SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

THE TREATMENT OF MINOR CONDITIONS IN THE EYE

BY

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Conjunctivitis may be one of the minor diseases of the eyes, but it may be so severe as to constitute a major emergency and endanger the sight.

The conjunctiva is the delicate mucous membrane lining the inside of the eyelids and the exposed part of the eyeball. It is moistened by the mucin from its epithelium and by the tears, which pass from the lacrimal gland embedded under the outer prominence of the brow to the puncta at the inner canthus, and so down the tear duct into the nose. Since the membrane is exposed to the dust of all the winds that blow and to touching by dirty hands, it is liable to infection. The tears prevent many an infection, both by washing the eyes and also by reason of a dissolving effect they have upon germs.

Examining the Conjunctiva

It is easy to examine the conjunctiva lining the lower lid. It is not easy to do this for the upper lid and fornix unless the knack of everting the lid has been mastered. Yet the upper fornix is the more important by reason of its depth. To the practised hand the eversion is a simple and nice performance. Instruments should not be used; they alarm children. The lashes should not be employed as lifts; ladies dislike losing these adornments. All that is needed is the worker's own thumb and index-finger and *the patient's lower lid*. Stand facing the patient. Use the right hand for the left eye and the left hand for the right eye. Tell the patient to look down. Place the inner edge of the thumb parallel with the lower lid and on its outer half a quarter of an inch below the lashes. Lay the inner edge of the index-finger lightly on the upper lid, just above the lashes, and gently push up the skin; this will cause the edge of the lid to lift from the globe and pout a little. Now, with the thumb in position, slip the lower lid under the upper lid, and the thumb, following the lower lid, will get under the upper lid, which can be held firmly betwixt thumb and first finger and everted, even against a vigorous orbicular spasm. The secret of the trick is to make the lower lid serve as a wedge to get under the upper lid.

Conjunctivitis: Irritant

The delicacy of the conjunctiva allows the classical signs of inflammation to be clearly noted: redness from distension of the vessels, which, since they have little support, are apt to bleed; heat from the hyperaemia; swelling that may be a slight oedema or an intense chemosis, rendering the lids and globe immobile and the skin of the lids glossy; and pain, which is described as like "grit in the eyes," even to a severity as though broken glass were rolling under the lids. Besides these there is discharge, consisting of excess of tears, frothy secretion from the Meibomian glands, mucin from the epithelium, and escaped leucocytes. So there will be a muco-purulent, a purulent, or a sanious discharge according to the severity of the attack. Vision is always disturbed.

Conjunctivitis may be caused by local or by reflex irritation. Mild attacks follow exposure to wind, dust, smoke, fumes, or heat. Reflex irritation due to septic teeth, nasal douches, gastritis, or the taking of stimulating foods will produce the symptoms. Exposure to bright light, such as the arc lamp, ultra-violet rays, or snow-fields in the high Alps, will cause smart attacks known as "snow blindness." Drugs—for example, arsenic—are often excreted by the mucous membrane, and, if irritating, will produce conjunctivitis. Tired eyes from late hours or errors of refraction cause mild attacks, which, if repeated, may become chronic. In all these conditions discovery and removal of the irritant will be followed by improvement in the condition. The patient will be comforted by the use of a lotion of boric acid (2 per cent.) in laurel-water.

Conjunctivitis: Contagious

Conjunctivitis due to microbic infection is more common among children than among adults, and among dirty ill-kept folk than among those of cleanly habits. Two forms are common: (1) angular conjunctivitis; (2) "pink-eye." Angular conjunctivitis is a mild but chronic condition, causing redness of the lids, particularly at their angles, whence the name "angular." The ocular conjunctiva is but little affected. The secretion may contain minute bubbles, so that it appears like frothed white of egg; this is caused by the excessive blinking of the lids. When the lids are screwed up the secretion is squeezed out at the angles, where it erodes the surface epithelium of the skin. It is slightly more common with women than with men, and in adults than in children. The cornea is rarely affected. The organism causing the disease is a thick, square-ended diplobacillus; it stains well with aniline dyes, but is decolorized by Gram's treatment: it is easily demonstrated in film preparations, and grows on dried serum slants, liquefying the serum into deep sharp-edged pools of turbid fluid. The treatment of angular conjunctivitis is simple: zinc sulphate is a specific which may be used freely, either in 1/4 or 1/2 per cent. strength, as an eye lotion; or, better, it may be dropped into the lower eyelids with a pipette. It is the success of zinc sulphate in the treatment of this disease that has made it almost a household remedy for eye troubles. But, good as it is in this common form of conjunctivitis, it may be noxious in other types of inflammation.

