

Commentary: Retinal folds: To operate or not to operate

The management of fovea-involving dry macular fold has often been seen as a dilemma. In this issue, the authors have well-described a unique surgical approach for its management.^[1]

Retinal folds (RFs) occurring as a postoperative complication of vitreoretinal surgery for repair of Retinal Detachment (RD) are rare. Van Meurs *et al.* have reported an incidence of about 3% cases developing RFs in the postoperative period.^[2] These folds can appear at the retinal periphery or over the macula. While the peripheral retinal folds maybe asymptomatic and can be observed, it is the macular folds that can cause decreased vision, diplopia, and metamorphopsia and may need intervention.^[3] Although there are some reports showing spontaneous flattening of these folds over months or years, the course of these folds can be unpredictable.^[3] Histological evidence shows progressive outer retinal/photoreceptor degeneration as early as 1 week following fold formation, leading to permanent visual loss due to long-standing retinal folds.^[4] In addition, PVR triggered by retinal folds may cause recurrent RD.^[3]

Recent imaging modalities, especially Spectral domain Optical Coherence Tomography (SD-OCT) have brought in new perspectives in the management of these folds.^[5] In view of this, decision-making in the management of these folds involves SD-OCT to ascertain if these folds are full thickness or partial thickness, outer or inner retinal folds, and whether they involve the fovea. Full-thickness retinal folds on SD-OCT present with photoreceptor to photoreceptor apposition, with or without ILM-to-ILM apposition.^[5] In contrast, the partial thickness folds maybe limited to the inner retina, seen as altered and irregular inner surface of the retina on OCT or outer retinal folds, seen as hyperreflective RPE lines that may protrude into the nuclear layer with or without folding of the external limiting membrane (ELM) and ellipsoid zone (EZ).^[5] Full-thickness retinal folds are differentiated from outer retinal folds by the association of inner retinal elevation and reduplication of full-thickness neurosensory retina in the former. Partial-thickness outer retinal folds on OCT may be seen in almost one-third of cases after repair of rhegmatogenous RD.^[6] Partial-thickness folds often resolve spontaneously while the full thickness folds involving the fovea may need surgical correction.

OCT also helps to differentiate these RFs formed postoperatively from the radial retinal folds seen in disease entities like Familial Exudative Vitreoretinopathy (FEVR), Retinopathy of prematurity (ROP), Norries' disease, etc., These folds are associated with retinal dragging and are characterized by long, tapering neurosensory retina with slippage and thickening of nerve fiber layer (NFL) or formation of NFL bundles due to the presence of peripheral and circumferential retinal traction.^[7] These radial retinal folds do not have good visual and anatomical outcome following surgery and need to be treated differently from postoperative retinal folds.

Although the authors have described RFs forming secondary to Pars plana Vitrectomy (PPV) in both cases,^[1] these folds are also seen after scleral buckling (SB), especially when using a gas tamponade or large circumferential buckle to

reattach superior bullous RDs or in RDs running through the fovea.^[3] Inappropriate or inadequate postoperative positioning after PPV for RD as seen in the setting of outpatient surgeries also is known to increase RF formation, especially in cases of the redundant retina as seen in Giant retinal tear or superior bullous RDs associated with residual fluid at the end of surgery.^[8] Understanding these risk factors is important to take appropriate precautionary steps to avoid this largely avoidable complication.

Once the decision to operate for these persisting macular folds is taken, the procedure involves inducing localized redetachment of the retina using BSS injection subretinally. Injection of about 100 µl of air along with BSS under the fold along with PFCL preretinal for effective ironing out of the fold has also been described by Barale *et al.*^[9] Removal of the ILM, of course, helps in complete removal of any residual retinal traction as well as recurrent retinal fold formation due to epiretinal membrane proliferation. Flattening and unfolding of the retinal fold with good visual outcome has been described by Mori *et al.* using this technique even for severe macular folds.^[10] However, possible serious complications like retinal or macular tears during the unfurling process or during induction of RD must be kept in mind and a judicious decision should be taken with pros and cons of surgery in mind.

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