

Letters

Cortical Cleaving Hydrodissection

In a recent article,¹ Peng et al. indicate that hydrodissection was first documented by Faust in 1984.² They then state that a detailed clinical description was published by me in 1992 and that I coined the term *cortical cleaving hydrodissection*.

Faust did describe hydrodissection as a way of expressing the nucleus from the bag for extracapsular cataract extraction. At no time did he view this as a method of lysing cortical/capsular connections, and he did not address the actual cleavage of cortex from the capsule during the process of hydrodissection. Most surgeons who were doing hydrodissection at that time were actually injecting fluid into the cortical layer, a path of least resistance, and then were doing cortical cleanup as a separate step.

Cortical cleaving hydrodissection, which I first described in 1992,³ was a separate technique specifically designed to lyse cortical/capsular connections at the time of hydrodissection (which was used by most surgeons at that time for the purpose of mobilizing the nucleus within the bag). The differences in technique involve not hydrodissecting the lens out of the bag but injecting fluid against the undersurface of the anterior capsule with gentle continuous irrigation through a 26 gauge cannula. This allows fluid to pass peripheral to the cortex and come up to the cortical/capsular connections at the fornix of the capsule where the fluid transmission is essentially retarded, resulting in forward pressure on the nuclear complex and a loculation of fluid posteriorly. If one continued to inject, the lens would hydrodissect out of the bag, but most of the cortex would remain attached to the capsule at the capsular fornix. In cortical cleaving hydrodissection, once the lens complex starts to elevate in the bag, the capsulorhexis is seen to enlarge. At that point, hydrodissection is stopped and the flat portion of the McIntire cannula is used to decompress the lens complex, forcing posteriorly loculated fluid to come around the equator of the lens and rupture cortical/capsular connections. The capsulorhexis returns to its former size, with radial striations appearing central to the capsulorhexis due to cortical

fibers being washed out of the capsule along with the egressing fluid.

I also described 3 methods for removing cortex during the phacoemulsification procedure following cortical cleaving hydrodissection so that one could do away with irrigation/aspiration of cortex as a separate step in phacoemulsification surgery.

I think there are substantial differences in hydrodissection as described by Faust and as it was being done at the time and cortical cleaving hydrodissection, which I view as a new way of doing hydrodissection with the purpose of cleaving capsular/cortical connections rather than just mobilizing the nucleus.

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References

1. Peng Q, Apple DJ, Visessook N, et al. Surgical prevention of posterior capsule opacification. Part 2: enhancement of cortical cleanup by focusing on hydrodissection. *J Cataract Refract Surg* 2000; 26:188–197
2. Faust KJ. Hydrodissection of soft nuclei. *Am Intra-Ocular Implant Soc J* 1984; 10:75–77
3. Fine IH. Cortical cleaving hydrodissection. *J Cataract Refract Surg* 1992; 18:508–512

Reply: We thank Dr. Fine for his thoughtful letter regarding what we believe is a very important and often underrated surgical technique. As we noted in our article, intraoperative subcapsular injection of fluid (in particular, cortical cleaving hydrodissection in which the anterior capsular flap is tented up by the injection cannula),¹ is an essential maneuver in enhancing cortical and cellular removal and cleanup. Our studies reveal that its increased use is an important reason that the incidence of posterior capsule opacification (PCO, secondary cataract, after cataract), one of the last nagging (and expensive) complications of modern cataract surgery, is now beginning to decrease toward single digits (D.J. Apple, MD, Q. Peng, MD, "Histopathological Study of Posterior Capsule Opacification with Different IOLs," presented at the annual meeting of the American Academy of Ophthalmology, Orlando, Florida, USA, October 1999). Based on our laboratory research, we have recently identified 6 important factors in reducing PCO. Hydrodissection, specifically subcapsular or cortical cleaving hydrodissection, is the first of these factors.

Until recently, the hydrodissection component of the cataract procedure has too often been used primarily to enhance the surgical ease of lens substance removal and the general safety of the operation. For example, most surgeons focus on