The most common epidemic form of conjunctivitis is that known as muco-purulent conjunctivitis. It is very contagious. If one member of a family is infected all the members are likely to be attacked. It is the common "pink-eye" of schools. The occurrence of such an epidemic is a reflection upon the toilet arrangements of the home or school. The inflamed eyes show marked hyperaemia of the whole conjunctiva, there is a velvety look about the upper tarsal membrane, and minute haemorrhages will be noted about the loosely supported vessels of the ocular conjunctiva. The lymph follicles of the lids are swollen, and appear as slightly raised pinkish-grey bodies about one-half to one millimetre in diameter. The discharge shows pale greyish-yellow pledgets of muco-pus floating in the tears and collected in the lower fornix and lacus lacrimalis. Commonly the attack begins in

one eye and then affects the other. Sometimes the preauricular gland is inflamed. In severe cases, such as are seen in Eastern countries, the discharge may be profuse and almost purulent: sharp-edged crescentic ulcers, "catarrhal ulcers," erode the margins of the cornea, and sight may be damaged by their effects. In England they are rarely dangerous. The organism known as the Koch-Weeks bacillus is rod-shaped, and is minute and delicate. In most of its features and reactions it is like *H. influenzae*—in fact, some workers have sought to prove that the organisms are one and the same.

The prevention of pink-eye in schools depends upon attention to toilet arrangements. Each child should have its own handkerchiefs, towels, and brushes: exchanges should be strictly prohibited. Exclusiveness in clothing, toilet, and sanitary articles is the basis of civilized cleanliness. On an outbreak of the disease in a school or family those affected should be isolated. The unaffected may be further protected by the use of eye drops of zinc sulphate 1/2 per cent. morning and evening. The treatment of the disease should be initiated by the surgeon. The conjunctival sac should be washed out with boracic lotion and the everted lids, fornices, and particularly the folds of the inner canthus then painted with a solution of silver nitrate. The solution must be fresh; it works best and is less painful when it contains 20 per cent. of glycerin. The strength of the silver salt in solution should be 1/2 or at most 1 per cent. The silver solution should be applied by the surgeon. He should not order it as "drops" for the patient's own use. Patients have a habit of continuing treatment indefinitely. Silver salts if long used are absorbed and deposited in the elastic fibres of the submucosa, so that the conjunctiva and cornea may become stained blue-black (argyrosis). For the patient's own use a lotion of zinc chloride 1/8 per cent. is beneficial, and in the stages of convalescence recourse to the zinc sulphate drops is good practice. In no circumstances should lead lotions be employed. Lead is readily absorbed by an abraded cornea, and leaves a permanent white mark, which may obscure vision.

Ophthalmia Neonatorum

Purulent conjunctivitis is a severe and dangerous disease. In this country it is most often seen in infants. The eyes of the child are infected at birth by vaginal discharge. The gonococcus is responsible for the majority of the infections, but the streptococcus will produce disastrous results. Ophthalmia neonatorum usually begins about the third day after birth. The lids become red and swollen, and their edges stick together. On opening them yellowish pus exudes. The everted lids show a rich velvety mucosa. The cornea may be affected by ulceration, or it may slough, with consequent incurable blindness. The disease is preventable. Gibson of Manchester in 1807 recommended that: (1) the leucorrhoea of the mother ought, if possible, to be cured during pregnancy; (2) when this has not been done the noxious secretion ought to be removed from the vagina during delivery; (3) the infant's eyes ought, immediately after birth, to be cleansed with a fluid which either removes the noxious matter or is able to prevent its injurious effects. That is the treatment of to-day. The disease is notifiable: "A purulent discharge from the eyes of an infant commencing within twenty-one days from the date of its birth must be notified" (L.G.B. Order, 1914). The measures taken to prevent and treat the disease have materially reduced the tale of blindness among children. They are:

1. Directly the head of the infant is born wipe the eyelids dry with clean cotton-wool. Use a fresh piece for each eye.

2. As soon as the mother is settled wash the infant's eyelids freely with a simple lotion—boracic or Condy 2 per cent. Run the fluid freely between the lids. The water for the child's first bath must not get into its eyes. Separate water and a fresh towel must be employed for the infant's face. At no time may the mother's toilet articles be used for the child.

