[Correspondence – Case Report]

External Subretinal Fluid Drainage and Vitrectomy in Exudative Retinal Detachment Secondary to Central Serous Chorioretinopathy: A Case Report

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Dear Editor,

Bullous central serous chorioretinopathy (bullous CSC; bCSC) is an atypical variant of CSC, characterized by exudative retinal detachment, especially in inferior quadrants [1]. Sub-retinal pigment epithelium (RPE) fibrin and increased hydrostatic pressure in pigment epithelial detachment (PED) is speculated to induce a RPE tear [2]. Subsequently, intense accumulation of sub-retinal fluid (SRF) leads to exudative retinal detachment. Proper treatment choice for bCSC is unclear. Removal of risk factors, focal laser, photodynamic therapy (PDT), and surgery can be applied [2]. There are two methods for surgical draining SRF: internal and external approach. Internal drainage may lead to retinotomy-associated rhegmatogenous retinal detachment (RRD) [3]. Pars plana vitrectomy (PPV) with external drainage does not need retinotomy, allowing laser photocoagulation with an improved view using perfluorocarbon liquid (PFCL) and immediate retinal reattachment [4]. We report a case of bCSC treated with external drainage and vitrectomy in which the retina was reattached and maintained without recurrence for more than 1.5 years.

A 51-year-old male presented with blurred vision in his right eye that started 5 days ago. Uncorrected visual acuity (UCVA) was 20/20, and intraocular pressure was normal in both eyes. Anterior segment was unremarkable. Fundus showed inferior bullous retinal detachment (RD) and no breaks in the right eye (Fig. 1A). Fundus was normal in the left eye. Perifoveal PEDs were found (Fig. 1A). SRF increased the day after admission (Fig. 1B). Fluorescein angiography (FAG) showed multiple perifoveal leaking points, a main infero-nasal leaking point, and consequent pooling to the subretinal space (Fig. 1C). Optical coherence tomography (OCT) showed RPE tear at the site corresponding to the main leaking point. Exudative RD secondary to CSC (i.e., bCSC) was diagnosed and laser photoagulation at leaking points was performed. On the 3rd day of admission, best corrected visual acuity (BCVA) was 20/40, fundus showed shifting of SRF after sleeping on one side and SRF decreased (Fig. 1D). Indocyanine green angiography (ICG) shows hyper-permeable and dilated choroidal vessels. He was discharged on the 5th day of admission. However, SRF increased significantly, and BCVA was 20/67 at outpatient visit at 5 days after discharge. We decided to transfer him for PDT. The next day, he was transferred to another hospital. BCVA decreased to finger count. Exudative RD was extended and prominent (Fig. 1E). Therefore, PDT was considered ineffective. After waiting 1 week, RD was further extended, and surgery was performed by S.J.W. (Fig. 1F). External drainage, PPV with PFCL,
endolaser, and intravitreal sulfur hexafluoride 18% gas injection were performed (Supplementary Video). Three months after surgery, BCVA was 20/40 and fundus showed flat retina and laser markings at nasal mid-periphery (Fig. 1G). One year and 8 months after surgery, BCVA was 20/29 and fundus was flat (Fig. 1H).

To the best of our knowledge, this is the first report of bCSC successfully treated with external drainage and vitrectomy in Korea. Kang et al presented bilateral bCSC treated with internal drainage and vitrectomy [5]. Their patient was initially treated with corticosteroid under diagnosis of Vogt-Koyanagi-Harada. Despite focal laser, exudative RD extended to fovea. External drainage, intravitreal gas injection, scleral buckling, and focal laser were applied. After 2 months, internal drainage, PPV, intravitreal gas injection, and focal laser were performed for recurrent RD [5]. In contrast, in our case, retina was attached and remained without recurrence during about 1.5 years after external drainage. In Kang et al.’s study, initial surgery was performed on 2 months after the first visits and final BCVA was hand motion due to foveal subretinal bands. In our study, external drainage was performed early after 17 days and final BCVA was 20/29.

In our case, no retinal break and shifting SRF were found. FAG revealed severe leaking points. OCT showed multiple PED, RPE tear. From these findings, we diagnosed bCSC. Various risk factors were reported in bCSC including corticosteroid therapy, organ transplantation, and hemodialysis [2]. None of these corresponded to our case.

In conclusion, we report a case of bCSC successfully treated with external drainage and vitrectomy and maintained stable for about 1.5 years. Recognizing that exudative RD can be atypical presentation of CSC, it is important to differentiate it from RRD. External drainage can be considered as safe and effective treatment for bCSC.

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References


**Figure Legend**

**Fig. 1. Initial and follow-up findings of a 51-year-old male patient with bullous central serous chorioretinopathy (bCSC) in the right eye.**

(A) At first visit, fundus photography (FP) showed impending macular-off inferior bullous retinal detachment (RD) and no retinal breaks. Optical coherence tomography (OCT) revealed multiple perifoveal pigment epithelial detachments (PEDs).

(B) The day after admission, SRF increased on FP and OCT.

(C) On the same day, fluorescein angiography (FAG) in early phase (figure on the left) showed multiple perifoveal leaking points and a main infero-nasal leaking point corresponding to the RPE tear on the OCT (figure on the right). FAG in late phase (figure on the middle) revealed consequent pooling to the subretinal space and the exudative retinal detachment. BCSC was diagnosed and laser photocoagulation at leaking points was performed.

(D) On the 3rd day of admission, fundus showed shifting of SRF after sleep with lateral decubitus position and OCT showed decreased SRF. Indocyanine green angiography (ICG) in early phase shows hyper-permeable and dilated choroidal vessels (figure in the middle). He was discharged on the 5th day of admission.

(E) When he was transferred to another hospital, exudative RD was extended and prominent. PDT was considered ineffective.

(F) Even after waiting 1 week, the RD was further extended, and surgery was performed. External drainage, pars planar vitrectomy with perfluorocarbon liquid (PFCL), laser photocoagulation, and intravitreal sulfur hexafluoride (SF6 18%) gas injection were performed. For external subretinal fluid (SRF) drainage, additional trocar was inserted at 2.5 o/c and trimmed infusion tip was connected (figure on the left, white arrow). Pale yellow colored SRF was drained through the trimmed infusion tip. PFCL was used to assist external SRF drainage (figure in the middle). Endolaser was added to the main leaking point where focal laser was performed preoperatively (figure on the right).

(G) Three months after surgery, fundus showed flat retina and laser markings at nasal mid-periphery, and OCT showed partial disruption of photoreceptor.
One year and 8 months after surgery, fundus showed well attached stable retina. OCT revealed the regeneration of the photoreceptor. Informed consent was obtained from the patient for publication of this case report and relevant images.