position have become fixed. It is now that the dental surgeon is called upon to manufacture some form of dental splint, and finds that it is quite impossible to reproduce satisfactory alignment of the lower and upper jaws, as the lower jaw is fixed in the displaced position and will not come forwards. In order to overcome this difficulty it has been the custom at the Royal West Sussex Hospital to treat these cases by extension. Applying the principles in common use in the treatment of fractures of the long bones, a Kirschner's wire is passed transversely through the symphysis of the mandible and vertical weight extension is applied by means of pulleys attached to a Balkan frame. The head is held down by webbing straps to the bed (see Fig. 1). It is found with this form of treatment

FIG. 2.—Before reduction. Note the overhang of the upper jaw.

FIG. 3.—After reduction by wire extension. The alignment of the upper and lower jaws is restored.

that the patient experiences great relief from pain, and is able to open the mouth much more freely almost at once. Liquid food is given at first, followed later by soft solids. The extension is left on until the local condition in the mouth has improved to such a degree that it is possible to fit a dental splint of the usual pattern, and this usually takes two to three weeks. Not only is there great relief from pain but the position of the fractured fragments is greatly improved (see Fig. 2, before reduction, and Fig. 3, after reduction) and alignment is restored.

The interest in this method of treatment is that it affords a practical method of treating severe compound fractures of the lower jaw into the mouth with comfort to the patient and without deformity or loss of alignment until such a time as the local condition has improved sufficiently for the dental surgeon to fit an appropriate form of dental splint.

LARYNGEAL GRANULOMA FOLLOWING INTRATRACHEAL INTUBATION

BY

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The method of intratracheal intubation in anaesthesia has been practised extensively, both in this country and in America, since Elsberg first introduced it in 1910. Its manifest advantages are too well known to merit further description here, and, judging from experience and literature, complications are rare. Indeed, a search through the library of the Royal Society of Medicine has failed to disclose any published evidence of post-anaesthetic complications following its use.

On this subject Chevalier Jackson, an acknowledged authority on laryngeal surgery, states that "in regard to the effect [of intratracheal intubation] on the mucosa of the air passages, the author is able to state from post-anaesthetic laryngoscopy in 80 cases that there is no reaction in the larynx from the presence of the insufflation tube, even in prolonged anaesthesia by insufflation. In quite a number of cases anaesthetized by the ordinary method, there has been quite a great deal of local laryngeal reaction, probably from ether mucus bubbling back and forth in the larynx, so that from an observation of these 80 cases the author is prepared to say that there is less irritation in the larynx from an intratracheal insufflation tube than from an anaesthesia of corresponding duration by the open method." (*Peroral Endoscopy and Laryngoscopy*, chapter iv.)

On theoretical grounds it appears likely that the complication most to be expected would be a laryngitis, the pharyngitis and stomatitis so often attributed to the intratracheal tube being probably due to faulty technique, lack of sterility, too tight packing of the throat with coarse material, or to the manipulations of the surgeon.

An Illustrative Case

That damage to the larynx may occur is, however, shown by the following case:

A married woman, aged 48, suffering from carcinoma of the cervix uteri, was admitted to St. John's Hospital, Lewisham, for a Wertheim's hysterectomy in February, 1934. The operation proved to be difficult, and took three hours ten minutes. Anaesthesia was nitrous oxide, oxygen, and ether, delivered through a nasal endotracheal tube. This was a Magill's tube, size 4, which was inserted by the "blind" technique of Rowbotham and Magill at the first attempt and without any difficulty or forcing whatsoever, at a stage when the anaesthetic was sufficiently far advanced for the cords to be well relaxed.

After the operation there was a good deal of retching, but no other complications. When seen by me a week later her condition was excellent, and she made no complaint of any throat trouble during her stay in hospital. She was discharged on March 13th.

The patient was readmitted on May 22nd, with the following history: She now stated that while in hospital on the previous occasion she had noticed once or twice that "her voice failed her" for short periods, during which she could only speak in a whisper. Previous to this operation she had had no trouble of any kind with her voice, and, in fact, she sung contralto in the church choir and at concerts. After her discharge from hospital, however, these attacks of "loss of voice" occurred more frequently, especially while singing. On May 16th she woke up at 3 a.m. choking, blue in the face, and she could not breathe properly. After a few minutes her breath came back, but she could only talk in a whisper for some time, and her breathing was "wheezing." On May 21st she had a second attack of choking, more severe and prolonged than the first. She was readmitted to hospital as an emergency.

On laryngoscopic examination by Mr. J. W. Harrison under evipan anaesthesia a subglottic growth was seen, which appeared to be a granuloma. This was removed with a punch. On recovery from the anaesthetic the patient's voice was normal. Two months later she was again admitted for increasing hoarseness. There was found to be a slight recurrence of the growth, which was curetted. Since then there has been no further trouble of any kind.

The pathological report of the growth was as follows: "The specimen has the histological picture of granulation tissue undergoing degeneration. There are no giant cells or other indication of tuberculous or specific infection. There are no epithelial cells or indication of a neoplastic process."

Comments

The endotracheal tube as usually employed is curved appreciably, so that when in position in the larynx the pointed distal end is curved anteriorly. The bevel on this distal end is placed laterally. Moreover, in order to facilitate the passage of the tube "blindly" a certain degree of hardness in the tube is desirable in order to obviate kinking.

