



THE COMPLETE AND COMPREHENSIVE ANALYSIS ON PTRYGIUM AND PINGUECULA.

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ABSTRACT: -

There are two common and rapidly increased disorder in the world i.e., Pterygium and Pinguecula. They are two different but somewhat similar disorder because in some cases pterygium is started with pinguecula means pinguecula is a first stage of pterygium disease. Pinguecula has its own blood vessels. For this reason, a pterygium is often larger and it may be red, pink or yellow. A pterygium may cause more symptoms than a pinguecula. Pterygium may interfere with a person's vision. There are no parts in pinguecula and there are four parts in pterygium namely: - 1. Head 2. Neck 3. Body 4. Cap. These disorders can be prevented by wearing sunglasses, wearing a wide brimmed hat, managing dry eyes, wash your eyes with cold water not extreme cold but somewhat cold after roaming outside. They can be treated in two ways: 1) Medicated 2) Surgical. If symptoms are in small form, then use medicated treatment. In medicated, there are some drops are used i.e., 1) Mitomycin C drop 2) 5- fluorouracil drop 3) Thiotepa drop. If symptoms are beyond particular limit, then use surgical treatment i.e., 1) Bare Sclera Technique 2) A conjunctival autograft Technique 3) Amniotic Membrane Grafting.

KEYWORDS: - Pterygium, Pinguecula, Mytomycin C, 5-fluorouracil.

INTRODUCTION: -

1.PTERYGIUM: -

A Pterygium is a triangular wedge of fibrovascular conjunctival tissue that typically starts medially on the nasal conjunctiva and extends laterally onto the cornea. "Pterygium" refers to the shape of the tissue, which looks like an insect wing. The plural form of Pterygium is pterygia.

A Pterygium is sometimes thought of as a trivial problem because it is unlikely to threaten visual acuity unless it approaches the visual axis. Nevertheless, it can be a cause of concern to patients because of the abnormal appearance it confers upon the eye and the irritation that is often associated with it. Although benign in the sense that pterygium is not cancerous, it can have important adverse effects on vision if proliferation approaches or reaches the visual axis

This topic will focus on the clinical presentation, diagnosis, and treatment of Pterygium. Some conditions that may occasionally be confused with Pterygium are discussed in detail elsewhere. [1]

2.PINGUECULA: -

- Pinguecula is a benign, common degeneration of the conjunctiva. Pinguecula has originated from the Latin word "pinguis," which means fat or grease. It is usually bilateral but can be unilateral also. It appears as a grey white-yellow mass on the bulbar conjunctiva. It presents in people exposed to wind, dust, ultraviolet light, and working outdoors for a long duration. Usually, it causes cosmetic complaints. Mild symptoms such as foreign body sensation and itching are treated with artificial tears. Surgical excision may be rarely considered for cosmetic reasons[2]

DIFFERENCE IN PTERYGIUM AND PINGUECULA: -

Both are growth on your eye's conjunctiva

Pinguecula

- A Pinguecula usually Symptoms, however, if it becomes irritate you may feel as if you have something in your eye. In some cases, Pinguecula become swollen and inflamed. Irritation and eye redness may occur, particularly if you are significantly exposed to sun, wind, dust or a very dry environment. With a Pterygium, some people may have no symptoms other than the growth appearing. For others, especially those who have a Pterygium that is growing, there can be redness, inflammation or both. Pingueculais a raised yellowish or white growth on the white of your eye. It stays on the conjunctiva and doesn't overlap onto your cornea. It usually doesn't cause symptoms or needs to be removed.[3]

