Table 1 Summary of KL-6 immunopositive pattern in normal human conjunctiva, pterygia, and a pseudopterygium

	Total (%)	Cytoplasmic/ circumferential membrane	Apical
Normal conjunctiva			
Superficial	0	0	0
Wing	100	7.3	92.7
Basal	100	3.0	97.0
Pterygium head			
Superficial	25	0	25.0
Suprabasal	100	9.4	90.6
Basal	90	5.0	85.0
Pterygium body			
Superficial	83.3	35.7	47.6
Suprabasal	100	62.5	37.5
Basal	100	65.5	34.5
Pseudopterygium			
Superficial	16.7	8.4	8.3
Suprabasal	58.2	9.5	48.7
Basal	65.5	3.4	62.1

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References

- Solomon A, Grueterich M, Li DQ, *et al.* Overexpression of Insulin-like growth factor-binding protein-2 in pterygium body fibroblasts. *Invest Ophthalmol Vis Sci* 2003;**44**:573–80.
- Kohno N, Akiyama M, Kyoizumi S, *et al.* Detection of soluble tumor-associated antigens in sera and effusions using novel monoclonal antibodies, KL-3 and KL-6, against lung adenocarcinoma. *Jpn J Clin Oncol* 1988;**18**:203–16.
- Kohno N, Kyoizumi S, Awaya Y, *et al.* New serum indicator of interstitial pneumonitis activity. Sialylated carbohydrate antigen KL-6. *Chest* 1989;**96**:68–73.
- Kitaichi N, Ariga T, Kase S, *et al.* Usefulness of quantifying serum KL-6 levels in the follow-up of uveitic patients with sarcoidosis. *Graefes Arch Clin Exp Ophthalmol* 2006;**244**:433–7.
- Kitaichi N, Kotake S, Shibuya H, *et al.* Increase of KL-6 in sera of uveitis patients with sarcoidosis. *Graefes Arch Clin Exp Ophthalmol* 2003;**241**:879–83.
- Guo Q, Tang W, Inagaki Y, *et al.* Clinical significance of subcellular localization of KL-6 mucin in primary colorectal adenocarcinoma and metastatic tissues. *World J Gastroenterol* 2006;**12**:54–9.
- Solomon A, Li DQ, Lee SB, *et al.* Regulation of collagenase, stromelysin, and urokinase-type plasminogen activator in primary pterygium body fibroblasts by inflammatory cytokines. *Invest Ophthalmol Vis Sci* 2000;**41**:2154–63.
- Touhami A, Di Pasquale MA, Kawatika T, *et al.* Characterisation of myofibroblasts in fibrovascular tissues of primary and recurrent pterygia. *Br J Ophthalmol* 2005;**89**:269–74.
- Ohshimo S, Yokoyama A, Hattori N, *et al.* KL-6, a human MUC1 mucin, promotes proliferation and survival of lung fibroblasts. *Biochem Biophys Res Commun* 2005;**338**:1845–52.

A simple technique for indirect gonioscopy for patients who cannot be examined at the slit lamp

Gonioscopy, the visualisation of the anterior chamber angle, is central to the examination during the initial and subsequent evaluation of a glaucoma patient.¹ In the infirm or immobile patient it can present a challenge to the examining ophthalmologist when patients are unable to position adequately for slit lamp microscopy. Here we present a valuable technique for indirect gonioscopy utilising a mirrored lens and the direct ophthalmoscope. To our knowledge this method has not previously been described.

Technique

Instead of using the slit lamp for magnification, we use a direct ophthalmoscope with the internal lens set to +15 dioptres or +20 dioptres. The gonioscopy lens is applied in the usual way, with the examiner holding the lens in one hand and the direct ophthalmoscope in the other (fig 1). Using a four mirrored lens in this way, indentation gonioscopy is possible. With practice, this technique can be performed in patients who are supine (for example, in bed) or seated (for example, in a wheelchair).

Comment

This simple technique allows for gonioscopy in patients who cannot be examined at the slit lamp. It uses equipment that should be readily available in the glaucoma clinic. For clinicians who are experienced at slit lamp gonioscopy, it is a relatively easy procedure to learn and yields comparable views of the iridocorneal angle enabling detection of configuration variants and angle anomalies. We find the technique very useful in the evaluation of many patients who might otherwise be impossible to examine fully.

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Figure 1 Demonstration of the technique of indirect gonioscopy utilising a four mirrored contact lens and the direct ophthalmoscope.

