returned it was found that he could not speak. When seen shortly after he appeared quite well and understood what was said to him, but refused to say a word. He pushed his plate at dinner-time when he wanted more. Two months later he began to say a few words and then quickly became as big a chatterbox as ever. We have already noted the occurrence of a temporary paresis of hemiplegic distribution which is found not infrequently after convulsions, recovery taking place in the course of a few days or weeks. This also follows epileptic attacks as is well known. In infantile convulsions from reflex excitation the spasms are often one-sided or at least more marked on one side than the other and the side which has suffered most is apt to be weak for a while.

In conclusion we would venture to suggest: 1. That there is a form of amaurosis which occurs in infants or young children which is post-eclamptic, due to anæsthesia of the visual centres. 2. That the convulsions, which may be due to various causes, are apt to be severe and accompanied by coma. 3. That the amaurosis may be associated with aphasia and paresis of hemiplegic distribution; the hemiplegia may be permanent. 4. That the amaurosis is for the most part transient. It is possible that in some instances there is hemianopia.

FOREIGN BODY IN ONE OF THE MAIN DIVISIONS OF THE LEFT BRONCHUS;

ATTEMPTED REMOVAL BY POSTERIOR BRONCHOTOMY THROUGH THE PLEURAL CAVITY.¹

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THE patient, a boy, aged 15 years, was admitted to the Victoria Infirmary, Glasgow, under the care of Mr. A. E. Maylard, on the evening of Dec. 24th, 1902, as an urgent case. He had been amusing himself in bed before going to sleep with a toy squeaker similar to what is placed in india-rubber dolls, when forgetting to remove the whistle from his mouth he fell asleep. He was not long asleep before he was suddenly awakened by a sense of suffocation, for the whistle had entered his windpipe. No amount of coughing and slapping on the back had any effect in dislodging the body and he was hurriedly taken to the infirmary. On his admission it was at once evident that the whistle was lodged somewhere in the windpipe and was probably lying straight across, for with every respiration there was a short shrill inspiratory whistle, followed by a longer expiratory squeak similar to what is got in squeezing a rubber doll but more muffled. The whistle was described as round in shape, with a hole in the centre, a serrated and a smooth edge, and of about the size of a threepenny-piece. Beyond an occasional fit of coughing its presence caused him little discomfort. The house surgeon, Dr. John Paton, examined his larynx with the laryngoscope. He found the cords patent but could not see the squeaker. On the following morning, the 25th, the whistling with respiration was still audible. The larynx was the only part tender to touch and nothing could be felt externally. The respiratory murmur was less marked all over the left lung, and more air seemed to be entering the right than the left lung. Dr. D. O. Macgregor, the superintendent, examined him with the screen but could not then locate the whereabouts of the squeaker. Under an æsthetic the trachea was opened and Mr. Maylard made an examination of the windpipe and bronchi with long probe and forceps, but with a negative result. He could not be certain that he touched the foreign body at all and he raised the question whether it had not been expelled, perhaps coughed up and swallowed. A tracheotomy tube was inserted. For the next day or two there was little to note except that since the trachea was opened the whistling had ceased, that comparative dullness was now present all over the left lung and more particularly at the base, that the respiratory murmur was lessening and accompanied by moist crepitant râles, and that the pulse, respiration, and temperature were gradually rising. On the 29th his condition assumed a more serious aspect. The

expectoration, of a muco-purulent character, was beginning to smell badly, the cough was very troublesome, and the patient's appearance was such as to suggest septic poisoning. The possibility of a commencing gangrene of the lung was considered. Another skiagraph taken by Dr. Macgregor showed the squeaker to be at a point between the fifth and sixth ribs on the left side and three-quarters of an inch outside the left border of the sternum. Mr. Maylard having to go out of town the case came under my care. Before leaving Mr. Maylard mentioned to me that he thought the boy's condition was very serious and that I had his sanction to do what I thought best. As no improvement was taking place, and now knowing the exact position of the squeaker, I determined to try its extraction. Enlarging the tracheotomy wound I passed a long probe into the bronchus and was quite confident that I felt the squeaker. With a long piece of silver wire bent like a hook I fished for a long time and thought more than once that I had caught it. Whether we were correct in supposing it to be too tightly held by the swollen mucous membrane or not I do not know, at any rate I failed to dislodge it. We then tried inversion, but with no effect. Regarding the outlook as very black if we left the squeaker where it was, perhaps unwarrantably so, I made an attempt to get at it from behind through the posterior mediastinum, removing two inches or so from the third, fourth, fifth, and sixth ribs between the base of the scapula and the vertebral column. On opening the pleural cavity, in which there was some fluid, it was at once seen that some air at least was entering the lung, for with every inspiration it was blown against the opening and with expiration sucked up into the upper third of the chest cavity. To fix the lung sufficiently to examine the root was the difficulty. We partly succeeded by inserting plugs of gauze, but every now and then a violent fit of coughing would supervene which did not facilitate matters. The structures forming the root of the lung could be fairly easily identified, though they seemed all clumped together, and it was only by the finger that one could recognise the more resistant wall of the bronchus. By palpation of the bronchus and examination of one suspicious spot with a needle I satisfied myself that the squeaker was not in the main bronchus, but in all probability was in one of its branches and covered by lung tissue, though I did not feel it. We thought it wise at this point to proceed no further and accordingly partly closed the wound, using gauze as a drain.

