

PRP was deferred in our patient despite the presence of peripheral and disc neovascularization and areas of capillary dropout, mainly because the new vessels were flat and did not cause a vitreous hemorrhage. There was also a significant risk of inducing cystoid macula edema after PRP in an otherwise good and stable vision. Graham and coworkers recommended that in the setting of retinal neovascularization associated with posterior uveitis, PRP should only be performed when the eye is quiet and only for patients with recurrent vitreous hemorrhage and significant capillary closure.<sup>9</sup>

It has been reported that retinal lesions are generally unresponsive to oral steroids in most cases of IRVAN,<sup>1,6,8</sup> such as in this patient where systemic oral steroid had to be combined with immunomodulating agents. None of the reports in the literature mentioned the effect of immunomodulating agents on patients with IRVAN, though they did caution against injudicious use of steroids.<sup>1</sup> Sudden withdrawal of these drugs run the risk of rebound inflammation; hence, they have to be tapered over a period of time even in the absence of therapeutic effect.

Patients with this condition need to be followed up closely as they may develop sight-threatening complications, such as exudative maculopathy and vitreous hemorrhage. Both respond quite well to timely laser treatment. The possibility of spontaneous regression should always be borne in mind, as a more conservative approach that will preserve visual acuity is a reasonable management strategy.

#### References

1. Chang TS, Aylward GW, Davis JL, et al. Idiopathic retinal vasculitis, aneurysms, and neuroretinitis: Retinal Vasculitis Study. *Ophthalmology* 1995; 102: 1089-1097.
2. Abu El-Asrar AM, Jestaneiah S, Al-Serhani AM. Regression of aneurysmal dilatations in a case of idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN) associated with allergic fungal sinusitis. *Eye* 2004; 18: 197-199.
3. Gedik, Yilmaz G, Akca S, Akova YA. An atypical case of idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN) syndrome. *Eye* 2005; 19: 469-471.
4. Hammond MD, Ward TP, Katz B, Subramanian PS. Elevated intracranial pressure associated with idiopathic retinal vasculitis, aneurysms, and neuroretinitis syndrome. *J Neuroophthalmol* 2004; 24: 221-224.
5. Tomita M, Matsubara T, Yamada H, et al. Long-term follow-up in a case of successfully treated idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN). *Br J Ophthalmol* 2004; 88: 302-303.
6. Yeshurun I, Recillas-Gispert C, Navarro-Lopez P, et al. Extensive dynamics in location, shape, and size of aneurysms in a patient with idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN) syndrome. *Am J Ophthalmol* 2003; 135: 18-120.
7. Owens SL, Gregor ZJ. Vanishing retinal arterial aneurysms: a case report. *Br J Ophthalmol* 1992; 76: 637-638.
8. Sashihara H, Hayashi H, Oshima K. Regression of retinal arterial aneurysms in a case of idiopathic retinal vasculitis, aneurysms, and neuroretinitis (IRVAN). *Retina* 1999; 19: 250-251.
9. Graham EM, Stanford MR, Shilling JS, Sanders MD. Neovascularization associated with posterior uveitis. *Br J Ophthalmol* 1987; 71: 826-833.

## Endoscopy-assisted balloon dacryocystoplasty in the treatment of congenital nasolacrimal-duct obstruction

Raoul D. Henson, MD<sup>1,2,4</sup>  
Ruben D. Henson III, MD<sup>1,3</sup>

<sup>1</sup>*Clinica Henson Eye and Ear, Nose, Throat Foundation  
Angeles City, Philippines*

<sup>2</sup>*International Eye Institute  
St. Luke's Medical Center  
Quezon City, Philippines*

<sup>3</sup>*Department of Otorhinolaryngology, Head and Neck Surgery  
St. Luke's Medical Center  
Quezon City, Philippines*

<sup>4</sup>*Department of Ophthalmology  
Makati Medical Center  
Makati City, Philippines*

### ABSTRACT

#### Objective

To report two cases of balloon dacryocystoplasty (DCP).

#### Method

This is a case series.

#### Results

A five-year-old boy with congenital nasolacrimal-duct obstruction (CNLDO) in the right eye underwent primary DCP. A six-year-old boy with bilateral CNLDO with previous nasolacrimal-duct probing had bilateral secondary balloon DCP. Both patients were symptom-free even at follow-up of 14 months.

