



# Traumatic macular holes: to operate, or not to operate, that is the question

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Ever since the observation that idiopathic macular holes (IMH) can be successfully managed by means of pars plana vitrectomy, a once inoperable condition became one of the surgeries with the highest success rate in vitreoretinal surgery (1). Indeed, advances in surgical techniques and instrumentation have led to a primary anatomic success rate of more than 95% for uncomplicated IMHs (2). On the other hand, significant challenges to vitreoretinal surgeons pose unique clinical scenarios with chronic and/or large macular holes, as well as macular holes associated with trauma, where success rates for hole closure and visual improvement decrease considerably.

In contrast to the IMHs, traumatic macular holes (TMHs) have a high rate of spontaneous closure. Reported rates of spontaneous closure of TMHs of 37–44% occur within the first two months after the injury (3). Comparatively, rate of spontaneous closure of IMHs is in the 2.7–6.2% range (4,5). Various factors have been postulated to play a role in this observed difference, including the relatively younger age of patients with TMHs and the intact posterior hyaloid, which may act as a scaffold for the re-approximation of the retinal edges. Furthermore, hole size and spectral domain optical coherence tomography (SD-OCT) features appear to have a prognostic value as well, since smaller hole size (<250 µm) and absence of any intraretinal edema are favorable imaging criteria for spontaneous hole closure (6). Guided by these imaging biomarkers and known natural history of TMHs, clinicians have traditionally resorted to observation as the initial

management of TMHs, followed by vitrectomy if the TMH fails to close with observation alone. Yet, there may be cases where early surgical intervention is warranted, but evidence to guide our approach on this is lacking.

The study by Chen *et al.* was the first multicenter, prospective, comparative case study that attempted to address the outcomes of patients with TMHs comparing observation to early vitrectomy (7). Authors reported that early vitrectomy resulted in significantly higher rate of TMH closure compared to initial observation (100% *vs.* 66.7%, respectively). Yet, despite the superior anatomic effects of vitrectomy surgery, there was no difference in final visual acuity between surgically closed or spontaneously closed macular holes. In the observation group, 80% of spontaneously closed TMHs did so within the first 3 months. Presence of cystoid macular changes on SD-OCT imaging was identified as an adverse factor in facilitating spontaneous closure. Taken together, the authors reported a high rate of spontaneous closure but even higher with early surgical intervention. They concede, however, that a 3-month observation period after injury may be an acceptable initial first step in patient management.

These are important findings as clinicians often struggle to identify the ideal timepoint of when to offer surgical intervention to TMH patients. Considering that TMHs are often observed in younger patients and children with formed vitreous, observation aimed at spontaneous closure that would preclude surgical manipulation of the vitreous may be optimal, especially in centers that do not routinely

perform pediatric vitrectomies. The length of observation must be balanced by the risk of permanent outer retinal and retinal pigment epithelium (RPE) changes that could be prevented, at least in part by the immediate surgical closure of TMHs. Although the study design by Chen *et al.* did not allow physicians to guide their patients and provide any recommendation, it is the rest of retina community that can benefit from this study extrapolating useful conclusions, formulate treatment plans based on scientific evidence and sound clinical research about this potentially vision threatening condition.

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