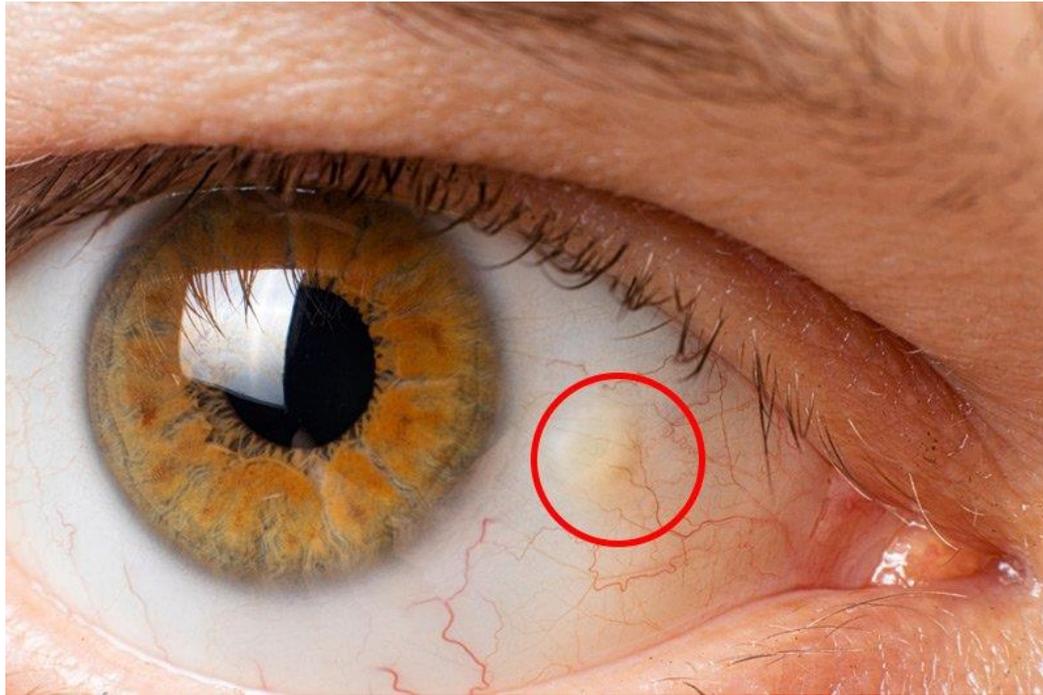


Fig1: - A diseased eye of Pinguecula

Pterygium

- Pterygium is a wing-shaped fibrovascular growth.[4]

It can be divided into three recognizable parts: apex (head), neck, and body. The raised triangular portion of the pterygium with its base toward the canthus is the body, the neck that includes the superficial limbus, whereas the head invades the cornea and forms the apex of the triangle. [5]

- A subepithelial cap or “halo” is present in front of the head of the pterygium [6]and is usually the first sign of pterygium. [7][8]Pterygium threatens vision through various mechanisms, such as blocking the visual axis as well as inducing significant astigmatism. [9]

Pterygium is widely regarded to be a degenerative condition arising from benign growth of the conjunctiva, characterized by fibro vascularization, conjunctival invasion, and elastic degeneration of collagen. However, some studies have shown that pterygium shares some similarities with cancers, because active cell proliferation occurs with minimal apoptosis. [10][11]

- Pterygium also displays other tumor-like properties, such as invasion of cornea and its high recurrence after surgical excision. It also exists with secondary premalignant lesions.[10][12][13]

- These tumor-like properties suggest that pterygium is possibly a premalignant tissue.[13]

