

CORRESPONDENCE

Use of high-frequency ultrasound for follow-up and visualization of intracanalicular plugs

Dear Editor,

We read with interest the case report entitled "Incomplete extrusion of an acrylic punctum plug in a case of severe dry eye syndrome."

played whereas hydrogel plugs are less visible as they produce little detectable boundary layer echoes (Fig. 1B).

We have tested SmartPlugs™ in numerous patients in a period of more than 2 years. No migration of intracanalicular plugs has occurred. We located nearly all implants in the horizontal part of the inferior duct and never situated implants in the ampulla only.

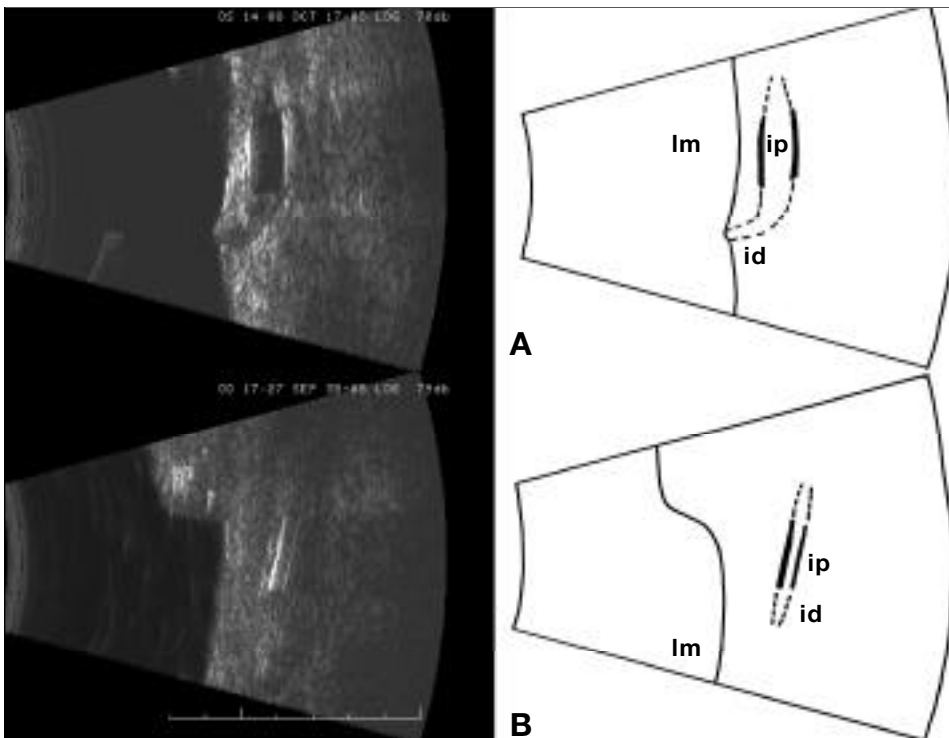


Fig. 1 A, B - 20-MHz Ultrasonography shows the lid in a longitudinal image. Intracanalicular plugs can be easily detected by the interface between plug and inferior lacrimal duct (lm = lid margin; id = inferior duct; ip = intracanalicular plug). A - SmartPlug™. B - Polydioxanon plug.

We confirm the clinical results achieved with intracanalicular plugs (i.e., SmartPlugs™).

In case of low lid temperature the thermosensitive material might not contract completely. The lid region can be warmed with a warm NaCl-wetted cotton wool tip. Follow-up observations can easily be made with 20 MHz ultrasound. The 20 MHz probe provides a good compromise between penetration depth and required resolution for clinical evaluation (1, 2).

At present, several intracanalicular plugs are available for clinical application. These include SmartPlugs™ from acrylic polymer, Formfit™ hydrogel plugs, Herrick™ plugs from silicone, and temporary intracanalicular plugs made from polydioxanone.

Our tests show that intracanalicular plugs made from acrylic polymer are most adequate for long-term follow-up. These are easily detected by ultrasonography (Fig. 1A). Polydioxanon and Herrick plugs can also be dis-



Fig. 2 - Clinical examination with 20-MHz probe.

This stands in contrast to details in recent publications.

The implant showed a homogenous inner structure of low echo density in the echogram. However, the bound-

ary layers are highly reflective and therefore easily detected. The reflectivity remained constant during long-term follow-up. Therefore, we regard the position of the implants in the proximal inferior duct as beneficial to prevent extrusion. In cases of partially opened punctum lacrimale, contamination is avoided.

In conclusion, it should be pointed out that intracanalicular plugs from acrylic polymer are most appropriate for noninvasive ultrasonic follow-up examinations. The posi-

tion of these plugs can be determined in a reliable and noninvasive manner. The aspect of easy monitoring by sonography should always be considered when selecting implants.

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REFERENCES

1. Hurwitz JJ, Pavlin CJ. Proximal canalicular imaging utilizing ultrasound biomicroscopy. *Orbit* 1998; 17: 31-6.
2. Ostendorf M, Tost F. Examen des canalicules lacrymaux par imagerie médicale avec la sonographie à 20 MHz: cas diagnostique normal (Partie I). *J Fr Ophtalmol* 2003; 26: 1031-4.
3. Tost F, Bruder R, Ostendorf M. Sonographie de haute fréquence appliquée aux affections des canalicules lacrymaux (Partie II). *J Fr Ophtalmol* 2003; 26: 1035-8.
4. Tost F, Darmann J. Zum Nachweis von Tränenwegokklusiven mittels Hochfrequenzsonographie. *Klin Monatsbl Augenheilkd* 2003; 7: 460-4.
5. Tost F, Darmann J, Clemens S. 20-MHz ultrasound and its value in imaging of lacrimal plugs. *Ophthalmologica* 2004; 218: 14-9.