#### Conclusion

Balloon dacryocystoplasty is a good and safe alternative in the treatment of CNLDO.

CONGENITAL nasolacrimal-duct obstruction (CNLDO) is a common clinical problem affecting as much as 6% of all newborns.<sup>1,2</sup> The most common form is failure of the canalization of epithelial cells that form the nasolacrimal duct as it enters the valve of Hasner. There is a high spontaneous rate of remission (60 to 90%) in the first year of life; hence, nasolacrimal-duct (NLD) probing should be delayed until 12 months of age.<sup>3</sup> Parents

can be instructed to perform lacrimal-sac massage during the intervening period until the tearing subsides.

The first line of treatment in CNLDO is NLD probing with the objective perforating the persistent layer of epithelial cells near the valve of Hasner. Probing has a high success rate if done at the appropriate time. Its failure increases with age and is known to double every 6 months.<sup>3</sup> Thus, in cases of persistent epiphora, a second probing 2 to 4 months later is recommended. In failed cases with persistent epiphora and recurrent infection, it may be necessary to perform a dacryocystorhinostomy.

Alternatively, bicanalicular silicone intubation with Crawford, Juneman or Ritleng tubes may be carried out, with success rates ranging from 88 to 95%.<sup>4</sup> Its drawbacks include the relative complexity of the procedure, difficulty of fixation, damage to the canalicular system, inadvertent removal of the tubes by the child, and the need for anesthesia/sedation for the removal in some cases.<sup>5</sup>

Balloon catheter dilatation (balloon dacryocystoplasty) was a method devised by Bruce Becker in 1991.<sup>6-7</sup> It consisted of a nasolacrimal probe combined with a balloon designed to forcibly expand the nasolacrimal duct, a strategy similar to coronary angioplasty. This procedure involved probing the nasolacrimal duct with a semiflexible-wire probe with an inflatable balloon at the tip (Figure 1). It has also been promoted as a less complex procedure compared with intubation because it does not require retrieval of the probe from the nose.

We report two cases of CNLDO that underwent balloon dacryocystoplasty (DCP). The first case involved a five-year-old boy with intermittent tearing of the right eye since birth. Dye-disappearance test revealed an obstruction in the right nasolacrimal duct. Matted lashes and a high-level tear meniscus were present in the right eye. No previous NLD probings nor intubation were done. Balloon DCP was subsequently performed. Postoperatively, the patient was given combination steroid/antibiotic eyedrops, nasal decongestant, nasal steroids, and oral antibiotics. After one week, the patient's tearing subsided and at last follow-up at 14 months, he remained symptom-free.

The second case was a six-year-old boy who had on and off tearing in both eyes since birth. NLD probing was performed for NLD obstruction on both eyes at 4 years of age. The tearing, however, persisted. A bilateral balloon DCP was performed. Postoperative medications included steroid antibiotic eye drops, nasal decongestants, and oral antibiotics. Tearing resolved after 1 week in the left eye and 2 weeks in the right eye with the addition of lacrimal-sac massage. At last follow-up at 10 months, both eyes remained symptom-free.

There are 2 sizes of balloon DCP tubes (Lacricath, Atrion Medical, Birmingham, AL, USA): 2 mm for children below 24 months and 3 mm (Figure 2) for

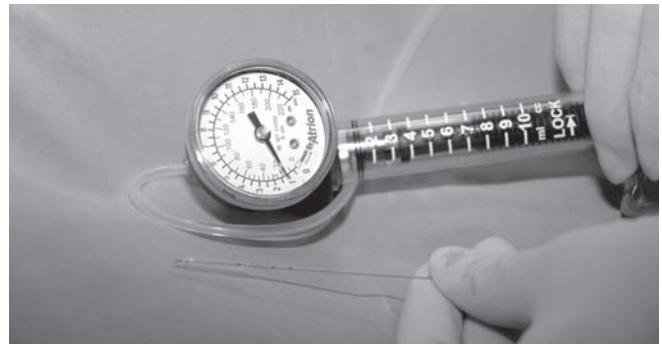


Figure 1. Balloon dacryoplasty unit (pump and stent).



