RESPIRATORY OBSTRUCTION FROM FRACTURES OF THE JAW

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It is proposed to discuss those types of fractures of the jaw which occur in civil practice and which are apt to give rise to respiratory obstruction of such a degree as to jeopardize the patient's life. From my experience of the difficulties of dealing with these cases I feel that a number of patients must succumb long before they reach a special unit. This has prompted me to put forward a simple method of overcoming the obstruction, in the hope that it may be of some assistance to those who first have to deal with such cases.

During the past two years 189 cases of fractured jaw, excluding those of malar or zygomatic bone, have been treated at this unit, and 10 of these suffered from a severe degree of respiratory obstruction. The majority resulted from road accidents; thus it may well fall to the lot of any medical man to deal with this type of case.

Types of Fracture

For the purpose of discussion the fractures will be referred to as Types 1, 2, 3, 4, and 5.

Type 1.—This type is commonly referred to as a fracture of the middle third of the face. When associated with a backward and downward displacement of the middle third, respiratory obstruction may result. A possible explanation for the cause of obstruction is that the hard palate, which is displaced with this middle third, carries with it the soft palate, which is thus approximated both to the posterior pharyngeal wall and to the base of the tongue. This, associated with the haemorrhage and oedema invariably present, results in respiratory obstruction. This type often involves the anterior fossa of the skull.

Type 2.—When the tooth-bearing fragment carrying the hard palate is displaced backwards the soft palate is approximated to the posterior pharyngeal wall and the base of the tongue, so that the mechanism producing the obstruction is as in Type 1.

Type 3.—When the anterior fragment of the mandible to which the tongue is attached is displaced downwards and backwards the tongue is also allowed to drop in the same direction, so that its base comes in contact with the posterior pharyngeal wall. This results in severe respiratory obstruction.

Type 4.—In this type there is a bilateral condylar fracture associated with angular deformity; the mandible is also fractured in the region of the midline. These fractures, when associated with a backward and inward displacement of the anterior fragments of the fractured mandible, allow the tongue to drop back on to the posterior pharyngeal wall, with resulting obstruction.

Type 5.—This type of fracture, which is in the region of the angle of the mandible, often needs no treatment *per se*. It is occasionally, however, associated with a very marked degree of swelling both externally over the region of the angle of the mandible and internally involving the cheek, soft palate, base of tongue, and posterior pharyngeal wall. On occasions this swelling causes severe respiratory obstruction, and is due to haemorrhage, probably as a result of

rupture of the inferior dental vessels.

No effort on the part of the patient can relieve the obstruction in these cases, as all local muscle action is limited owing either to the pain associated with the fracture or to the local oedema and haemorrhage.

In none of these types has paralysis of the palate been noted, either immediately after the accident or during the course of the follow-up.

These injuries are often associated with a loss of consciousness at the time of the accident, and if intra-oral, pharyngeal, or nasopharyngeal haemorrhage occurs blood may be aspirated into the lungs, and respiratory distress further increased. Examination of the chest frequently confirms this.

It is to the credit of general practitioners and general hospitals that the majority of cases of fractured jaw have been transferred to this unit promptly for the specialized treatment necessary. Some of these patients have later described a terrifying journey in an ambulance during which they imagined they were suffocating. Many have arrived in a collapsed condition. One patient aged 78 arrived in a state of congestive heart failure as a result of the respiratory obstruction.

Treatment

It is true that when the fracture is reduced and immobilized the respiratory obstruction is relieved and the patient's condition rapidly

TYPE 1.—Radiograph and diagram of fracture of middle third of face.

TYPE 2.—Radiograph and diagram of horizontal fracture.

TYPE 3.—Radiograph and diagram of comminuted fracture of the mandible.

TYPE 4.—Radiograph and diagram of fracture of condyles and anterior part of mandible.

TYPE 5.—Radiograph and diagram of fracture in the region of the angle. Intra-oral photograph.

improves. The majority of these patients on arrival are unfit for an anaesthetic and the lengthy operative procedure which reduction and immobilization of the fracture with wires, splints, or pins entails. To attempt this is exposing the patient to an unnecessary risk. Frequently, immobilization of a fracture can be achieved only by the use of cap splints, and this means a delay of six to eight hours while they are being constructed.