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Reference

- Palmberg P. Gonioscopy. In: Ritch R, Shields MB, Krupin T, eds. *The glaucomas. Basic sciences*. St Louis: Mosby, 1996:455.

Haemorrhagic vitreoretinal complications associated with combined antiplatelet agents

Antiplatelet agents are increasingly encountered in combination^{1–3} or taken with non-steroidal anti-inflammatory drugs (NSAIDs), which potentiate their action. We present four cases of intraocular haemorrhage associated with these combinations.

Case 1

An 83 year old man presented with visual acuity reduced to hand motions in both eyes as a result of dense vitreous haemorrhage. He had hypertension, which was being treated, but was not diabetic. Medications included 75 mg clopidogrel once daily and diclofenac.

He underwent a right vitrectomy with cryotherapy and gas tamponade. There was copious intraocular and extraocular bleeding that was difficult to control, significantly prolonging surgery. Postoperatively the acuity was still hand motions with persistent vitreous haemorrhage. Clopidogrel and diclofenac were discontinued before left eye surgery.

At left vitrectomy dense vitreous blood and peripheral disciform lesions were found. Final acuity was 6/12 left eye. The right eye required further surgery for retinal detachment with a final acuity of hand movements.

Case 2

A 72 year old man with inferior retinal detachment under silicone oil, was scheduled for vitrectomy and retinectomy. He was taking aspirin 75 mg once daily and clopidogrel 75 mg once daily, following myocardial infarction (MI). Retinectomy was performed under oil after bipolar diathermy. Extensive and persistent haemorrhage from the cut retina was difficult to control, prolonging surgery. At follow up he had a hyphaema, which cleared over 1 month. The retina redetached under oil.

We have encountered two further cases of spontaneous vitreous haemorrhage associated with combination antiplatelet agents, requiring surgery. No obvious source of bleeding was identified (table 1).

Table 1 Summary of four patients with haemorrhagic vitreoretinal complications whilst taking combined antiplatelet agents

Case	Age (years)	Sex	Antiplatelet drugs	Presenting complaint	Uncontrolled intraoperative bleeding	Outcome/acuity
1	83	M	Clopidogrel, diclofenac*	BE vitreous haemorrhage	Extraocular + intraocular (first eye)	RE further surgery. HM LE 6/12
2	72	M	Clopidogrel, aspirin	Recurrent RD under oil	Intraocular only	Redetached—further surgery, HM 6/6
3	86	M	Dipyridamole mr, aspirin, piroxicam*	LE vitreous haemorrhage	Extraocular only	
4	76	M	Clopidogrel, aspirin	LE vitreous haemorrhage	—	6/12

*Non-steroidal anti-inflammatory agent potentiating antiplatelet effect; mr, modified release; BE, both eyes; LE, left eye; HM, hand movement; RD, retinal detachment.

Comment

The drugs described have varying degrees of antiplatelet activity. NSAIDs competitively and reversibly bind cyclo-oxygenase (COX) and are ineffective as antiplatelet drugs alone, but may potentiate other agents. Aspirin irreversibly inhibits COX and, as monotherapy is not associated with increased risk of haemorrhage in vitreoretinal surgery.⁴

Clopidogrel inhibits adenosine diphosphate activity, impairing platelet aggregation. Dipyridamole also inhibits platelet aggregation, but through a number of different mechanisms. The action of these two agents can be deliberately potentiated by combining them with aspirin.

Clopidogrel and aspirin in combination are widely used following unstable angina¹ and coronary artery stenting,² while dipyridamole with aspirin is used for secondary prevention of stroke.³

Prescribing information for clopidogrel advises discontinuation 7 days before surgery if antiplatelet activity is not required.⁵ Intraocular haemorrhage has recently been reported following peripheral iridectomy in a patient taking both clopidogrel and aspirin,⁶ but vitreoretinal complications have not previously been described.

Our four cases do not prove causation, but in the absence of alternative aetiology it seems likely that impaired platelet function lead to the presenting complaint in cases 1, 3, and 4 and the intraoperative complications in cases 1 and 2. The antiplatelet combinations encountered may be intentional (cases 2 and 4); inadvertent (case 1), or both (case 3).

Cessation of medication in selected cases may be justified, but must balance the risks of doing so (particularly with drug eluting coronary stents) versus the risks of surgery with impaired clotting. Combination treatment is usually indicated for a defined period (up to 1 year for clopidogrel and aspirin) and it may be possible to defer surgery in elective cases. Aspirin monotherapy may be an acceptable alternative after discussion with the patient's physician.

