



GIANT INCLUSION CONJUNCTIVAL CYST: A CASE REPORT

Ophthalmology

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KEYWORDS

Disease

Inclusion cysts are benign cysts filled with clear serous fluid containing shed cells or mucoid material (Figure 1).[1] Inclusion cysts constitute 80% of all cystic lesions of the conjunctiva. The average onset age is 47 and occurrence has no gender predilection.[2]

They are formed from an inclusion of the conjunctival epithelium into the substantia propria, forming a central cystic cavity due to epithelial cell proliferation. The cyst wall is composed of stratified squamous epithelium and connective tissue. [3]They can be either primary or secondary, and are usually asymptomatic. Treatment is required if discomfort develops or any impairment of function due to the size pf the cyst leading to restricted movement of eyeball..[1]

Etiology

A patient named Irshad begam 47 yrs old come to the department of ophthalmology at Vims Amroha with conjunctival swelling for last 20yrs. Primary conjunctival inclusion cysts are congenital. Secondary cysts can be spontaneous or, most commonly, due to inflammatory conditions of the conjunctiva[4], such as pterygium, pingueculitis[5], chronic keratoconjunctivitis[6] and pyogenic granuloma[7], or following ocular trauma[8] or surgery, such as cataract [9], strabismus[10], enucleation[11] or scleral buckle placement[12].

Risk Factors

The following causes have been cited for secondary conjunctival inclusion cyst:

- Inflammatory conditions of the conjunctiva (e.g. pterygium, pingueculitis[5], chronic keratoconjunctivitis[6] or pyogenic granuloma[7])
- Trauma[8]
- Surgery[9][10][11][12]
- Sub-Tenon anesthesia[13]

General Pathology

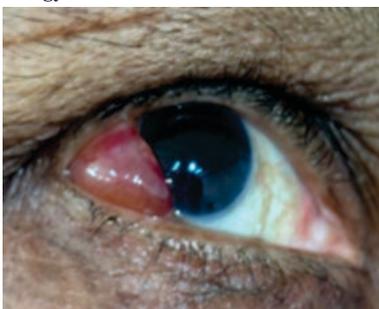


Figure 2A. Image illustrating a patient who developed conjunctival temporal inclusion cyst after trauma four yrs back.

A cyst is an abnormal vesicle containing gas, fluid or semi-solid material, with a membranous framework. It can develop in various locations e.g., eyelids, conjunctiva and anterior segment.[14] Post-traumatic or post-surgical cystic formation is often seen.[15]Cyst walls are composed of layers of non-keratinized lining epithelium and connective tissue.[3]

Pathophysiology

Excessive invagination of the caruncular epithelium or fornix during embryonic development leads to the formation of primary inclusion cysts.[16] The presentation of these cysts varies from birth to old age.[4] Secondary inclusion cysts can occur either naturally or under inflammatory conditions of the conjunctiva. Anything that causes detachment of a portion of conjunctival epithelium can cause a secondary inclusion cyst, such as surgery or trauma.[8] Sub-Tenon anesthesia is one such example of surgical trauma that can result in an inclusion cyst.[13]



Image Illustrating A Patient Who Developed Conjunctival Temporal Inclusion Cyst Following Trauma Four Yes Back

In addition, it is known that cyst formation involves inflammatory processes, therefore the immune system plays a role. Individual factors, such as autoimmune diseases, can also contribute to changes in the immune response resulting in differing degrees of cyst formation.[15]

Primary Prevention

Primary conjunctival inclusion cysts cannot be prevented, as it is a congenital disease. Avoiding conjunctival inflammatory processes and ocular trauma can reduce the chance of developing a secondary inclusion cyst.

Diagnosis

History

Many patients may be asymptomatic. Symptomatic patients may complain of a "round lesion" on the surface of the eye, which may be associated with an increased cyst size or foreign body sensation.

Diagnosis of conjunctival inclusion cyst is essentially clinical (Figure 3A). Histopathology can confirm the diagnosis, although this is not usually necessary. Slit lamp examination should include a measurement of the size of the cyst, assessment of the characteristics of its wall(s), and internal content, and whether it transilluminates (Figure 3B). The walls are usually thin and translucent. The fluid is usually clear; however, in rare cases, epithelial cells can deposit at the bottom of the cyst and form a pseudo-hypopyon (Figure 4). It is also important to evaluate the eye for signs of previous trauma, previous eye surgery, or active inflammatory processes.

Figure 3. Large conjunctival inclusion cyst in the temporal side of conjunctiva.