Figure 2. Dilated tip of the stent (photo courtesy of Lacricath).

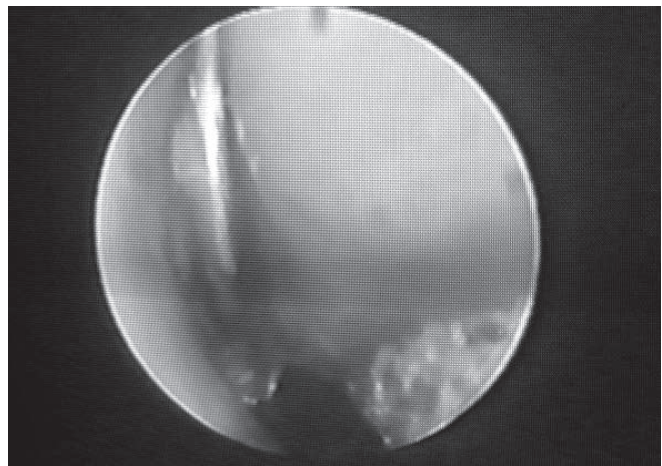


Figure 3. Nasal endoscopic view of dilated balloon tip coming out of the valve of Hasner.

children above 24 months. Both patients had general anesthesia during the procedure. Nasal packing soaked with oxymetazoline (Drixine) was placed inside the nose just below the inferior turbinate. The ipsilateral lower or upper punctum was dilated and a 0-Bowman probe was inserted until it reached the inferior meatus. After the removal of the Bowman probe, the deflated balloon stent was inserted until it reached the inferior meatus. The nasal pack was removed and a 2.7-mm (pediatric) video endoscope was placed intranasally to visualize the balloon stent coming out of the valve of Hasner (Figure 3). The

---

---

balloon was inflated for 90 seconds and then deflated. The deflated stent was retracted a few millimeters superiorly to the level of the lacrimal sac and duct. A marker on the stent indicated the level of the sac-duct junction. The balloon was again inflated for 90 seconds, deflated, and removed. NLD irrigation was done and endoscopically visualized nasally to confirm its patency at the valve of Hasner. Once the flow of fluid was confirmed, this indicated a patent nasolacrimal duct.

Since Becker's pioneering study, many ophthalmologists in the United States have been using balloon DCP for CNLDO. Becker has used this procedure on patients up to 6 years of age.<sup>7</sup> Our series of balloon DCPs reflects the results of the cases reported by Becker. Both were done in children more than 12 months old (five and six years) who were poor candidates for NLD probing. Despite their age, successful results were obtained with a long-term follow-up of more than 10 months.

Compared to NLD probing, balloon DCP not only punctures the valve of Hasner but also dilates and expands the nasolacrimal duct. It is generally effective and safe in the treatment of CNLDO as a primary procedure in children over 12 months of age and as a secondary procedure after failure of NLD probing.

#### References

1. MacEwen CJ, Young JDH. Epiphora during the first year of life. *Eye* 1991; 5: 596-600.
2. Oliitsky SE, Nelson LB. Disorders of the eye. In: Behrman RE, Liegman RM, Jenson HB, eds. *Nelson Textbook of Pediatrics*, 16th ed. Philadelphia: W.B. Saunders, 2000. 1911.
3. Paul TO, Shepherd R. Congenital nasolacrimal duct obstruction: natural history and the timing of optimal intervention. *J Pediatr Ophthalmol Strabismus* 1994; 31: 362-367.
4. Kraft SP, Crawford JS. Silicone-tube intubation in disorders of the lacrimal system in children. *Am J Ophthalmol* 1982; 94: 290-299.
5. Katowitz JA, Welsh MG. Timing of initial probing and irrigation in congenital nasolacrimal-duct obstruction in older children. *Am J Ophthalmol* 2000; 130: 42-48.
6. Becker BB, Berry FD. Balloon catheter dilatation in pediatric patients. *Ophthalmic Surg* 1991; 22: 750-752.
7. Becker BB, Berry FD, Koller H. Balloon catheter dilatation for treatment of congenital nasolacrimal-duct obstruction. *Am J Ophthalmol* 1996; 121: 304-309.