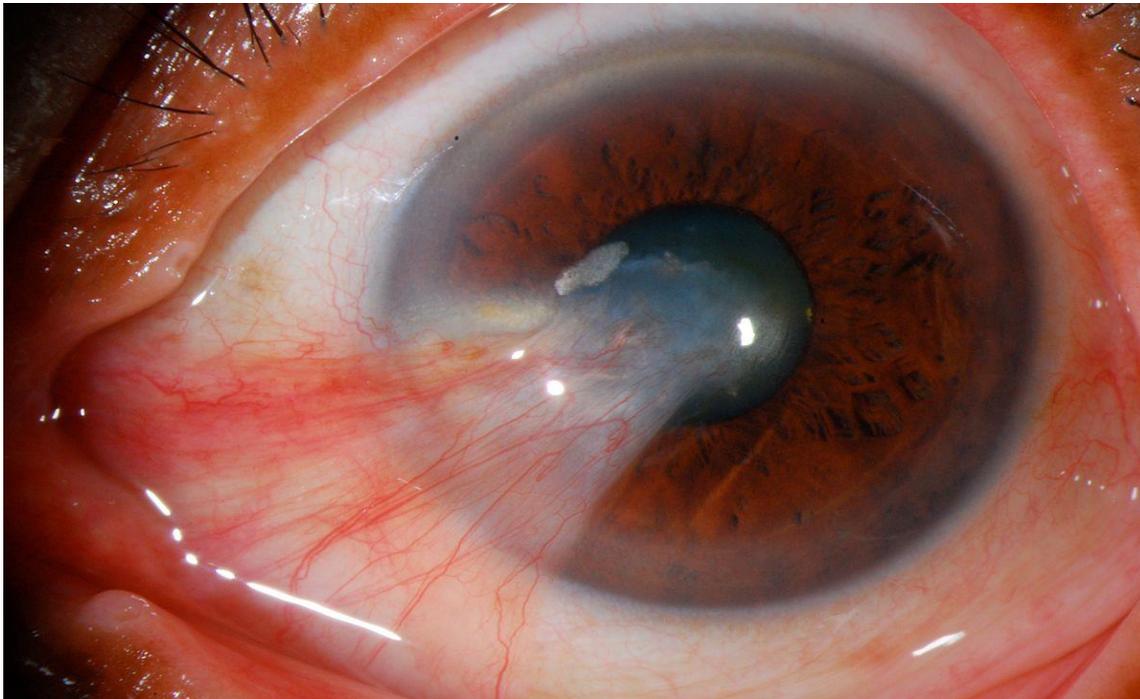


Fig 2 : - A diseased eye of a Pterygium

WHO GETS PTERYGIUM AND PINGUECULA: -

- Pterygium can happen to anyone who spends a lot of time outdoors in the sun without eye protection. It's more commonly seen in older adults (over 80 years of age) who live near the equator. Children rarely get pterygium.

About 12% of people in the world develop pterygium

- Long-term exposure to the sun's ultraviolet (UV) light (most common cause).
- Eye irritation from wind and dust[14]