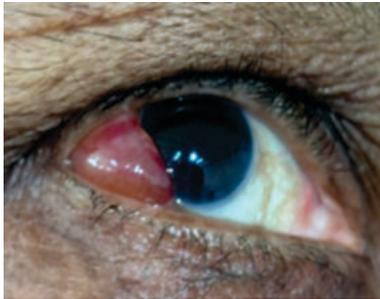


Figure 3A. Spontaneous cyst, developed without a previous history of trauma/surgery or chronic inflammation. Hospital of State Civil Servant (IAMSPE-SP).

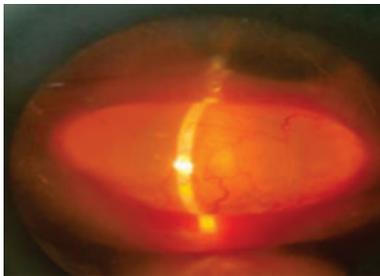


Figure 3B. Slit lamp photograph. Note translucency of the conjunctival inclusion cyst wall.

Symptoms

Small conjunctival inclusion cysts are generally asymptomatic or only cause mild sensations indicating the presence of a foreign body. Larger cysts can cause pain, motility disturbance, visual defect or refractive error, and cosmetics concerns. Sometimes, the conjunctiva around the cysts can become injected due to dry eye.

In a clinical-histopathological study that analyzed different varieties of conjunctival cysts[4], the most common symptoms were, in decreasing order:

1. Progressive increase in cyst size
2. Cosmetic disfigurement
3. Foreign body sensation
4. Proptosis
5. Ocular motility restriction
6. Blurred vision

Diagnostic Procedures

The diagnosis of conjunctival inclusion cyst is usually clinical and may be confirmed by pathology; however, there are some imaging modalities that can be useful for diagnosis. Corneal and conjunctival tumors can be visualized by AS-OCT and UBM, two noninvasive imaging techniques. [17]The use of imaging modalities is helpful for preoperative planning, surgical decision-making and to confirm cyst characteristics. Several studies on the quality of AS-OCT and UBM show that they provide useful information about the internal features, extension, size, and shape of the cysts

Anterior Segment Optical Coherence Tomography (AS-OCT)

AS-OCT is ideal for imaging structures from the surface of the eye to the level of the iris. [21]A disadvantage of AS-OCT is that it cannot visualize early pathological changes smaller than 5 μm such as early dysplasia.[21][22]When comparing AS-OCT and UBM, AS-OCT is the better imaging technique for small cystic structures. This is

especially useful for nevi as they often contain small cysts. In contrast, UBM is a better technique to determine tumor margins.

A Round Well-delimited Subconjunctival Lesion

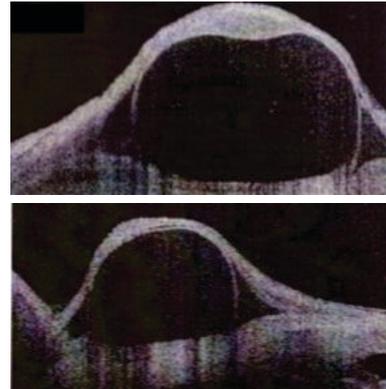


Figure 6B. Longitudinal AS-OCT section demonstrating a round lesion with hyporeflective content (punctiform particles noticed) and a thin hyperreflective wall.

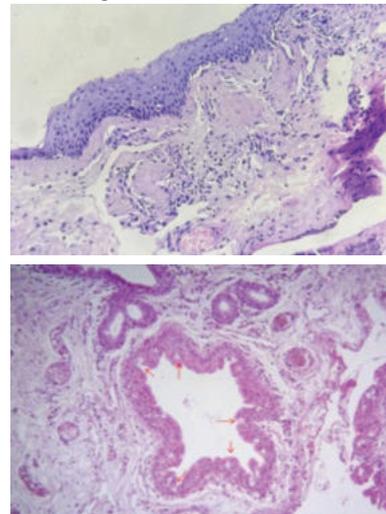
Comparison of UBM and AS-OCT showed that UBM had a better tumor visualization and better resolution of the posterior margin. UBM also had a better resolution for pigmented as well as for nonpigmented tumors. However, AS-OCT showed better resolution of the anterior border and better resolution of the anterior segment anatomy. Posterior tumor shadowing was rarely found in UBM images and more common in AS-OCT. The image quality was good in UBM but less in AS-OCT. The study shows that AS-OCT is superior to UBM for the imaging of conjunctival lesions, since AS-OCT offers a higher resolution and conjunctival lesions are superficial and mostly not pigmented.[17][23]

Laboratory Test

Conjunctival Inclusion Cysts are diagnosed clinically, therefore, laboratory tests are not required.

Histopathology

Histological Sections of Conjunctival Inclusion Cyst Resection. Same Patient From Figure 3.



