

# Multiple Orbital Dermoid Cysts Located within the Superior Oblique Muscle

Syed Ziaeddin Tabatabaie, MD<sup>1</sup> • Mohammad Taher Rajabi, MD<sup>2</sup>  
Ali Sadeghi Tari, MD<sup>3</sup> • Mohammad Bagher Rajabi, MD<sup>1</sup>

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## Abstract

**Purpose:** We describe clinical and radiologic findings and surgical outcome of an orbital dermoid cyst located in the superior oblique muscle tendon. This unusual location for dermoid tumors has not been reported previously.

**Case report:** A 15-year-old girl referred to us with an orbital mass in superonasal quadrant of the left orbit reportedly to be present from birth. Computed tomography revealed a cystic mass in the superonasal quadrant of the left orbit. Surgical excision through an incision at the medial of the upper lid crease showed two well-circumscribed masses surrounded by superior oblique muscle tendon. Results of histopathologic evaluation showed a dermoid cyst. Postoperatively, the patient did well with no change in her clinical finding.

**Conclusion:** The findings in this patient demonstrate an unusual presentation for dermoid cysts; such pathologies could be included in the differential diagnosis of an enlarged extraocular muscle (EOM).

**Keywords:** Dermoid Cysts, Orbit, Superior Oblique Muscle

*Iranian Journal of Ophthalmology 2011;23(3):65-68 © 2011 by the Iranian Society of Ophthalmology*

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## Introduction

Orbital dermoid and epidermoid cysts are choristomas resulting from sequestration of surface ectoderm.<sup>1-3</sup> Dermoid cysts generally remain asymptomatic unless they enlarge and cause orbital compressive effects or rupture spontaneously and cause an inflammatory reaction. Lesions are located superotemporally (70-75%) and superonasally (15-17%) in the majority of the cases.<sup>4</sup> Here

we present an unusual presentation of a dermoid cyst located within the superior oblique muscle tendon that has not been reported previously.

## Case report

A 15-year-old girl presented with an orbital mass in superonasal quadrant of the left orbit that has been from birth (Figure 1).

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1. Associate Professor of Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran
  2. Assistant Professor of Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran
  3. Professor of Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran
  4. Resident in Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran

Received: April 7, 2011

Accepted: August 11, 2011

Correspondence to: Mohammad Taher Rajabi, MD  
Assistant Professor of Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran,  
Tel:+98 21 55414941-6, Email: mt\_rajabi@yahoo.com

She had diplopia in extreme upgaze which had been worse over several years. There was no pain or visual loss. Ocular and medical history was unremarkable.

Best corrected visual acuity (BCVA) was  $^{10}/_{10}$  in right eye and  $^8/_{10}$  in the left eye. Results of the pupillary examination were normal. Motility exam demonstrated mild limitation on the left side in up and left gaze. The remaining results of the anterior and posterior segment examination in both eyes were normal.

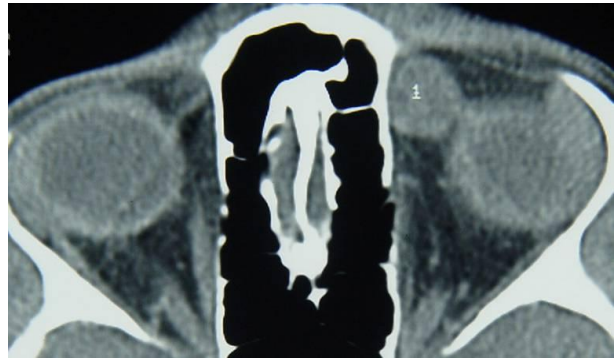
Computed tomography revealed a cystic mass at superonasal quadrant of the orbit (Figure 2). The contents of the cyst were nonhomogeneous, with a mixture of tissue densities ranging from fat to water.