With increased use of combination agents⁷ these problems may be encountered more frequently. Our cases suggest that caution should be exercised when operating on patients taking clopidogrel if there is concurrent use of aspirin or NSAIDs.

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References

- 1 Yusuf S, Zhao F, Mehta SR, *et al.* Effects of clopidogrel in addition to aspirin in patients with acute coronary syndromes without ST-segment elevation. *N Engl J Med* 2001;**345**:494–502.
- 2 Mishkel GJ, Aguirre FV, Ligon RW, *et al.* Clopidogrel as adjunctive antiplatelet therapy during coronary stenting. *J Am Coll Cardiol* 1999;**34**:1884–90.
- 3 Diener HC, Cunha L, Forbes C, *et al.* European Stroke Prevention Study 2. Dipyridamole and acetylsalicylic acid in the secondary prevention of stroke. *J Neurol Sci* 1996;**142**:1–13.
- 4 Narendran N, Williamson TH. The effects of aspirin and warfarin therapy on haemorrhage in vitreoretinal surgery. *Acta Ophthalmol Scand* 2003;**81**:38–40.
- 5 www.sanofi-synthelabo.us/products/pi_plavix/pi_plavix.html.
- 6 Davies BR. Combined aspirin and clopidogrel in cataract surgical patients: a new risk factor for ocular haemorrhage? *Br J Ophthalmol* 2004;**88**:1226–7.
- 7 Chen ZM, Jiang LX, Chen YP, *et al.* COMMIT (Clopidogrel and Metoprolol in Myocardial Infarction Trial) collaborative group. Addition of clopidogrel to aspirin in 45,852 patients with acute myocardial infarction: randomised placebo-controlled trial. *Lancet* 2005;**366**:1607–21.

Isolated foveolar detachment in Irvine-Gass syndrome

Irvine-Gass syndrome, which describes visual loss after cataract surgery as a result of cystoid macular oedema (CMO), typically produces petalloid leakage around the fovea on fluorescein angiography (FA) often associated with late hyperfluorescence of the optic disc.¹ Recently, optical coherence tomography (OCT) has confirmed the presence of perifoveal cystic spaces in vivo, consistent with histological specimens with CMO. OCT is increasingly used as a first test, before FA, for diagnosing unexplained visual loss after cataract surgery. Here we report a case of Irvine-Gass syndrome that demonstrated perifoveal leakage and late optic disc staining on FA, whose predominant OCT finding was a localised foveolar detachment. Isolated foveal detachment has been described in diabetic macular oedema² but we are unaware of any reports of isolated foveolar detachment in Irvine-Gass syndrome.

Case report

A 65 year old woman complained of decreased visual acuity in the right eye

5 months after uneventful cataract extraction. Her medical history was unremarkable. Visual acuity was 20/80 right eye and 20/25 left eye. Dilated fundus examination revealed a loss of the foveal depression in the right eye and normal foveal reflex in the left eye. FA revealed perifoveal leakage right eye and late optic disc hyperfluorescence (fig 1). OCT revealed a foveal neurosensory detachment without cystic spaces around the fovea (fig 2). She was treated with Lotemax and Voltaren in the right eye four times daily and 5 weeks later the acuity improved to 20/25 right eye with resolution of the CMO clinically.

Comment

Several facts support the diagnosis of Irvine-Gass syndrome in this case, including the poor initial visual acuity, the presence of perifoveal leakage and late disc hyperfluorescence on FA, the onset of symptoms 5 months after cataract extraction, and the improvement in vision on topical steroid and non-steroidal drops.³ In Irvine-Gass syndrome, leakage from the retinal vasculature typically leads to accumulation of intraretinal fluid with secondary visual loss. Accumulation of fluid beneath or within the retina requires disruption of cell-cell contacts that ordinarily maintain relative dehydration of potential extracellular spaces. Cell-cell apposition within the retina is mediated by cadherins on Müller cells and retinal neurons.⁴ Accumulation of intraretinal fluid in Irvine-Gass syndrome implies that leakage from the retinal vasculature exceeds the rate of fluid resorption, and that there is disruption of cadherin mediated cell-cell contact within the retina. Our observation of isolated subretinal accumulation of fluid indicates that in this case there was disruption of the normal apposition between the retinal pigment epithelium and photoreceptors, rather than disruption of cadherin mediated cell-cell contacts within the retina. Clinicians should be aware that the clinical and/or OCT finding of an isolated neurosensory detachment, which has previously been seen in diabetic macular oedema, can also occur in Irvine-Gass syndrome.

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