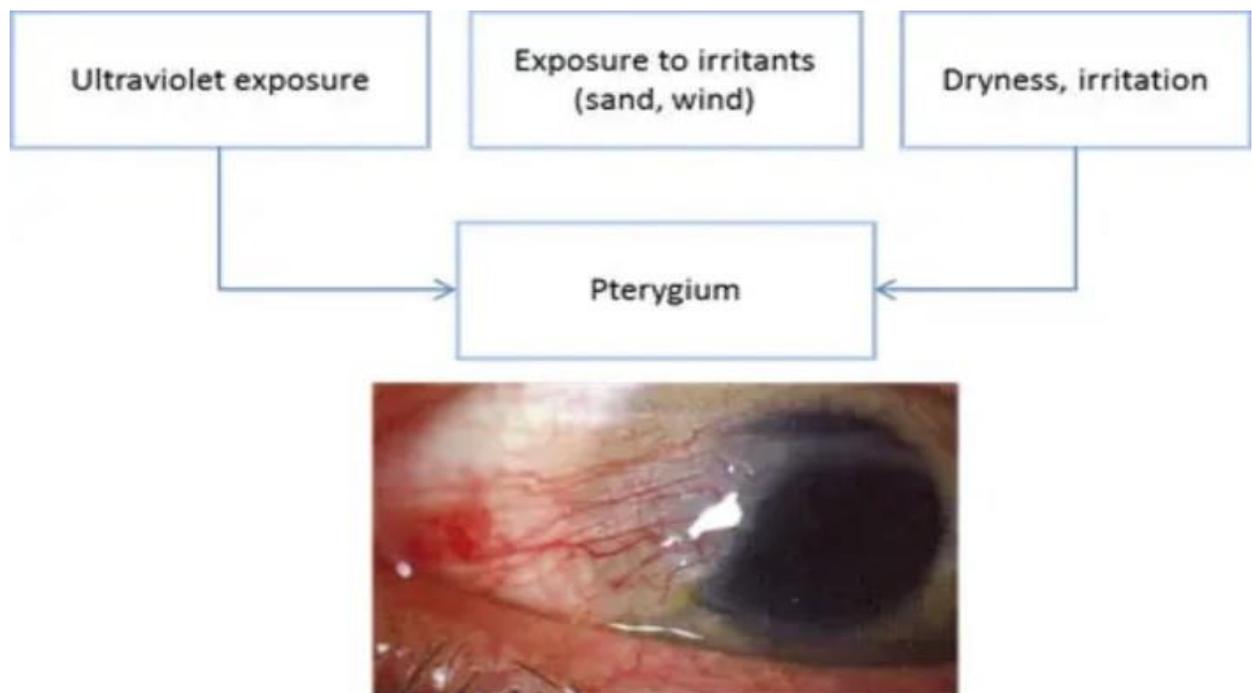


Fig3: - Causes of Pinguecula and Pterygium

DIFFERENT STAGES: -

Stage 0: This stage is when the lesion is posterior to the limbus (border of the cornea that is contact with the white of the eye (sclera)), specifically called **Pinguecula**. A Pinguecula is a yellowish patch or bump on the conjunctiva that occurs due to a deposition of protein, fat or calcium on the tissue. In this case there is no vascularity and conjunctival and corneal ectasia are seen.

Stage 1: In this the lesion involves limbus. Minimal papillary response is seen and conjunctival and corneal tissues are flat.

Stage 2: In this stage the lesion appears just on the limbus. The vascularity is normal but a minimal elevation is observed on conjunctival and corneal tissues.

Stage 3: The Pterygium covers the area between the limbus and pupillary margin. Moderate vascularity with vessel congestion is seen and the lesion is up to 1 mm.

Stage 4: In this case the lesion is central to the pupillary margin. It extends to more than 1 mm. This is a severe form of Pterygium with vessel congestion and dilation. It is of dense and deep color and may involve areas of vision (visual axis). This is associated with increase in astigmatism and can even lead to limitation of eye movement.[15]

PTERYGIUM CONSISTS OF FOLLOWING PARTS: -

- **Head:** Part of the Pterygium in the cornea
- **Neck:** the part that overlies the junction between the cornea and sclera

- **Body:** the part that lies in the conjunctiva overlying the sclera
- **Cap:** opaque infiltration seen in front of the head of progressive pterygia[16]