Cyst lined by stratified epithelium with goblet cells (arrows) on the cyst wall, communicating directly with the lumen. HE - 100x. Photo by courtesy of Ulisses de Alcantara Ferreira, M.D. Pathology Sector, Hospital of State Civil Servant (IAMSPE-SP).

The American Academy of Ophthalmology's Pathology Atlas contains a virtual microscopy image of Conjunctival Inclusion Cyst .

Differential Diagnosis

Benign
<ul style="list-style-type: none"> • Conjunctival papilloma • Papilloma of caruncle • Conjunctival pseudoepitheliomatous hyperplasia

- Keratoacanthoma
- Conjunctival hereditary benign intraepithelial dyskeratosis
- Conjunctival dacryoadenoma
- Lacrimal gland dacryops
- Epithelial inclusion cyst

Premalignant

- Conjunctival keratotic plaque
- Actinic keratosis
- Conjunctival intraepithelial neoplasia

Management

Management can involve either observation or intervention, depending on the size of the cyst and the patient's complaints.

General Treatment

Excision of conjunctival inclusion cyst is the definitive treatment although it is also possible to aspirate the cyst at the slit lamp. After informed consent is obtained, including a review of risks, benefits, and alternatives, the patient is positioned at the slit lamp with their head firmly positioned against the bar. The ocular surface may be cleaned with betadine. Under topical anesthesia of the ocular surface with 0.5% proparacaine, using a 27 or 30 gauge needle attached to a syringe, the cyst can be aspirated. Care must be taken not to puncture conjunctival vessels, or the globe during the procedure. Post-operative care may include a brief period of restrictions (i.e. swimming), the use of antibiotic drops, and/or a follow-up visit.

Medical Therapy

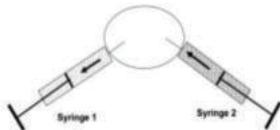


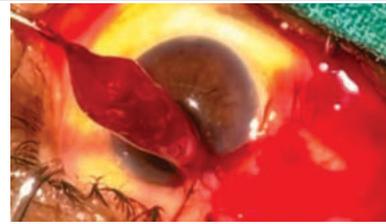
Figure 9. Paired injection technique: syringe 1 is used to withdraw the cyst content; syringe 2 is used to inject the alcohol. Reproduced from Kothari M. A novel method for management of conjunctival inclusion cysts

Generally, these cysts may disappear spontaneously; however, persistent cases require treatment. Surgical excision of the cyst is the best treatment, but thermal cautery under slit-lamp visualization[25] or YAG laser of the cyst has also been performed.[9][26]

There are reports on the application of TCA (trichloroacetic acid) 20–25% for superficial conjunctival cysts with high success rates, and also reports of TCA 10%-20% injection into conjunctival cysts in ophthalmic and anophthalmic sockets[27], as well as children and multiple cysts, with 100% success (Figure 8).[28] Mihir Kothari et al. reported two cases of conjunctival inclusion cysts following strabismus surgery treated using a paired injection technique, which consists of using two 31 G insulin syringes, one empty syringe (syringe 1) and the other filled with 0.5 mL 70% isopropyl alcohol (syringe 2), simultaneously. The fluid from the cyst is aspirated into syringe 1 as the cyst is simultaneously filled with the alcohol from syringe 2 to prevent collapse. Once all the alcohol from syringe 2 is injected, aspiration (syringe 1) is stopped. The cyst remains inflated and filled with alcohol throughout the procedure. Thirty seconds later, the cyst is emptied by aspirating the alcohol with syringe 1 (Figure 9). There was no recurrence in a nine-month-follow-up.[24]

Surgery

Excision of the conjunctival inclusion cyst can be performed under topical anesthesia with 0.5% proparacaine, associated with subconjunctival infiltration of lidocaine around the cyst. A non-traumatic tweezer can be used to assist in removal of the cyst. A small incision is made and the blunt tip of scissors introduced between the cyst and Tenon capsule, to separate the cyst from the surrounding tissue. After blunt dissection around the anterior aspect of the cyst, the next step is to carefully free the base of the cyst. Removing the cyst intact decreases chances of recurrence. If there is no conjunctiva remaining for primary closure over the wound, then the scleral bed may be left open or a conjunctival autograft or amniotic membrane may be used to cover the defect. Send the excised presumed cyst to pathology.



Demonstrates the simple technique of conjunctival epithelial cyst removal without sutures.

Surgical Follow up

The follow-up time for each patient who underwent surgical excision of the cysts varies. The photo in Figure 12 illustrates a patient 2 months after excision.

Complications of Surgical Excision

As the cysts are thin walled, rupture is common during excision. Recurrence is the main postoperative concern. Careful and intact removal of cyst is necessary to prevent recurrence.[4]

Prognosis

Prognosis for conjunctival inclusion cyst is usually very good.

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