to refractory cases.

Key words: vitreomacular traction, vitrectomy, macular hole, cystoid macular edema, macular pucker, VMTS

Introduction

The vitreomacular traction syndrome (VMTS) is a clinical entity in which incomplete posterior vitreous detachment is causing traction on the macula. The traction itself may induce various changes in macula such as cystoid macular edema (CME), retinoschisis, macular pucker formation, macular hole or tractional macular detachment^{1,2}.

VMTS was first described in 1967 by Jaffe³ and Reese^{4,5}. It is presented with mild symptoms of decreased central vision and metamorphopsia, usually in slow progression. Besides ophthalmoscopic examination, optical coherence tomography (OCT) has become the gold standard for the evaluation and follow-up of VMTS patients⁶.

The purpose of this case series was to evaluate the results of vitreous surgery for vitreomacular traction syndrome.

Patients and Methods

In this retrospective comparative case series, patient records of 19 eyes of 19 patients were analyzed. All patients underwent ophthalmic examination (best corrected visual acuity, intraocular pressure, slit lamp biomicroscopy and indirect ophthalmoscopy) and optical coherence tomography (Cirrus HD-OCT, Carl Zeiss Meditec). Sutureless small gauge pars plana vitrectomy

(Alcon, Accurus® 2500) with the removal of vitreoretinal adhesions and traction was performed. Out of 19 eyes 10 (53%) had CME (Figure 1), 5 (26%) had macular pucker (Figure 2), 3 (16%) had macular hole (Figure 3) and 1 (5%) had tractional macular detachment (Figure 4). Additional vital dye (Brilliant blue) staining with ILM peeling and C3F8 tamponade was done in case of macular hole and ERM peeling in case of macular pucker. Retinal

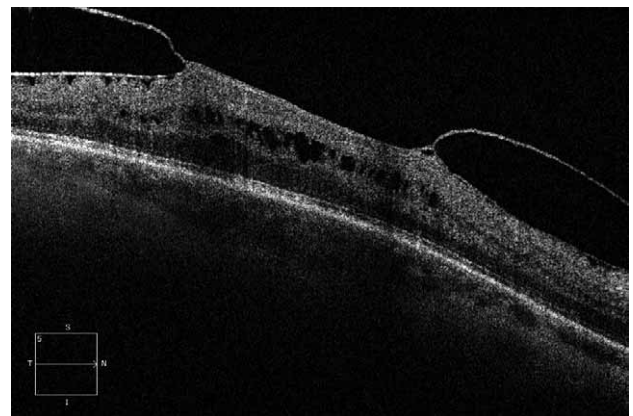


Fig. 1. Cystoid macular edema caused by vitreomacular traction.

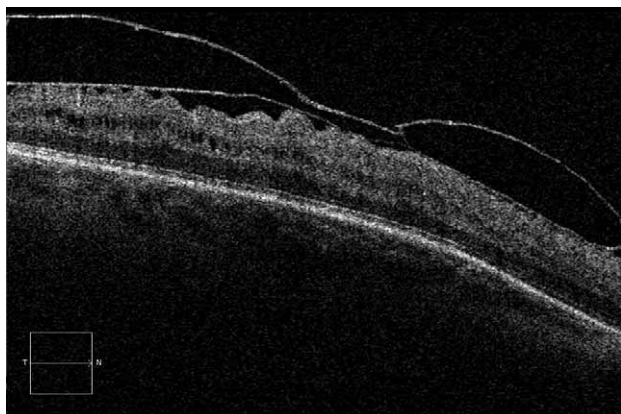


Fig. 2. Macular pucker caused by vitreomacular traction.

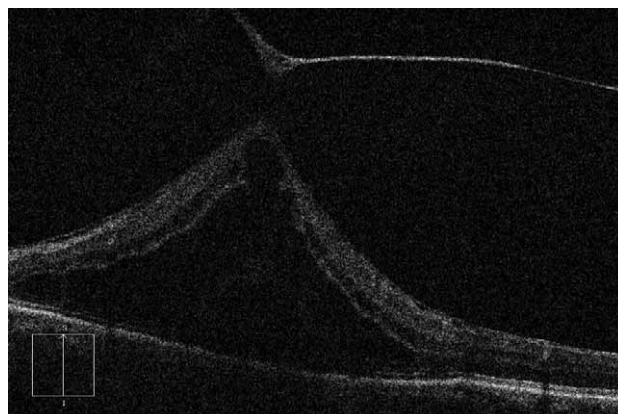


Fig. 4. Tractional macular detachment caused by vitreomacular traction.

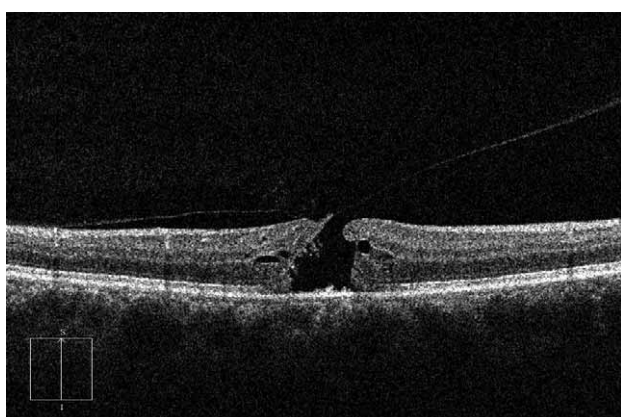


Fig. 3. Macular hole caused by vitreomacular traction.

periphery was examined for breaks and endolaser was applied when necessary. In 7 (36%) eyes cataract operation with IOL implantation was performed, 8 (42%) eyes were pseudophakic and 4 (21%) were phakic.