3. If at delivery there is a suspicion of a purulent discharge from the vagina of the mother cleanse the baby's eyes as suggested, then instil a drop of silver nitrate 1 per cent. between the lids. The eyes must be examined and washed after eight hours, and if there is a suspicion of discharge make and stain film preparations for microscopical examination. The gonococcus is easy to demonstrate with methylene-blue staining: the groups of biscuit-shaped cocci within the leucocytes are characteristic.

Treatment consists in: (1) cleansing; (2) use of a germicide. Special nurses must be put in charge or the child should be taken into hospital, preferably with its mother. The surgeon in charge should never omit to examine and note down the state of the cornea as soon as he sees the case. The cleansing is the chief part of the treatment. The eyes should be washed free from pus every hour and irrigated every four hours with plenty of boracic lotion. Syringes and large irrigators are dangerous. Retractors should not be used. The lids should be parted with the fingers and the lotion run in from a cotton-wool swab or with an undine, the nozzle of which is protected with rubber tubing. The silver nitrate solution, 1 per cent., or other chosen germicide should be painted over the conjunctiva once a day by the surgeon. Gonorrhoeal conjunctivitis in adults is now very rare. It is usually due to the transfer of urethral discharge by the contaminated fingers. The symptoms are intense, and the danger to sight is grave. Such a case should be removed to hospital immediately.

In outlining the treatment of conjunctivitis "painting" the lids has been mentioned. Brushes should not be used for this purpose. They are rarely surgically clean, and the hairs are apt to get loose. The surgeon should make a fresh cotton-wool brush for each eye treated. Take a wisp of cotton-wool about the size of a postage stamp and a tapered glass rod or a thin wax taper. Hold the cotton-wool between the tips of the left thumb and finger, press the end of the rod upon the wool, then lightly pinch the wool on to the rod and twist the rod at the same time. The wool will be securely twisted on to the rod.

Hyperaemia as a Diagnostic Symptom

Pink-eye, or hyperaemia, is a symptom common to many diseases of the eyes: it is therefore necessary to be able so to read other signs as to determine the real nature of the trouble. Three diseases may be named: acute conjunctivitis, acute iritis, and acute glaucoma. All cause hyperaemia, pain, and disturbance of sight. Age liability will be some distinction. Conjunctivitis is most common in children, iritis in young adults, and glaucoma in elders. But the most valuable distinction is to be found in the state of the pupil. If the pupil is mobile the disease is probably conjunctivitis; if the pupil is small and irregular it is probably iritis; if the pupil is enlarged, slightly oval, and immobile glaucoma may be present. When examination with a magnifying-glass does not make the condition clear, the test should be done with a mydriatic. Put one drop of 1 per cent. homatropine within the lower lid of the eye and let the patient rest

with the eyes closed for half an hour. If then the pupil is found to be dilated evenly and well the condition is certainly not iritis. If the pupil has dilated but little and its outline is irregular, there is iritis. If the pupil has dilated with almost alarming rapidity there is likely to be glaucoma, and then the mydriatic should be neutralized immediately with eserine. (Atropine should not be used for this test, since it is such a powerful mydriatic that it cannot be neutralized by eserine.) Of all the means of differential diagnosis the state of the pupil is the most valuable and also the most objective.

Lacrimal Obstruction: Infants

On occasions a baby will be brought for examination with the complaint that an eye has been inflamed since birth. The infant may be a few days to a fortnight old. The unwary may jump to the conclusion that this is a case of ophthalmia neonatorum. Examination of the eyes will show that the condition is quite different. First, it will be noted that one eye is healthy and the other is in a messy state. The lid margins are clogged, and mucus and pus hang about the inner canthus. When the discharge is wiped off with cotton-wool the eye and lids will look healthy except that the conjunctiva will be too wet. If now the little finger be pressed down between the inner canthus and the nose the reason for the trouble will be shown: muco-pus will regurgitate from the lacrimal puncta. The trouble is due to obstruction of the lacrimal duct which carries the tears from the sac into the inferior meatus of the nose. The lacrimal duct develops as an epithelial cord which becomes embedded in the nose and is then canalized. A plug of epithelial debris may block the duct.

