day the corneal infiltrate was extensive. The development of such a severe keratitis in such a short time was astonishing. The patient was then supplied with a new contact lens, and within a week the eye quietened down again.

2. Mrs. A.D., aged 58 years. Five weeks after alcohol injection for right trigeminal neuralgia, neuromparalytic keratitis developed. When first seen a fortnight after the onset of the affection the area involved extended centrally for about 7mm. diameter. The patient was supplied with a contact lens, which she is wearing for about 12 hours a day, with a break of about half to one hour at mid-day. The patient has now been wearing the contact lens for four months. The cornea has cleared considerably, though there is a central nebula. Vision without contact glass but with correction is 6/24, and with contact glass 6/12.

Comment:

1. *Fitting*.—From the fitting point of view the anaesthesia of the eye is a slight initial advantage. The taking of the impression can be made without the use of any anaesthetic. When the contact lens is put in, the reaction of the eye makes it easy to tell whether the fitting of the contact lens is satisfactory. A wrong fitting causes irritation (hyperaemia, discharge, etc.). In the absence of subjective signs in the neuromparalytic cornea the reaction of the eye shows readily any deficiency of the fitting.

2. *Indications*.—It appears that the use of contact lenses is warranted as an alternative to tarsorrhaphy. It gives better protection for the eye as was shown in the first case. From the aesthetic point of view it has distinct advantages. In the first case the patient was much happier with the contact lens which has enabled her to discard the shade she previously wore to hide the deformity caused by the sutured lids. Moreover, there need be no reluctance in trying a contact lens when there is hesitation about undertaking such a disfiguring procedure as tarsorrhaphy.

My thanks are due to Miss J. M. Fleming for referring the first case to me, and Miss A. Logan Adam for the second case.

ORBITAL EMPHYSEMA SIMULATING CELLULITIS

BY

C. L. CONOR O'MALLEY

GALWAY

ORBITAL emphysema is apparently a rare condition as indicated by the literature at my disposal on the subject. The majority of cases are described as following a benign course, not necessitating surgical

interference. I have found no description of a case similar to the following :—

Description of Case

Patient Michael W., an agricultural worker was looking on at a football match, from a position behind the line. A player charged over, collided with him, and stuck his finger or fingers into patient's left eye. There was slight haemorrhage from the eye and the left nostril. The eye was closed but there was no pain on that, or the following day. On the third day after injury, while at work in the beet-field, about the noontide hour, he felt his eye "beginning to bulge." The condition became more acute towards evening and was accompanied by severe pain. That same night he saw his doctor, who ordered him to hospital, where he arrived next day. I saw him shortly after admission, *i.e.*, on the fourth day after injury. Here is a note of his symptoms, general and local :—

Patient was very ill, in a state of partial collapse, and suffering intense pain. The temperature was 99.5° and pulse 100. Notwithstanding the low temperature, the general condition suggested an acute infection. There was marked proptosis of the left eye, which protruded between the lids, leaving a central belt of cornea completely exposed. The lids were stretched, tense like a drum. Fleishy folds of chemosed conjunctiva overhung the cornea, and projected over the edges of the lids. The eyeball was stony hard from external pressure. The cornea was opaque, and had sloughed at the area of exposure, causing a large irregular ulcer. No detail of intra-ocular structures could be seen, and vision was reduced to nil. The eyeball was immobile, and the orbital tissue felt hard and brawny. There was no trace of a wound from the intruding finger, and examination of the nose was negative.

Treatment and Course

On admission patient had warm saline irrigations of the conjunctiva, atropine, and an injection of M. and B. 693 soluble. The cornea was threatened both from exposure necrosis, and by strangulation from the tense eyelids, and swollen conjunctiva. Orbital cellulitis was the diagnosis, and without delay, under a general anaesthetic, an incision was made along the middle third of the upper margin of the orbit. When a sinus forceps was pushed through behind the eyeball, a quantity of gas bubbled up through the blood in the wound. The eyeball immediately subsided into the orbit in a most dramatic fashion, the cornea was safely covered by the lids, and the tension in all the orbital structures was forthwith relieved. The orbital incision was kept open for three days, and was then allowed to close permanently. Although no pus, or foul smell was manifest, and gas infection of the orbit is said to be a very rare occurrence, yet

this possibility could not be immediately excluded.¹ Cultures from the depths of the wound, however, proved negative, except for an apparently accidental contamination with *staphylococcus albus*. There was a slow but steady recovery. For quite some days the cornea seemed to hang in the balance; but at the end of a week the ulcerated area showed signs of healing, and the periphery began to clear. Eventually the cornea cleared throughout, with the exception of a nebula just below the pupillary area. As the cornea cleared, two small posterior synechiae could be seen, and also a retinal haemorrhage near the disc; otherwise the intra-ocular structures were normal. Chemosis took 28 days to resolve. The severity of the chemosis was possibly due to an infection by dirty fingers as much as by obstruction of the circulation due to intra-orbital tension.

