

picture. It is helpful to remember few points:

- Weak acid penetrates freely in the living cells.
- An organic acid penetrates readily than an inorganic acid.
- Organic acid penetrates only after the surface membrane has been destroyed.
- Burn with a weak acid shows symptoms of irritation.
- Burn with a strong acid shows signs of a corrosive injury.
- As a general rule, for the acid burn, it can be said that the penetration of the ocular tissues is not marked.
- There is instantaneous cellular death. Therefore, the lesion or area of burn is sharply limited.
- The lesion is non-progressive, as further penetration of acid is prevented by the barrier offered by the precipitated proteins of the cell layer.
- The affected lesion is fixed and appears coagulated. There is no edema or disintegration of tissue affected.
- The lesion is sharply limited.
- The recovery is rapid.
- Minor and superficial burn of cornea will heal with no scar and no relapses.
- Strong acid affecting the entire cornea may result in an irrecoverable loss of the corneal tissue and so the eye.

Clinical Feature

- Irritation, lacrimation and photophobia.
- Greyish white lesions are in the epithelial layer.
- With severe burn, the whole epithelium of the cornea is necrosed and may slough away.
- Conjunctiva is congested and may show necrosis.
- Vascularization of cornea is superficial and deep.
- Signs of iritis.
- Degenerative changes.

Management

As a general rule, the best and immediate treatment is to wash the eyes immediately without wasting a second.

Wash eyes with plenty of water. If possible the whole head can be dipped in the bucket full of water and the patient can open his eyes repeatedly in water.

In clinic, the eye physician can and should wash the eye again to be sure.

The eye must be examined with slit lamp.

Topical antibiotic eyedrops to prevent secondary infection.

Topical eye ointment twice or thrice a day depending on the extent and depth of lesion.

Some cases need steroids topically.

2. AMMONIUM HYDROXIDE BURN INJURY (NH₄OH—LIQUOR AMMONIA)

Young student is brought to the clinic by his teacher straight from the science college laboratory. The boy has suffered injury with ammonium hydroxide on opening the cork of the bottle. His eyes have been washed immediately with plenty of water within few seconds. He complains of lacrimation, photophobia, and intense pain.

Ocular examination show mild lid edema, marked conjunctival congestion, edema of the corneal epithelium which has been shed off at places.

Diagnosis: Chemical injury with ammonium hydroxide.

INJURY WITH AMMONIUM HYDROXIDE

Ammonia

Ammonia is available in the following forms:

- As pure ammonia (NH₃) in its gaseous or liquid form.
- Ammonium hydroxide, liquor ammonia (NH₄OH), as a solution in water. A 10% solution is used in home because of its solvent properties.
- Ammonium chloride (salt ammoniac) NH₄Cl.

Case 12

Alcohol Intoxication (Ethyl Alcohol Intoxication)



Young couple enters the clinic. The wife complains that her husband shows squint when he drinks whisky of reputable brand. By the morning he appears normal to me. No other complains of any kind.

I asked her a simple question and at the same time answered it also. He must be showing the squint on getting drunk that is consuming more than his tolerance (Figs 12.1 and 12.2). Obviously the answer was, yes Doctor.



Fig. 12.1: Drinker with empty glass. Waiting to fill it up



Fig. 12.2: Whisky in serving glass

Ocular examination was normal, except mild latent esophoria. Fundus appeared normal.

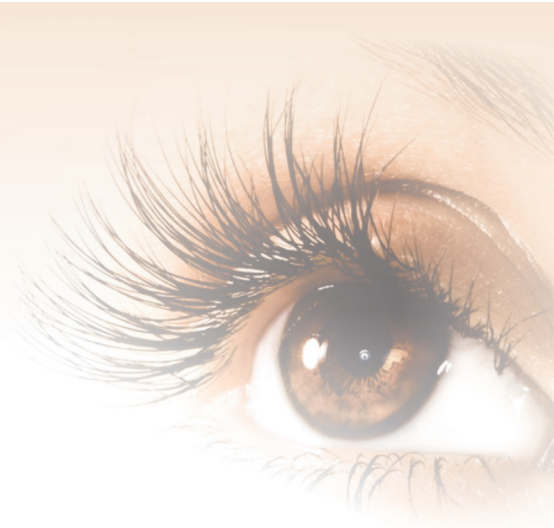
Visual acuity was normal.

Diagnosis: Ethyl alcohol intoxication.

ALCOHOL (ETHYL ALCOHOL) INTOXICATION

- Many organic chemicals on inhalation such as chloroform and ethyl ether produces visual disturbances preliminary to unconsciousness. The visual disturbances are due to the occurrence of diplopia and impairment of perception and judgment.
- In this class of chemicals the most important from the practical, social, family and public point of view is the consumption of ethyl alcohol by people throughout the universe irrespective of class, colour, religion or race. The ingestion of alcohol even of the reputable brand produces visual disturbances due to disturbances of higher visual functions.
- It is to be remembered and stressed that the alcohol intoxication is not a gradual process but it comes on quickly when the concentration in the blood rises to certain level which varies considerably with each individual (from 170 to 183 mg per 100 ml blood).
- The critical level is relatively constant for same individual. The effects due to concentration in the blood achieved rapidly are more potent than when the

Anterior Ring Staphyloma of Sclera



Patient attends the ophthalmic clinic with complain of bulging bluish-black colored ring all around the black (cornea) of the eye. To begin with this bulging was little and it is gradually increasing in its size. There is mild discomfort due to improper closure of the affected left eye. Ocular examination shows a bluish-black coloured ring of bulged sclera around the limbus in the left eye. The right eye shows bluish coloration around the limbus.