For a week after the operation the discharge from the wound behind was serous; it then became semi-purulent and ultimately purulent, necessitating the insertion of a tube. The expectoration continued to be profuse, muco-purulent in character, and at first very foetid. Some sloughy tissue was discharged from the posterior wound, but the amount of discharge, never abundant, gradually lessened. The expectoration diminished, the physical signs cleared up, the patient put on weight, and he was dismissed on March 11th with the wounds healed and in excellent health. The cicatrix behind is with every inspiration drawn slightly inwards; the movement of the scapula towards the vertebral column (the action of the rhomboidei) is less than on the sound side; other movements are free. Before dismissal Dr. Macgregor and myself examined him thoroughly with the "screen," but failed to find any trace of the squeaker. Skiagraphs were also taken but revealed no shadow of the whistle. Naturally the question arises, Where is the squeaker? That it was in the bronchus at the time of the operation is absolutely certain. The skiagraph was taken the night before the exploration and it is hardly possible to believe that it could have been coughed up without the knowledge of the boy, who was intelligent and aware of its presence in the lung, or of the special nurse in charge of the case. That it was not coughed up or discharged through the posterior wound subsequently to the operation I am equally certain; that it might have been coughed up, swallowed, and passed by the rectum is possible—the boy thinks not. For the first week only after the operation were the stools strained.

I bring this case forward, however, principally to raise the question as to the best method of approaching the bronchi. In considering this question it is necessary to start with the assumption that all other measures for extraction have failed and that the case is a desperate one necessitating an extreme measure. Nothing short of this would justify an operative procedure which is undoubtedly performed with great risk. I know that the greater proportion of cases of foreign bodies in the bronchi

¹ The case was shown at a meeting of the Pathological and Clinical Society, Glasgow, on April 20th, 1903.

or lungs get well in time by expulsion, by encapsulation, or otherwise, but there is a proportion of cases which end fatally chiefly from gangrene of the lung. In these extreme cases where gangrene of the lung is commencing, or is actually established, and the foreign body revealed by radiography is in an accessible position—I mean the main bronchus or one of its branches—surely some effort should be made in these cases to extract the body even though it entails an operation such as that attempted in the present case. In the February number of the *Annals of Surgery* for this year there is a very interesting editorial article on “Intramediastinal Bronchotomy and Oesophagotomy,” by one of the editors, Lewis Pilcher of Brooklyn. The whole work done in this particular field is reviewed and reference is made to most of the published cases. The method of approaching the bronchus through the anterior mediastinum is first considered and details are given of Ricard’s² case and of Milton’s³ case. In both of these cases the foreign body was the same, the inner cannula of a tracheotomy tube, and in both the cannula was in the right bronchus. Ricard “resected the upper half of the sternum, uncovered the trachea near its bifurcation and palpated it repeatedly but could not feel the cannula either at the lower part of the trachea or at the beginning of the bronchus.” Milton divided the sternum in the median line and drew the two halves apart by strong retractors. He had some difficulty to begin with in exposing the bifurcation of the trachea but succeeded by drawing the trachea upwards. The trachea was opened low down and the cannula was removed. The patient in Ricard’s case died from gangrene of the lung and in Milton’s from mediastinal sepsis. Pilcher concludes his remarks on the anterior operation thus: “These two cases illustrate well the possibilities, the difficulties, and the dangers of attacks upon the air passages through the anterior mediastinum. . . . The future successful mediastinal tracheotomy will in all probability combine the following steps: (a) the sternal resection of Ricard; (b) the exposure of the trachea by the pushing back of the pleura and the holding aside by retractors of the great retrosternal vessels; (c) the lifting up of the trachea by traction from above through a hook inserted into the old tracheal opening in the neck; (d) the incision into the trachea just above its bifurcation; (e) the exploration of the bronchi through the wound, the detection and the removal of the foreign body; (f) the tamponade of the anterior mediastinum, with the external wound left widely open to afford unrestricted exit of wound discharge; (g) later secondary suture or healing by granulation as the case may require.” The method of approaching the bronchus through the posterior mediastinum is then referred to and the opinion of Quénu⁴ quoted as to the best method of approach, based alone upon experiments upon the cadaver. Briefly, the method advised by Quénu is as follows: exposure of the ribs by flap, removal of portions of the third, fourth, fifth, and sixth ribs, and stripping the pleura from the chest wall so as to gain access to the bronchus without opening the pleural cavity. This method is “a further development of the observations made by Quénu and Hartmann⁵ with regard to the possibility of exposing the oesophagus through this opening.”

