Restrictive Strabismus Following DCR and Jones Tube

I recently encountered an interesting case of restrictive strabismus. The patient had a history of squamous papilloma in the right lower lacrimal canaliculus, blocking tear drainage and necessitating a right dacryocystorhinostomy (DCR) with Jones tube insertion. This was performed in November 2022 and required Jones tube repositioning in June 2023. Following this the patient's symptoms were minimal, with no issues at the subsequent annual review.

I saw the patient in March 2025, following an optometrist referral due to diplopia on right gaze and irritation at the previous surgery site. On examination the patient was orthophoric in all positions other than right gaze, in which they had a small right esotropia and mild right hypotropia. Ocular motility revealed -2 under-actions of the RLR and RSR. Attached is the patient's Hess chart, which shows the limitation of right superior and lateral recti, primarily resulting in restriction of abduction and dextroelevation. This pattern corresponds with the surgical site directly opposite at the medial canthus, indicating a tether-like restrictive cause for the strabismus. The patient is currently awaiting oculoplastic review.

The journal article attached describes a series of cases very similar to this one. I was unaware of this potential complication following DCR or Jones tube insertion, and as the literature suggests, it is very rare. The article proposes multiple causes for the restrictive limitation of abduction seen in these cases, with the most likely being conjunctival scarring and inflammation.

One factor I found surprising in this case was the delayed onset of diplopia, occurring over two years after the canalicular bypass surgery. Interestingly, the article reports delayed onset is actually typical, with a mean of 13 months between surgery and diplopia onset in patients treated with DCR and bypass tube. This delay possibly relates to the time it takes for adhesions to form between the conjunctiva and surrounding tissues.

Treatments described in the article include topical steroids, injection of triamcinolone, release of adhesions and mucous membrane grafting. While some of these interventions proved beneficial, total resolution of diplopia was rare. Due to the restrictive nature being unrelated to the extraocular muscles, these cases should not be treated with strabismus surgery. Some literature suggests the intra-operative use of mitomycin C during DCR and canalicular bypass surgeries can reduce the likelihood of scar tissue forming. Similarly, some treatments involving release of conjunctival adhesions utilise mitomycin C to help prevent future recurrence.

It will be interesting to see how this patient is managed once they are reviewed by our oculoplastic team. I can post an update in the comments after they are seen. I am keen to hear if anyone else has seen this complication following DCR and/or Jones tube insertion before too!