TREATMENT

For a fortnight the effect of drops, such as zinc chloride 1/8 per cent., may be tried. The mother should be taught to increase the natural pumping action of the lid movements. The infant is laid on its back and some warmed lotion is poured into the hollow of the inner canthus. Now the lower lid is pulled outwards away from the nose; this brings the cord of the tensor tarsi into action, and so opens the sac and sucks the lotion into it. The little finger is then pressed down on the sac, the contents of which are forced down the duct. If this treatment fails, the duct must be syringed through with plenty of fluid. One operation is usually successful. A general anaesthetic is needed. The lower punctum is stretched with a dilator, a rod the size of a dance-programme pencil with a tapered blunt-pointed end. The dilator is pressed downwards into the minute hole of the punctum for one millimetre; then the handle is depressed so as to be parallel with the lid margin, and with a rolling movement the dilator is insinuated a little way into the canaliculus, so that both this and the punctum are stretched without being split. The nozzle of a lacrimal syringe is now passed in the same way: first downwards; then inwards until the nozzle can be felt pressing upon the wall of the sac against the nasal bones; and, lastly, the body of the syringe is raised to lie alongside the nose with the nozzle pointing down the duct. The contents of the syringe are driven out. If the fluid passes into the nose it runs back into the throat, and the child will be seen to swallow.

Lacrimal Obstruction: Adults

Epiphora, or a watery eye, is an annoyance. In certain walks of life it may be a real danger to the sight of

the eye. Any interference with the muscular mechanism of the lids or the position of the puncta, or any obstruction to the drainage apparatus, will cause tears to flow over the cheek. It may be an after-effect of facial paralysis, of chronic blepharitis, or of scarring of the lids. Obstruction in the duct is due to some nasal trouble. There may be disease of the nasal bones from syphilis; it has been known to follow periostitis arising from dental disease, and it may be caused by fracture of the nose from falls or blows. In some cases nasal catarrh may spread upward into the duct and cause more or less temporary obstruction. Apart from the annoyance of the condition it is dangerous when it occurs in those whose work renders them liable to exposure to dust or flying specks, such as smiths or road-makers. A septic sac will infect a corneal abrasion, and a hypopyon ulcer, with the loss of the sight of the eye, may follow.

In any complaint of epiphora first note the position of the lids and puncta, then test the patency of the tear passages. Place within the lower lid a fragment of dry fluorescein, close the lids, pinch the nose to make the tears flow, then "pump" the tears down the duct (as described in the section dealing with the infant). If the passages are normal the stain will pass into the nose and can be blown out in a minute or so. If the stain does not come through the duct may be explored by: (1) syringing; (2) probing.

The method of syringing has been given above. In cases in which there is inflammatory swelling of the mucous lining of the duct regular syringing with hydrogen peroxide, 5 volumes, will often effect a cure. In cases of long duration, where there is a mucocoele in the sac, and especially if the contents are purulent, there is probably an organic stricture either of the bone or of the lining membrane. The suspected stricture should be searched for with a probe. Use a drop of cocaine and adrenaline. Then after dilating the punctum pass the probe as directed for the nozzle of the syringe. When the probe is in the duct slide it down gently until the stoppage can be felt. If it is elastic it is probably membranous; if it is tough and resistant it is probably bony. In the latter case there is no doubt as to the proper procedure. The sac, canaliculi, and the remnants of the duct should be extirpated by operation, or a passage from the sac directly into the nose may be made by a plastic operation. When the stricture is probably membranous the decision as to treatment is more difficult. To force the stricture by probes and then leave it will be useless, for the subsequent scarring will be denser than before. If the probe can be gently insinuated through some part of the stricture there is a prospect of success by long-continued syringing. It is dangerous to syringe immediately after passing a probe: a false passage may have been made, and the syringing will drive the possibly septic contents of the tear passages into the cellular tissues and may set up acute cellulitis. A leaden style, solid or hollow, may be passed down the duct if a probe will dilate it sufficiently without force. The upper end of the lead is lipped over the lid to prevent it slipping down. Styles may be worn for months without discomfort, but they must be removed periodically and cleaned. In most such cases it is better to remove the sac or make a direct passage into the nose. Some plastic operations succeed well, though there may be trouble from the puffing up of the tissues when the nose is blown. After removing the sac and blocking the canaliculi the excess of tears gradually ceases, and there is no inconvenience, except in cold winds or emotional states.