

1 **Title**

2 A clinical sign for aiding the diagnosis of unilateral orbital fat herniation

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4 **Short Title**

5 Orbital fat herniation

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17 **Type of Article**

18 Case report

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27 **Abstract**

28 Subconjunctival orbital fat herniation is a rare occurrence. These masses can be easily mis-
29 diagnosed as more sinister lesions. We present a unilateral case of this condition and a
30 useful, previously undescribed clinical sign, which obviated the need for orbital imaging.

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32 **Key Words**

33 Orbital, fat, herniation, prolapse, subconjunctival

34 Introduction

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36 Subconjunctival fat herniation (SFH) is a rare finding.¹⁻⁴ Intraconal orbital fat herniates
37 through a dehiscence in Tenon's capsule to form a mass, usually under the supero-temporal
38 bulbar conjunctiva. SFH has been mistaken for choristomas (dermoid cysts and
39 dermolipomas), lymphomas, pleomorphic lipomas and lacrimal gland tumours or cysts.⁴

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41 A more common finding is protuberances of the lateral area of the lower lid and upper cheek
42 from orbital fat herniation through the inferior orbital septum. This is particularly common
43 in elderly, obese males. It has been referred to as 'steatoblepharon' or 'palpebral bags'.¹

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45 SFH is frequently misdiagnosed. We report a previously unreported, useful clinical sign that
46 helped confirm the clinical diagnosis.

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48 Case Report

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50 A 76-year-old man was referred to the orbital clinic with an asymptomatic right, supero-
51 temporal anterior orbital mass, which had been present for five years. The patient had
52 diabetes mellitus, hypertension, high cholesterol and had had a cardiac bypass for which he
53 took multiple medications. There was no history of ophthalmic disease or trauma. On
54 examination there was a large, soft, yellow, mobile, subconjunctival mass in the supero-
55 temporal orbit, directly inferior to the palpebral lobe of the lacrimal gland (figure 1). The
56 posterior edge of the mass was not visible. The mass did not have dermis, glands, keratin or
57 hair on it. There was also bilateral infero-temporal preseptal fat prolapse, with the left
58 prolapse being markedly larger than the right (figure 2a and b). There was no proptosis,
59 diplopia, acuity/colour vision reduction, pupillary abnormalities, tenderness or conjunctival

inflammation. The mass was diagnosed clinically as orbital fat herniation and no imaging or investigations were performed. The patient declined surgical intervention.

Discussion

Supero-temporal subconjunctival masses may be intraorbital fat herniation, dermoid cyst, dermolipoma, lymphoma, pleomorphic lipoma and dacryops.⁴ Unlike the present case, dermoid cysts and dermolipomas usually present in childhood. They are typically firm and white and their surface can contain sebaceous glands and hair follicles. Lymphomas are usually flat and 'salmon pink' in colour. Orbital pleomorphic lipomas are extremely rare, with only a few cases in the literature.⁵ Although similar in appearance to OFH they gradually increase in size. OFH should not be confused with the lacrimal gland, which is located superiorly to the fatty mass. The present case was suspected as being an orbital fat prolapse as the lesion was soft, yellow and mobile. The finding of bilateral, but asymmetrical inferior fat pads supported the diagnosis. The inferior fat pad on the side with the subconjunctival fatty mass was markedly smaller than the fellow side. There appears to have been a similar degree overall of fat herniation on each side, but on one side all the herniated fat was located in the inferior fat pad but on the other side it was split between the inferior fat pad and the superior subconjunctival fatty mass. This useful clinical sign, which has not been previously reported, obviated the need for CT scanning.

The orbit contains both intraconal fat (within Tenon's capsule) and extra-conal fat (outside Tenon's capsule). CT scanning from other case series of subconjunctival OFH showed extrusion of intra-conal fat.^{1, 4} Inferior fat pads are usually thought to derive from extra-conal fat. However, in the present cases, the clear splitting of fat between the superior conjunctival area and the inferior lid indicates a common source. It is likely that inferiorly,

intra-conal fat herniated through both tenons and orbital septum – both of which atrophy with age - to form the lower lid fat pad.

Subconjunctival orbital fat prolapse is usually unilateral and supero-temporal, but has been described to occur bilaterally and nasally and inferiorly.⁴ The reported case series are all small, but age, male sex and obesity all seem to be risk factors.^{2, 4} OFH has been reported in a young child, although in this case the dehiscence in Tenon's capsule was caused by penetration with a wire.⁴

The patient in the present report was asymptomatic and elected for conservative management. Surgical excision has been conducted in other case series for both diagnostic and cosmetic reasons.⁴ The lesions have been clamped, cut and the base diathermied prior to releasing the clamp. No recurrences or complications have been reported, but there is a risk of retrobulbar haemorrhage.

Conclusion

OFH is frequently misdiagnosed. Assessment of the inferior fat pads may facilitate a clinical diagnosis avoiding the need for further investigations, referrals or excision.

Declaration of Interests

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper

Figure Legends

112 **Figure** 1: Supero-temporal orbital fat herniation

113 **Figure** 2: Asymmetrical infero-temporal pre-septal fat pads: right smaller than left

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115 **Consent**

116 The patient gave written consent for his photographs to be taken and for these photographs

117 to be used for publication.

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120 References

121

- 122 1. Viana GA, Osaki MH, Filho VT, Sant'Anna AE. Prolapsed orbital fat: 15 consecutive
123 cases. Scand J Plast Reconstr Surg Hand Surg 2009;43(6):330-4.
- 124 2. Schmack I, Patel RM, Folpe AL, et al. Subconjunctival herniated orbital fat: A benign
125 adipocytic lesion that may mimic pleomorphic lipoma and atypical lipomatous tumor. Am J
126 Surg Pathol 2007;31(2):193-8.
- 127 3. Stangos AN, Hamedani M. Spontaneous subconjunctival orbital fat prolapse:
128 presentation of four cases. Klin Monbl Augenheilkd 2006;223(5):415-7.
- 129 4. McNab AA. Subconjunctival fat prolapse. Aust N Z J Ophthalmol 1999;27(1):33-6.
- 130 5. Daniel CS, Beaconsfield M, Rose GE, et al. Pleomorphic lipoma of the orbit: a case
131 series and review of literature. Ophthalmology 2003;110(1):101-5.

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