The mean age of patients was 65 years, ranged from 47 to 83 years. Mean follow-up was 6.1 months. Main outcome measures were best-corrected visual acuity (BCVA), OCT measured foveal thickness and the anatomical outcome of surgery (CME resolution, ERM removal, macular hole closure, macula reattachment).

Results

In the group of CME, the edema resolved in 8 (80%) patients and the CFT was reduced in average for 75 μm (34–227 μm). Final visual acuity had improved by 3 lines.

Among 5 eyes with macular pucker all 5 (100%) had the complete removal of ERM. In 1 (20%) CME had developed which has resolved on topical anti-inflammatory medications. CFT was reduced in average for 35 μm (12–75 μm). Final visual acuity had improved by 2 lines.

Anatomical closure of the macular hole was accomplished in 2 (66%) eyes after 1 surgery and in 1 (33%) af-

TABLE 1
VITREOMACULAR TRACTION SYNDROME: CLINICAL DATA AND THE RESULTS

	CME	Macular pucker	Macular hole	TMD
N = 19	10	5	3	1
Favorable anatomical outcome of surgery	8 (80%)	5 (100%)	2 (66%) – 1 surgery 1 (33%) – 2 surgeries	0 (0%) – 1 surgery 1 (100%) – 2 surgeries
CFT reduction	75 μm (34–227 μm)	35 μm (12–75 μm)	(36–142 μm)	192 μm
BCVA preop.	0.1	0.2	0.1	0.05
BCVA postop.	0.2	0.3	0.1	0.05
BCVA 5 months	0.4	0.4	0.3	0.15
Complications – minor	2 (20%) – extramacular hemorrhage (1) – hypotony (1)	2 (40%) – extramacular hemorrhage (1) – CME (1)	2 (66%) – extramacular hemorrhage (1) – hypertension (1)	
Complications – major	2 (20%) – retinal break (1) – macular scarring (1)			1 (100%) – retinal detachment (1)

CME – cystoid macular edema, TMD – tractional macular detachment, CFT – central foveal thickness, BCVA – best corrected visual acuity

ter 1 additional surgery. CFT was reduced in average for 93 μm (36–142 μm). Final visual acuity had improved by 2 lines.

The detached macula was reattached after 2 surgeries with CFT reduction of 192 μm and final visual acuity improvement of 1 line.

One patient had early postoperative transient hypotony and one had postoperative hypertension; three patients had extramacular hemorrhage that resolved after 1 month.

Two patients had iatrogenic retinal breaks; one was successfully treated with laser photocoagulation and the other reoperated for retinal detachment. One patient had major retinal hemorrhage that resulted with macular scarring. The results are shown in Table 1.

Discussion and Conclusion

The vitreomacular traction syndrome represents a wide spectrum of anatomic changes in the macula that can produce visual deficit^{1,2}. Surgical treatment by vitrectomy and the release of the traction has so far been the only option for cases in which complete PVD hadn't

occurred spontaneously^{7–10}. Although vitrectomy in such cases may improve visual acuity, visual improvement may be limited by the duration of vitreomacular traction and anatomical changes in the macula^{11–14}. The purpose of this study was to investigate the efficacy and safety of pars plana vitrectomy in the treatment of macular disorders caused by vitreomacular traction. In our case the outcome of the vitrectomy and the number and severity of the surgical complications did not differ from the complications when vitrectomy was performed in eyes without vitreomacular traction. Vitrectomy with gas tamponade and postoperative posturing is an effective intervention for macular holes¹⁵.

According to some authors the indication for vitrectomy should be delayed awaiting the spontaneous release of vitreomacular traction in 4 to 6 months¹⁰. Better preoperative visual acuity and shorter duration of the disorder are favorable prognostic factors for good postoperative outcome^{1,2}.

With the development of new drugs for nonsurgical treatment of vitreomacular traction by enzymatic vitreolysis, in the future vitrectomy could become restricted only to refractory cases¹⁶.

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PARS PLANA VITREKTOMIJA KOD VITREOMAKULARNOG TRAKCIJSKOG SINDROMA

SAŽETAK

Vitreomakularni trakcijski sindrom (VMTS) je klinički entitet kod kojega nepotpuno odvojena stražnja staklovina vrši trakciju na žutu pjegu. Obzirom da u pojedinim slučajevima potpunim odvajanjem stražnje staklovine može doći do spontane popuštanja trakcije, vitrektomija je indicirana kada je trajanje trakcije dulje od 4–6 mjeseci i uzrokuje značajan pad vidne oštine. Cilj ove studije bio je istražiti učinkovitost i uspješnost pars plana vitrektomije u liječenju poremećaja žute pjege uzrokovanih vitreomakularnom trakcijom. U našem slučaju ishod vitrektomije i brojnost oziljnost komplikacija nije se razlikovao od komplikacija kada je vitrektomija rađena u očima bez vitreomakularne trakcije. S razvojem novih lijekova za nekirurško liječenje vitreomakularne trakcije enzimatskom vitreolizom, u budućnosti bi vitrektomija mogla biti ograničena samo na refraktorne slučajeve.