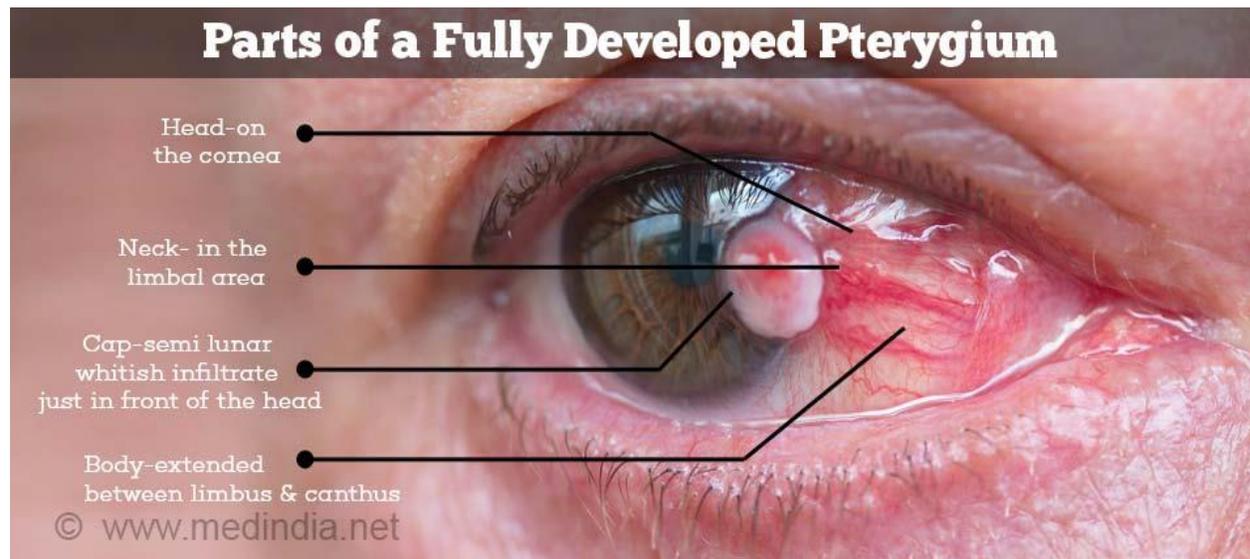


Fig 5 :- Parts of Pterygium

TYPES IN PTERYGIUM AND PINGUECULA

1.PINGUECULA: -

- There are no types in pinguecula

2.PETRYGIUM: -

- A pterygium can either be progressive or atrophic [degenerated][16]

Table1 : -The differences between the two are [16]

	Progressive pterygium	Atrophic pterygium
Appearance	Thick and fleshy	Thin and membranous
Blood vessels	Very prominent	Very few blood vesssels giving a pale appearance
Cap in front of the head	Present	Absent
Progression	Continues to advance further into the cornea	Static after an initial period of growth

EPIDEMIOLOGY: -

Pterygium has a worldwide distribution and is common in areas that lie within a geographical latitude of 40° north and 40° south of the equator.[17]

Prevalence can be as high as 22% in these equatorial areas and less than 2% in latitudes above 40°.[17][18][19] Findings from an Asian region,[19] as well as Nigeria,[20] corroborate this trend. However, within the same regions, prevalence rates vary widely.[19][20][21][22][23][24][25][26][27][28][29][30][31]

Achigbu and Ezepue in Enugu, Nigeria, found a prevalence rate of 19.3%.[20] Among motorcycle riders, whereas Ogbonnaya in Abakaliki, Nigeria, found a lower prevalence rate of 7.6% among patients visiting a hospital eye clinic, which compares with some other studies from parts of Asia that reported lower prevalence rates ranging from 4.4% to 10.1%. Several other studies from parts of Africa, Europe, and Australia reported a lower prevalence rate ranging from 0.8% to 11.7%.[26][27][28][29][30][31]

Various risk factors have been suggested, including race, age, social status, occupation, and educational background.[30][31][32][33][34].

SYMPTOMS: -**1.PINGUECULA: -**

- A pinguecula may not cause any symptoms, or may cause the following **mild** symptoms:[35]
 - Dryness
 - Irritation
 - Foreign body sensation
- In more severe cases, you may experience:[35]
 - Inflammation
 - Itching
 - Redness
 - Soreness

2.PETRYGIUM:-

- In most cases, there are no symptoms.[35]
- However, some people may experience mild symptoms similar to those of a pinguecula:[35]
 - Dry eyes
 - Redness
 - Irritation
 - Inflammation
 - Foreign body sensation
 - Contact lens discomfort

PREVENTION OF PINGUECULA AND PTERYGIUM:-

Because sunlight appears to be a risk factor for developing pingueculae, people should take care to protect their eyes from the sun. This also helps prevent other eye conditions, such as cataracts and cancer[36].Below are some things a person can try to protect their eyes from sunlight and other irritants:[36]

- **Wearing wraparound sunglasses:** Wraparound sunglasses block 99–100% of UV rays. People should wear them whenever they go outside or get into a vehicle, even if it is cloudy, raining, or snowing outside.
- **Wearing a wide-brimmed hat:** A wide-brimmed hat helps keep the sun's rays off the face and eyes.
- **Wearing protective eye gear:** People should wear safety goggles or other appropriate eye protection when working in dusty or dirty environments.
- **Managing dry eyes:** If a person has dry eyes, they should speak with an eye doctor about medications they can use to keep the eyes lubricated.