Diagnosis: Anterior ring staphyloma of the sclera.

ANTERIOR RING STAPHYLOMA OF SCLERA

Staphyloma is an ectatic condition of the sclera in which the uveal tissue is incarcerated (Fig. 31.1). It occurs in a situation where the sclera is weak by the passage of blood vessels. Anteriorly in the region of ciliary body, the sclera is pierced by many vessels which enters and leave the eye. The main vessels are anterior ciliary arteries and veins. This area is further weakened by the presence of canal of Schlemm. This weakness of the sclera in the ciliary region and associated high intraocular pressure

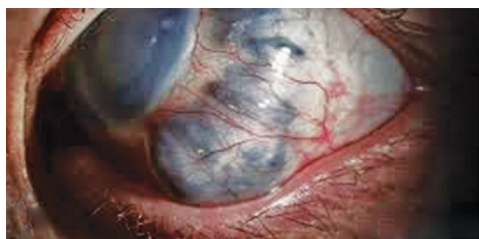


Fig. 31.1: Ring staphyloma

play part in the development of an anterior ring staphyloma of the sclera in the ciliary region.

1. LOCALIZED ANTERIOR STAPHYLOMA

A localized anterior scleral staphyloma (Fig. 31.2) develops at the site of disease process in the ciliary region such as:

- Scleritis and episcleritis
- Tuberculoma
- Uveitis
- Endarteritis
- Trauma.

A localized anterior scleral staphyloma remains localized at the site. It has been further divided into two types.

Ciliary Staphyloma

It occurs in the region of ciliary body wherein the anterior ciliary arteries have passage and emerge at the anterior border of the bulge. In the ciliary staphyloma, the dark striae of the ciliary processes can be seen on transillumination.

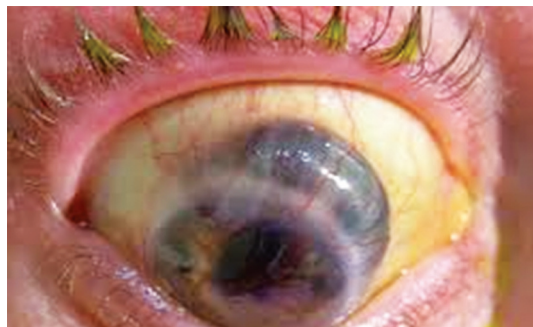


Fig. 31.2: Localized anterior staphyloma



CLINICAL FEATURES AND MANAGEMENT

1. LENS INCARCERATED (HANGING) IN THE PUPILLARY AREA

This occurs following a trauma. It is a rare event in which the lens suffers an axial rotation of 90° so that the equator of the lens presents in the pupillary area. Probably a spasmodic contraction of the pupil may have played a part in engagement of the lens in the pupil in this position. The lens may maintain this position or usually it shall dislocate either in the anterior chamber or vitreous.

2. DISLOCATION IN THE ANTERIOR CHAMBER

A clear lens dislocated into the anterior chamber gives a characteristic appearance (Fig. 32.1).

- Lens looks like a drop of oil placed in the anterior chamber. Its peripheral rim gives a golden luster. The iris is clearly visible through the lens. The pupil is spasmodically constricted.
- Cataractous or an opaque lens appears as a white pale globular disk in the anterior chamber. The lens usually turns completely so that the posterior surface of the lens is towards the cornea.

The lens in its anterior dislocation position, whether clear or opaque may sometimes be well-tolerated (Fig. 32.2). Usually, the hyper-mature lens disintegrates and ruptures filling the anterior chamber with fluid liquid which may absorb slowly.



Fig. 32.1: Dislocation in anterior chamber

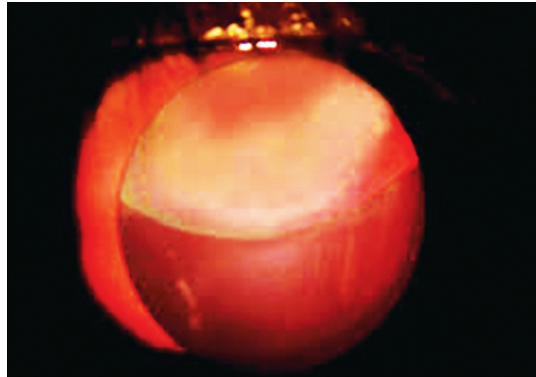


Fig. 32.2: Luxation of lens upper part

Most frequently the dislocated lens in the anterior chamber produces the following complications:

- *Corneal dystrophy/opacity:* The lens present in the anterior chamber comes in contact with the endothelial surface of the cornea repeatedly. This repeated contact leads to corneal dystrophy or opacity.
- *Secondary glaucoma:* Secondary glaucoma occurs due to blockage of the circulation of the aqueous humour from the pupil and at the angle of the anterior chamber.
- *Iridocyclitis:* Iridocyclitis sets in due to constant irritation of iris and ciliary body.

Management

Removal of the lens at an early stage is the best treatment to avoid all the above mentioned three intractable complications which usually results in the loss of vision.

3. DISLOCATION IN THE VITREOUS

Clinically the dislocation of lens in the vitreous (posterior dislocation) produces the following picture:

- Anterior chamber is deep.
- Iris is tremulous.
- Pupil appears jet black.
- Lens can be seen by ophthalmoscopy.
- Lens may be clear or opaque.

If the vitreous is healthy the lens appears to be afloat in the anterior vitreous near the ciliary body. This lens may show some