A relatively simple procedure has been used to relieve the respiratory obstruction, and can be carried out by any reasonably competent person. A No. 8 or 10 Magill nasopharyngeal tube lubricated with 5% cinchocaine hydrochloride ("percaine") ointment is passed through one or other nostril. It may not be easy to do this if the septum is deflected or the nose fractured, and a little manipulation may be necessary. There is invariably some difficulty in passing the tube once it has reached the posterior pharyngeal wall. Continuous gentle pressure, however, usually results in the tube slipping past this obstruction, and respiratory excursions immediately take place freely through the tube. The patients are relieved, anxiety is allayed, and recovery from shock is rapid. The fact that obstruction invariably occurs at the posterior pharyngeal wall indicates that there is approximation of the base of the tongue, the palate, and the posterior pharyngeal wall. In cases in which blood has been aspirated into the lungs a flexible gum-elastic catheter is passed via the nasopharyngeal tube into the trachea and bronchi, and the blood aspirated. This latter procedure, if the patient is still in a confused state, causes no reflex attempts at coughing. In cases in which the level of consciousness is not depressed the gum-elastic catheter will produce a laryngeal reflex which will distress the patient, and it is best then to discontinue the attempt to aspirate. Aspiration, when it does not cause distress, is essential, as the patient is either unable or unwilling to cough. Retention of the blood may lead to collapse of the lung or pneumonitis. Periodic aspiration of the pharynx is also carried out for the purpose of removing saliva or any oozing which may take place, as the patient is unable to swallow or cough.

Occasionally these fractures, particularly Type 1, are associated with head injuries. It is of the utmost importance in these cases that the respiratory obstruction be relieved and cerebral congestion avoided.

Relief of the obstruction, by decreasing restless movement, also allows good x-ray pictures to be taken.

Summary

Five types of fracture of the jaw which may give rise to respiratory obstruction are described and illustrated.

The importance of prompt relief of the obstruction is stressed.

Treatment by means of a No. 8 or 10 Magill nasopharyngeal tube, with periodic aspiration of the pharynx to remove saliva or oozing, is described.

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The Central Council for District Nursing in London (25, Cockspur Street, S.W.1) has issued a revised edition of its "Directory of District Nursing and Street List for London." The directory lists in alphabetical order the name of nearly every street or place in the administrative County of London, together with the borough and postal district in which it is situated. A reference number attached to each street or place shows in the index the name and address of the nursing association that covers it.

VESICAL CARCINOMA WITH BILHARZIA

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Schistosomiasis on Abadan Island is exclusively of urinary type and is not a common disease. It is known that 25 new cases were reported from the laboratories in 1947 and 46 in 1948. From January 1, 1949, all cases were admitted to the Isolation Hospital, and in ten months there were 50 admissions, 43 being new cases diagnosed by discovery of the ova in the urine, four relapses, and three cases diagnosed at cystoscopy. These are not large figures for a population in the region of 200,000, and it is doubtful whether any of the cases were infected on the island itself. All the cases admitted in 1949 have been interrogated and found to have visited endemic areas in Iraq or Iran. Moreover, no snails of the species *Bulinus*, *Physopsis*, and *Planorbis*, the intermediate hosts of the parasite, have yet been discovered here. No case has previously been known to have developed malignant disease in Abadan.

Case Report

An Iranian man aged 40 was admitted to the Isolation Hospital on March 20, 1949, complaining of painless terminal haematuria for the previous fifteen days. He stated that he had lived on Abadan Island for three years and used the Company's piped water for drinking and washing, but during

Photomicrograph showing ovum of *Schistosoma haematobium* adjacent to a group of tumour cells and separated from a surviving bundle of muscle fibres by fibrous tissue. The terminal spine of the ovum shows clearly.

1947 he spent a month in a village near Ahwaz where the only water available was from the river. He had a suprapubic scar, which he said was from an operation for stone performed elsewhere in 1942, but no details of this were available and no other abnormality was found on examination. The urine examined contained numerous ova of *Schistosoma haematobium* and numerous red blood cells. These findings were repeated on February 26, March 1, April 8, and April 14. On February 22 the red cells alone were found, and on April 27 the urine was normal. On April 27 the patient was discharged. During his stay he had had 22 gr. (1.4 g.) of potassium antimony tartrate.

On July 7 he was admitted to the General Hospital. For several months he had had a dull ache in the right loin and