Surgical excision through an incision at the medial of the upper lid crease showed 2 well-circumscribed masses surrounded by much enlarged but otherwise superficially normal superior oblique muscle tendon near the trochlea. No periorbital attachment was noted (Figures 3, 4). During removal, the cyst wall ruptured and hair and yellowish material spilled. There was no pedicle from the mass to the orbital wall. Postoperatively, the patient did well with no change in her clinical findings.

Results of histopathologic evaluation confirmed the diagnosis of a dermoid cyst. The cyst filled with keratin and lined by stratified squamous epithelium. Hair follicles and adipose tissue are found within the cyst wall (Figure 5).



**Figure 1.** A 15-year-old girl with a mass in superonasal quadrant of the left orbit



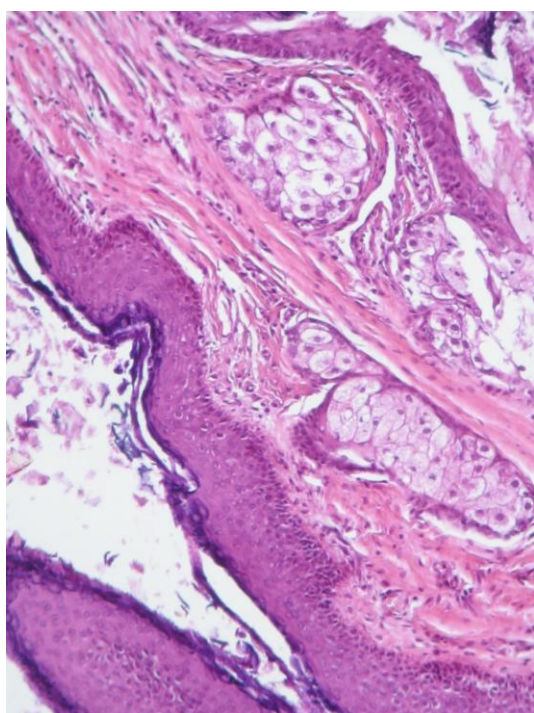
**Figure 2.** Axial CT scan of orbits shows cystic mass in superonasal part of the orbit. Notice the heterogeneous appearance of the cyst contents.



**Figure 3.** Intraoperative gross pathology of the two discrete cystic mass from the superior oblique muscle



**Figure 4.** Gross photograph of excised dermoid cyst showing a large cyst and a small cyst attached to it



**Figure 5.** Histopathology shows the keratin-filled cyst lined by stratified squamous epithelium. Hair follicles and adipose tissue are found within the cyst wall.

## Discussion

Orbital dermoids are choristomas resulting from sequestration of surface ectoderm.<sup>1,3</sup> Most lesions develop into cystic structures filled with keratin debris. Histopathologic evaluation classically demonstrates a keratinized squamous epithelium lining a cyst wall, which includes dermal adnexal structures such as hair follicles and glandular elements.<sup>5</sup>

Dermoid cysts comprise 3% to 9% of all orbital tumors, varying with the age group studied.<sup>6,7</sup> The majority of occurrences are in children younger than 3 years of age and present as asymptomatic anterior mass lesions.<sup>8</sup> After the childhood peak, a second peak in the clinical presentation of dermoids occurs in the third and fourth decades due to expansion of posterior orbital dermoid cysts.<sup>3</sup>

Superficial or simple lesions primarily refer to anterior orbital dermoid in children that frequently are based on a periosteal pedicle extending from the frontolacrimal or frontozygomatic sutures. An anteriorly located dermoid cyst often present as a small asymptomatic nodule that does not affect orbital position or ocular motility. The superficial location anterior to the equator of

the globe, allows for early diagnosis and excision.<sup>5</sup>

Dermoid cysts in the posterior portion of the orbit frequently remain asymptomatic until enlargement causes changes in the position of the globe, or extraocular muscle (EOM) imbalance after the first decade of life.<sup>5</sup>

Orbital dermoids located in the posterior orbit may disturb ocular motility, leading to diplopia.<sup>9-11</sup> Abnormalities in ocular motility can result from tight attachment of the muscle to one section of a large dermoid.<sup>12</sup> Muscular inflammation and fibrosis from recurrent trauma and discharge of cyst content or mechanical limitations from compression by an intraorbital mass can contribute to decreased EOM function,<sup>12</sup> although we did not find any significant limitation in function of superior oblique muscle.