TREATMENT FOR PTERYGIUM AND PINGUECULA: -

MEDICATED TREATMENT: -

1. Mitomycin C Drop: -

The authors used antineoplastic and antibiotic agent, mitomycin, in the form of eye drop as adjuvant treatment for Pterygium. The authors believe that mitomycin eye drops is a safe and effective adjunct to surgical excision in the treatment of primary or recurrent pterygia, or both.[37]

MMC is an alkylating agent which inhibits DNA synthesis. By inhibiting DNA synthesis, it leads to the death of cells caused by the inability to repair the genotoxic injury caused by alkylation. It acts against all cells regardless of the cell cycle and even acts in cells that are not synthesizing DNA. Inhibition of DNA synthesis leads to reduction in the number of mitoses, especially when MMC comes into contact with cells that are in the late G1 and early S phases of the cell cycle. It can be used before, during or after pterygium surgery applied locally or in the form of eye drops. The injection application directly on the pterygium has the advantage of protecting the corneal endothelium and epithelium[38].

2. 5-Fluorouracil drop:-

Of 25 consecutive white patients, 28 eyes with primary pterygium underwent pterygium excision with intraoperative application of 5-fluorouracil (25 mg/mL for 3 minutes). The superior and inferior conjunctiva was approximated to cover the scleral bed within 1 mm of the limbus. Recurrence of pterygium was defined as

postoperative fibrovascular growth more than 1 mm onto the cornea. Eyes with recurrence less than 2 mm were treated with subconjunctival 5-fluorouracil injections.[39]

After a mean follow-up of 14.1 +/- 3.9 months (mean +/- standard deviation), 7 recurrences (25%) were observed. All recurrences were detected within 12 months. In 4 of 7 recurrences, the fibrovascular growths were less than 2 mm. We, therefore, performed subconjunctival 5-fluorouracil injections. In 3 (75%) of 4 recurrences, the fibrovascular growths became atrophic. No serious complications were observed during and after the surgery. However, superficial punctate keratitis, pain, and hyperemia were detected in all patients in the early postoperative period. As a result, of 28 eyes, 4 (14%) had unacceptable cosmetic results and growing recurrences.[39]

SURGICAL TREATMENT: -

The main challenge to successful surgical treatment of pterygium is recurrence, evidenced by fibrovascular growth across the limbus onto the cornea. Many surgical techniques have been used, though none is universally accepted because of variable recurrence rates. Regardless of the technique used, excision of the Pterygium is the first step for repair. Many ophthalmologists prefer to avulse the head from the underlying cornea. Advantages include quicker epithelialization, minimal scarring and a resultant smooth corneal surface.[40]

1. Bare Sclera Technique: -

This technique involves surgical excision of the Pterygium with the exposed sclera left bare. It has been described as a quick and easy procedure, often performed in the office with topical or subconjunctival anesthesia. This has a high recurrence rate ranging from 30-80 %, and is hence, seldom used today. Other variations of this approach were tried to mitigate the high recurrence rate, and these named procedures include - primary closure of the defect, splitting the head of the Pterygium, rotation of the Pterygium head away from the cornea and repositioning the head of the Pterygium. While these modifications did improve the results, recurrences were still common, and the technical complexity of these procedures limited their use.[41]

2. A conjunctival autograft technique: -

The first real advance in Pterygium management was the description of the technique of conjunctival-limbal autograft transplantation after Pterygium excision, by Kenyon in 1985. In their landmark paper, the authors used a free conjunctival-limbal graft with the same dimensions as the scleral bed, harvested from the superior bulbar conjunctiva, and sutured this in the scleral bed. The graft is preferably taken from the superior temporal bulbar conjunctiva, because of the technical difficulty in harvesting a graft from the inferior bulbar conjunctiva. The inferior limbus and inferior bulbar conjunctivae are more exposed to the deleterious effects of ultraviolet radiation, compared to the superior limbus and superior temporal bulbar conjunctiva which are shielded by the upper lid. Conjunctival-limbal autograft are associated with recurrence rates ranging from 0 to 15%. In a series from India, Rao et al reported the outcomes of this procedure in 53 eyes with 36 primary and 17 recurrent pterygia, with a mean follow-up of 18.9 + 12.1 months. The recurrence rate was 3.8%. The steps of the technique followed in the report are described in brief below. A wire speculum is used to separate the lids. A superior rectus bridle suture is inserted. The

suture is used to abduct the eye maximally (assume nasal Pterygium) by clipping it to the drapes adjacent to the lateral canthus. A small incision is made in the conjunctiva just medial to the head of the Pterygium. Beginning here, the conjunctiva is progressively dissected from the body of the pterygium towards the caruncle. The head of the Pterygium is left attached to the cornea, enabling easier dissection of the conjunctiva.[42]