Two unsuccessful cases by Rehn⁶ and a successful case by Enderlen⁷ are given of oesophagotomy by this route but no case of bronchotomy by this method is quoted nor can I find any record elsewhere. Pilcher concludes his article thus: “From this review of the published cases in which up to the year 1900 efforts had been made to reach the bronchi or oesophagus through the mediastinal spaces, anterior or posterior, there was little to encourage its further practice. Operative procedures which may be successfully carried out upon a cadaver are attended with the greatest of difficulty and danger in the

living subject.” As Willard,⁸ who attempted tracheotomy on dogs, very pointedly remarks: “The aspects of the parts during life and after death are as absolutely different as they can possibly be. A bronchus which after death is easily exposed, and which is reached with the greatest ease, I have seen five minutes previously absolutely enclosed with huge pulsating vessels of twice the size, any one of which, if punctured, would seriously complicate, if not render the operation absolutely fatal. The alteration of the parts in life and in death can only be appreciated when seen.” Mr. Stephen Paget,⁹ commenting upon the same experiments of Willard, says: “These very valuable experiments plainly forbid all hope of our reaching and removing foreign bodies in the bronchi by any direct incision of them. It is true that one might possibly gain access to a bronchus through the posterior mediastinum without opening the pleura, or, at all events, without causing collapse of the lung, but the dangers of hæmorrhage are so great and the uncertainty of the whole procedure so frightful that the operation is hardly ever likely to be practised. And how can the surgeon explore the bronchus or get a hold of the foreign body through a button-hole in the bronchus deep inside the chest? How can he close his incision even if he can make it? And how can he prevent infection of the mediastinum if he leaves it open? These objections may be theoretical, but so is the operation.” I make this somewhat lengthy extract because many of the points raised by Mr. Paget bear on the present case and help us to come to a right conclusion as to whether the operation is really a justifiable one or not. There is no reported case, as far as I can find, of deliberate exposure in the living subject of either bronchus through the pleural cavity for the removal of a foreign body. The dangers and difficulties of this method of exposure are without doubt considerable and only the extreme gravity of the case, as before stated, would warrant such a procedure.

Pneumothorax.—The danger of sudden and alarming respiratory embarrassment, if not of actual death, from pneumothorax, or rather from collapse of the lung, has been regarded as sufficient to ban this route. That there was respiratory difficulty in the present case is true, but it was not alarmingly increased when the pleural cavity was opened and extensively opened. Perhaps this was partly due to the fact that the anæsthetist, Dr. D. Lamb, administered oxygen whenever he thought the breathing or colour of the patient demanded it; perhaps the youth of the patient had also something to do with it.

Movement of the lung.—The great difficulty in this case was the constant movement of the lung; it flopped about in the chest cavity like a sail in the wind with a loose sheet. Gauze packing steadied it sufficiently to palpate the bronchus, but, had we felt the foreign body in the bronchus, this movement of the lung would have greatly increased the difficulty of its extraction if it had not prevented its extraction altogether. To overcome this difficulty I believe that the safest and the most satisfactory course would be to remove a portion of another rib and insert one’s hand into the pleural cavity. The root of the lung could then be palpated between the forefinger and thumb and the bronchus easily identified by its cartilaginous rings. Should the foreign body be detected this fixation of the root would enable the operator to incise the bronchus and to extract it. I do not think that this is such an impossible suggestion as it would appear; as it was. I had almost my entire hand in the chest cavity. It certainly would make all the difference in fixing the root, greatly facilitate the examination of the bronchus, and greatly lessen, if not entirely remove, the possibility of injuring either the pulmonary artery or the vein. The observations of Quénu and Hartmann¹⁰ demonstrate its feasibility. The approach through the pleural cavity would also enable the surgeon to deal with a gangrenous patch in the lung by incision or otherwise and even to remove the entire lung if necessary.

