A complication of peribulbar block in a patient with exophthalmos

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Summary
A patient with marked exophthalmos secondary to thyroid eye disease presented for tarsorrhaphy and removal of orbital fat. A single superolateral peribulbar injection was performed. After injection of 3.5 ml of local anaesthetic solution, the globe suddenly dislocated anteriorly. This complication has not been described previously. In patients with exophthalmos, general anaesthesia should be considered as the method of choice for ophthalmic procedures. (Br. J. Anaesth. 1998; 81: 615).

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Case report
A 53-yr-old woman with long standing thyroid eye disease presented to the ophthalmic emergency department three times in 12 months complaining of acute, excessive proptosis secondary to coughing. Therefore, it was decided to perform a left tarsorrhaphy and removal of orbital fat. She was euthyroid and apart from being a heavy smoker was otherwise healthy. On examination, she had marked bilateral exophthalmos, which was greater on the left.

The surgeon felt that a single superolateral injection of local anaesthetic would be sufficient for the procedure. After local infiltration to the upper eyelid, a 25-gauge peribulbar needle was inserted periconally to a depth of 2 cm. A slow injection of 2% lidocaine (lignocaine) with epinephrine (adrenaline) and hyaluronidase was commenced. After 3.5 ml had been injected, the entire globe suddenly dislocated anteriorly, with both upper and lower lids lying behind the globe. The block needle was removed promptly and the surgeon exerted gentle but constant pressure manually to the globe which then re-located behind both lids. Local anaesthesia to the upper lid had been achieved and surgery was performed uneventfully.

Discussion
Thyroid eye disease is a common problem, but only a small percentage of patients need surgical intervention.1 The main indications for surgery are excessive proptosis and optic neuropathy. The aim of surgery is to reduce proptosis and decrease pressure effects on the optic nerve. There have been several surgical procedures described,2 but the method with least complications is excision of orbital fat.3 4 In a review of the literature, we found no reports of globe subluxation after peribulbar anaesthesia.

In a normal eye, the globe is prevented from protruding by the orbital septum. This is a firm, inelastic sheet of connective tissue. It originates superiorly from the periosteum of the superior orbital rim and inserts onto the levator aponeurosis of the upper lid. Similarly, inferiorly it originates from the inferior orbital rim and inserts into the capsulopalpebral fascia (analogous to the upper lid levator aponeurosis) of the lower lid. These attachments retain orbital fat within the orbit and provide anterior stability for the globe.

In thyroid eye disease, intraorbital pressure is increased because of marked thickening of the extrinsic muscles. They may be up to eight times their normal size as a result of an increase in the mucopolysaccharide content of the muscle. The latter has an osmotic effect, leading to the formation of oedema. There is also an increase in orbital fat content, further increasing intraorbital pressure. Fibrosis of the eyelid muscles leads to lid retraction and a further reduction of the stabilizing effect of the orbital septum.

It seems that in this patient, the pressure behind the globe was already increased to a critical level, such that the slight increase in pressure after peribulbar injection was sufficient to cause the globe to sub-lux anteriorly.

With the increasing use of local anaesthetic techniques we feel that it is important to report this complication. Choice of anaesthetic technique is crucial to the successful outcome of ophthalmic procedures. For patients with marked exophthalmos presenting for orbital decompression, we would suggest that general anaesthesia is the method of choice, thereby avoiding increased pressure behind the globe.

References

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