3. Amniotic Membrane Grafting: -

- It has also been used to prevent Pterygium recurrence. Although the exact mechanism by which the amniotic membrane confers its beneficial effect has not yet been identified, most researchers have suggested that it is the basement membrane that contains factors important for inhibiting inflammation and fibrosis and promoting epithelialization. Unfortunately, recurrence rates vary widely among the studies that exist, somewhere between 2.6 percent and 10.7 percent for primary pterygia and as high as 37.5 percent for recurrent pterygia.¹ A distinct advantage of this technique over the conjunctival autograft, however, is the preservation of bulbar conjunctiva. Amniotic membrane is typically placed over the bare sclera, with the basement membrane facing up and the stroma facing down.[43]

A Pterygium recurrence is relatively high even after a surgical excision. A recurrent pterygium can be worse than the initial primary pterygium. An amniotic membrane transplantation can help decrease the recurrence rate of a pterygium by reducing inflammation and scarring.[44]

DIFFERENTIAL DIAGNOSIS: -

1. : -Differential diagnoses of pinguecula are as follows:

1. Pterygium: It gradually progresses to encroach the cornea. When it involves the pupillary area, it affects the visual acuity of the patient, or it may reduce the uncorrected visual acuity due to induced astigmatism even when the pterygium does not involve the pupillary area.[45]
2. Conjunctival foreign body: Conjunctival foreign body is recognizable by slit-lamp examination of the eye—the patient complains of foreign body sensation and watering of the eye surface. The conjunctival foreign body is removable with a sterile disposable needle. [45]
3. Phlycten: Can occur anywhere on the conjunctiva. It appears as an elevated summit and stains with fluorescein dye. The phlycten is due to a hypersensitive reaction to an endogenous allergen. It is usually associated with Mycobacterium tuberculosis.[45]
4. Nodular Scleritis: Nodular scleritis is associated with severe pain. Scleral inflammation correlates with a distinct nodule in nodular scleritis.[45]
5. Limbal dermoid: The limbal dermoid is a pale-yellow mass. The common location is the inferior temporal limbus. It may involve the conjunctiva and cornea.[45]
6. Conjunctival malignant melanoma: Conjunctival malignant melanoma is a rare malignant tumor of the conjunctiva. It is visible as a raised elevated pigmented lesion associated with a feeder vessel.[45]
7. Conjunctival epithelial inclusion cyst: Conjunctival epithelial inclusion cyst is a cystic swelling filled with clear fluid. Patients are usually asymptomatic.[45]
8. Ocular surface squamous neoplasia: Ocular surface squamous neoplasia is a common malignancy of the ocular surface. Patients complain of redness and foreign body sensation. They usually present in the interpalpebral conjunctiva. It gradually approaches the limbus. It is usually associated with a sentinel vessel.[45]

9. Conjunctival naevus: Conjunctival naevus is a benign lesion of the conjunctiva. They are flat pigmented lesions.[45]

10. Visual acuity test: this test involves reading letters on an eye chart.[45]

2. Diagnosis for Pterygium are as follow: -

There is no diagnosis for the pterygium because the disease is diagnosis was in its first stage and in pterygium diseases Pinguecula is on a first stage.

So how diagnosis the pinguecula is already mentioned.

CONCLUSION: -

Pterygium and pinguecula diseases are increasing in world day by day because the pollution is increasing. These disorders are mostly observed in those individuals who are present in dusty areas.

Precautions should be taken by individuals and those are wearing sunglasses and washing your eyes with cold water after being outside in dusty places. This technique is to protect your eyes from dust going into them so that pinguecula and pterygium are avoided.

Pterygium starts with pinguecula. Pinguecula is not serious and seems minor so people at initial stage do not detect it, do not understand symptoms and ignore it. When Pinguecula is converted in Pterygium then it may not be cured by medicated treatment and it causes blur vision and hence the only option is surgery but after the surgery it may reappear and start again as pinguecula.

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