Our patient with dermoid cyst incarcerated within an EOM totally isolated from the orbital wall, represent an unusual form of deep orbital dermoids. Paramuscular attachment of dermoids to EOMs has been reported.<sup>11,13</sup> Howard et al<sup>5</sup> reported 2 cases of dermoid cysts within the lateral rectus muscle. Pollard and Calhoun<sup>11</sup> described a 5-year-old patient with lateral rectus palsy caused by a dermoid cyst. Our case differs from previous reports of dermoid tumors by unusual position within the superior oblique muscle. To the best of our knowledge, this is the first report of such unusual presentation.

Various surgical approaches have been used.<sup>4</sup> The recommended approach to a dermoid cyst is either an infra brow incision or a cutaneous eyelid crease incision. When a conjunctival approach is used, care must be taken to identify and isolate adjacent rectus or oblique muscles to avoid damaging them. We preferred an upper eyelid crease excision because it provides better exposure of the eyelid and anterior orbital structures with minimal dissection decreases the risk of vital anatomic structures, allows for simple wound closure and provides a better cosmetic result.<sup>4,14</sup>

## Conclusion

The findings in this patient demonstrate an unusual presentation for dermoid cysts and such pathologies could be included in the differential diagnosis of an enlarged EOM.

## References

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1. Shields JA, Bakewell B, Augsburger JJ, et al. Space-occupying orbital masses in children. A review of 250 consecutive biopsies. *Ophthalmology* 1986;93(3):379-84.
2. Kodsi SR, Shetlar DJ, Campbell RJ, et al. A review of 340 orbital tumors in children during a 60-year period. *Am J Ophthalmol* 1994;117(2):177-82.
3. Samuelson TW, Margo CE, Levy MH, Pusateri TJ. Zygomaticofrontal suture defect associated with orbital dermoid cyst. *Surv Ophthalmol* 1988;33(2):127-30.
4. Shields JA, Kaden IH, Eagle RC Jr, Shields CL. Orbital dermoid cysts: clinicopathologic correlations, classification, and management. The 1997 Josephine E. Schueler Lecture. *Ophthal Plast Reconstr Surg* 1997;13(4):265-76.
5. Howard GR, Nerad JA, Bonavolonta G, Tranfa F. Orbital dermoid cysts located within the lateral rectus muscle. *Ophthalmology* 1994;101(4):767-71.
6. Pollard ZF, Harley RD, Calhoun J. Dermoid cysts in children. *Pediatrics* 1976;57(3):379-82.
7. Sherman RP, Rootman J, Lapointe JS. Orbital dermoids: clinical presentation and management. *Br J Ophthalmol* 1984;68(9):642-52.
8. Lane CM, Ehrlich WW, Wright JE. Orbital dermoid cyst. *Eye (Lond)* 1987;1 (Pt 4):504-11.
9. Grove AS Jr. Giant dermoid cysts of the orbit. *Ophthalmology* 1979;86(8):1513-20.
10. Mehra KS, Bannerji C. Enlargement of optic foramen due to dermoid cyst of orbit. *Am J Ophthalmol* 1965;60(5):931-3.
11. Pollard ZF, Calhoun J. Deep orbital dermoid with draining sinus. *Am J Ophthalmol* 1975;79(2):310-3.
12. Reim M, Freund J, Wegel-Lüssen L. Giant dermoid cyst of orbit causing disturbance of ocular motility. *Mod Probl Ophthalmol* 1975;14:372-6.
13. Mortada A. Dermoid cyst of great wing of sphenoid bone. *Br J Ophthalmol* 1970;54(2):131-3.
14. Kronish JW, Dortzbach RK. Upper eyelid crease surgical approach to dermoid and epidermoid cysts in children. *Arch Ophthalmol* 1988;106(11):1625-7.