Ptosis was very persistent, so much so, that one feared a lesion of the levator or its nerve twig; at the end of six weeks, however, ptosis had disappeared, and diplopia which had come on cleared up a few weeks later. Ultimately the patient recovered 6/9th vision with full field and movements. The retinal haemorrhage vanished, and except for adhesions and a small nebula the eye became normal.

Discussion

Although repeated radiographs failed to show a break in the sinus walls bounding the orbit, this was obviously a case of orbital emphysema, but with symptoms indicative of cellulitis. Radiography of the thin sinus walls offers many technical difficulties, and probably it is not possible to demonstrate a hole in the lamina papyracea. The sequence of events leading to the exophthalmos was not typical of emphysema cases. A finger pushed into the orbit had presumably fractured the lamina papyracea, and opened a way into the ethmoid. It is unlikely that the slight trauma of a finger would fracture into the frontal sinus or antrum. The patient could not associate the onset of proptosis on the third day with the blowing of his nose or sneezing; but this must have been the immediate cause of his emphysema. There was no evidence of intra nasal disease.

McArthur² reviewed 33 cases of facial emphysema. In 10 cases there was evidence of pre-existing bone disease, leading to fracture on slight trauma. Davis³ states that the majority of cases of emphysema give a history of sudden increased pressure in the buccal and nasal cavities. Van Duyse⁴ describes a case of orbito-palpebral emphysema following a fracture of the skull, which involved the orbital wall of the frontal sinus. The emphysema disappeared and recurred over a period of time. Terrien⁵ classified emphysema about the orbit as: orbital, orbito-palpebral and palpebral. Caccialupi⁶ described in detail a case of fracture of the infero-internal angle of the orbit, involving the frontal and ethmoid sinus,

and causing orbito-palpebral emphysema. His case is illustrated by radiographs, which demonstrate very clearly the pathway of air into the orbital tissues. The majority of cases of emphysema, described in the literature, seem to have been caused by violent blows with obvious fracturing of the sinus walls adjoining the orbit. Fuchs⁷, however, says that orbital emphysema may be produced by blows on the eyeball, pushing it backwards against the orbital fat. The orbital fat is thereby displaced against the orbital wall, with sufficient violence to fracture the lamina papyracea, thus opening a pathway for air to enter the orbit. If the eyeball is ruptured by the blow the recoil on the orbital fat is neutralized, and so fracture of the lamina with emphysema does not occur. Therefore according to this author the presence of one lesion excludes the other. It is difficult to visualize the eyeball resisting a blow sufficiently violent to fracture indirectly the orbital wall. Würdemann⁸ enumerates three symptoms which he thinks are characteristic of orbital emphysema. (1) Exophthalmos lessened by deep inhalation. (2) The eyeball may be pushed back into place with a feeling of crepitus, and a sound like crunching snow. (3) The eye protrudes on blowing the nose. He apparently assumes a free to and fro passage of air from sinus to orbit. This type of injury would presumably not cause dangerous pressure on, or exposure of the eye.

Most writers on the subject think that the various forms of orbital emphysema can be adequately treated by a pressure bandage and by cautioning the patient against sneezing and blowing his nose. It is clear, however, that cases can occur such as that herein described, where strangulation of the eyeball is threatened, and to relieve the tension, an immediate evacuation of the air is imperative.

Summary.

A case is described of a severe proptosis which endangered the eye, and was caused by a gaseous accumulation in the orbit. The symptoms were indistinguishable from those seen in orbital cellulitis. An evacuation operation to relieve the proptosis became urgent. The eye which looked a total loss, made an almost complete recovery.

By inference one concludes that here was a case of orbital emphysema. The air may have got behind the patient's eyeball, directly through a stab wound made by the football player's finger. This is unlikely. The more likely explanation is, that the finger made a valve like opening in the orbital plate of the ethmoid which allowed air under pressure to enter the orbit, but not to leave it. The case seems unusual in that the eye was in great danger; whereas orbital emphysema is usually not a serious condition, and requires no treatment other than a pressure bandage over the eye.

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REMOVAL OF SMALL MAGNETIC FOREIGN BODY FROM THE EYE EIGHTEEN MONTHS AFTER THE DATE OF INJURY*

BY

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HENRY B., aged 34 years.—The patient attended Moorfields Eye Hospital on July 6, 1940, complaining of soreness of the left eye, the result of the entry of powdered chalk into it nine days previously. He gave a history of having injured the left eye 18 months before

Site of slight depression on surface of left iris, with pigmented floor and faint diffusion of rusty colour around on the iris stroma.

while knocking off the head of a screw with a hammer and chisel. The eye had been slightly red at the nasal side ever since.

On examination the left eye showed marked ciliary injection. There was a corneal scar to the nasal side and a dark rust coloured nodule on the iris behind the scar (see figure). The corneal microscope and slit-lamp revealed marked aqueous flare, a few very fine deposits on Descemet's membrane, and small round dark spots, evidently distributed in the posterior reflecting zone. (These spots

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