Apart from trauma which may be inflicted during the passage of the tube, it seems possible that the distal pointed extremity, if it should rest against any part of the laryngeal mucosa, would cause ulceration by the continuous movements of the larynx against it during respiration. This would be more prone to occur if the tube were too hard, the end too sharply pointed or too sharply curved, or if the tube were not passed sufficiently deeply into the trachea. Moreover, any infection carried down from the nose would be likely to set up a laryngitis in conjunction with the irritation caused by the presence of the tube.

These dangers may be avoided by a careful attention to the shape and condition of the tube, and to technique. The necessity for great gentleness and for sterility is not always realized. Moreover, it is desirable that intubation should not be attempted until a sufficient depth of anaesthesia is reached to ensure that spasm of the glottis or its forced closure, as in coughing, will not take place.

Pushing the tube against a closed glottis or pulling it up and down the pharynx in an attempt to force a reluctant tube to enter the trachea when the head is in the wrong position or the patient not sufficiently relaxed are both practices to be condemned.

Finally, it appears to be a matter for argument whether the passage of a soft tube under direct vision is not a safer and more surgical procedure than the "blind" passage of a stiffer tube. Certainly, in all cases where nasal sepsis cannot be excluded intubation through the mouth is preferable to the nasal route.

I wish to express my gratitude to Mr. E. Hesketh Roberts and to Mr. J. W. Harrison for their kind permission to publish this case, to the latter for the operative details, and to Dr. Arthur Davies for the pathological report.

V. G. Nair (*Journ. Ind. Med. Assoc.*, July, 1935, p. 488) records twenty-eight small-pox cases in patients aged from 3 months to 58 years who were treated by intragluteal injections of liver extract, not more than eight to ten being given in each case. In the discrete type four or five injections were sufficient in doses of 5 c.cm. daily for two or three days, followed by 2 c.cm. daily for another two or three days. It was found that this treatment modified the course of the disease, shortened its duration, abated the eruption, and prevented subsequent disfigurement from scarring and pitting. The systemic disturbance soon disappeared, and the patient went through the attack with comparative comfort. None of the cases described showed the usual complications of small-pox, such as boils, subcutaneous abscesses, secondary septic fever, toxic rash, or phlebitis and thrombosis.

Clinical Memoranda

Two Fatal Cases of Botulism

The rarity of this very fatal type of food poisoning, together with the importance of the early recognition of the clinical signs, if the specific antiserum is to be of any avail, leads me to describe the signs and symptoms of the condition in two fatal cases occurring in two sisters, who died within eight hours of one another, and within at most forty-eight hours of the onset of any symptoms.

CASE I

A message to call on Mrs. O., aged 51, was received at midnight on Thursday, August 8th, 1935, the reason given being that the patient was unable to see, speak, or swallow. When seen the patient was holding up her eyelids with her fingers in an attempt to look at me; she spoke in an almost incoherent nasal voice, but was perfectly rational, and could write her requests, though she was terribly frightened. On examination there was double ptosis of the eyelids, and the movements of the eyes in all directions were almost completely absent, there being but a flicker in the outward direction; the pupils were equal and active, the palate did not move, but the pharyngeal reflex was still present. There was no weakness of the limbs, knee jerks were normal, and the plantar reflexes flexor in type. There was no actual ataxia, but the patient walked and stumbled like a blind person. The temperature was normal, the pulse 88, and the blood pressure 130/80. The patient had vomited that day, and had noticed the drooping of her eyelids (more marked on the right) only that morning. She was moved to a nursing home at 2 a.m., but despite energetic treatment, including the injection of 50 c.cm. intravenously, and 25 c.cm. intramuscularly, of antitoxin serum, she died at 8 p.m. on August 9th from respiratory failure. The striking symptoms of the last few hours of her life were acute pain in the region of the heart and the lower edge of the ribs on both sides. She was seen by Dr. W. R. Wylie, who confirmed the diagnosis.

CASE II

At 7 a.m. on Friday, August 9th, a message was received from the sister of the first patient, Mrs. J., aged 49, stating that on attempting to drink an early morning cup of tea she found that she was unable to swallow. Seen half an hour later (she lived elsewhere, but the sisters had dined together at Mrs. J.'s home several days previously), she presented very similar signs. There was ptosis of the eyelids, but less complete than in Case I. The movements of the eyes were again almost entirely absent, the palate did not move, the speech was absolutely incoherent, and swallowing was impossible. There was, in addition, marked difficulty in breathing, and the patient complained of pain over the praecordium. She seemed definitely more ill than Case I. She was moved to the same nursing home, but died at 10 a.m., before any treatment could be administered. There seems little doubt that the son of this case, aged 20 years, who died after an illness lasting less than forty-eight hours, succumbed to the same infection. He had partaken of the same food on August 2nd or 3rd, became seriously ill on August 4th, and died the same night. A post-mortem examination was said to have shown tuberculous meningitis, but his symptoms as described by Case I, his aunt, were exactly similar to those of the other two.

BACTERIOLOGY AND POST-MORTEM FINDINGS

Bacteriological examination of the suspected nut-meat brawn showed: (1) the presence in a direct smear of a Gram-positive bacillus, apparently anaerobic; (2) a growth on culture of (apparently) the same organism; and (3) that this Gram-positive anaerobic bacillus was spore-bearing. These findings were considered to be conclusive as to the nature of the infection—namely, *B. botulinus*.

Post-mortem examination of the bodies revealed, as is usual, very little beyond the presence in the upper part of the small intestine of undigested vegetable matter. There was no local irritation. Microscopical examination of the brain