The conclusions which might be drawn from this case and a consideration of the subject in general are these: 1. A foreign body in the right bronchus not far below the bifurcation of the trachea, which of course defies extraction by other measures, is best got at through the anterior mediastinum, the technique as detailed by Pilcher. The exploration

² Ricard: Contribution à l’Étude de la Chirurgie du Médiastin Antérieur, Bulletin et Mémoire de la Société de Chirurgie de Paris, 1901, tome xxvii., No. 11, p. 304.

³ Milton: Removal of a Foreign Body from the Bronchus by Intra-thoracic Tracheotomy, THE LANCET, Jan. 26th, 1901, p. 242.

⁴ Quénu: De l’Extraction des Corps Étrangers Trachéo-bronchiques par la Voie Médiastinale Postérieure, Bulletin et Mémoire de la Société de Chirurgie de Paris, 1901, tome xxvii., No. 12, p. 317.

⁵ Quénu et Hartmann: Des Voies de Pénétration dans le Médiastin Postérieur, Bulletin et Mémoire de la Société de Chirurgie de Paris, 1891, tome xvii., p. 82.

⁶ Rehn: Operationen an dem Brustabschnitt der Speiseröhre, Verhandlungen der Deutschen Gesellschaft für Chirurgie, 27 Kongress, 1898, Centralblatt für Chirurgie, 1898, No. 26.

⁷ Enderlen: Ein Beitrag zur Chirurgie des hinteren Mediastinum, Deutsche Zeitschrift für Chirurgie, Band lxi., S. 441.

⁸ Willard: Intrathoracic Surgery; Bronchotomy through the Chest-wall for Foreign Bodies impacted in the Bronchi. Transactions of the American Surgical Association, 1891, vol. ix., p. 345.

⁹ Stephen Paget: The Surgery of the Chest, 1896, p. 361.

¹⁰ Ibid.

of the left bronchus through the anterior mediastinum is anatomically impossible. 2. A foreign body in either bronchus well down near the lung can be reached, if other means fail and the nature of the case demands it, through the posterior mediastinum. With the arm hanging over the table a vertical incision midway between the base of the scapula and the vertebral column, and extending from the upper border of the third rib to the lower border of the seventh rib, should be made dividing everything right down to the ribs. A flap incision is a disadvantage as free drainage is advisable. The ribs, third to seventh inclusive, should be divided subperiosteally, and from two inches to two and a half inches removed from each. Median division of the pleura is an advantage as its reflection to each side protects the hand from the cut edge of the ribs. 3. By deliberately opening the pleural cavity and inserting one's hand the root of the lung could be easily manipulated, the bronchus incised, and a foreign body removed with greater certainty and certainly with less danger from hæmorrhage than by stripping the pleura from the chest wall. No attempt should be made to close the opening made in the bronchus. The danger of subsequent sepsis would be much lessened by only partially closing the wound and packing from the bottom.

Remarks by Mr. MAYLARD.—My comparatively short association with the case in its initial stages leaves me little to add to what has already been stated by Dr. Andrew. It had been my unfortunate experience to see two cases of death from gangrene of the lung due to the accidental lodgment of teeth within the bronchi; and the gravity of the symptoms which were beginning to show themselves in the case led me to agree with Dr. Andrew that we were fully justified in employing any measures that would reasonably be expected to lead to the extraction of the foreign body or favour its expulsion. Although the attempt to remove it failed it is not altogether improbable that the manipulation involved in the operation may have had something to do with the subsequent dislodgment. The operation was undertaken, as will be learned from Dr. Andrew's own statement, with the strictest appreciation of the gravity of the symptoms which apparently manifested themselves and the severity of the measure it was proposed to employ. Apart, however, from all considerations connected with the operation as employed for this particular case I am of opinion that it is not without its own teaching in regard to the method of approaching the root of the lung, the bronchi, and œsophagus by the posterior mediastinal route; and quite apart therefore from any intrinsic merits connected with the case itself the operation is one which from its great rarity is worthy of being recorded.

Glasgow.

A CASE OF HÆMATOSALPINX DUE TO TUBAL PREGNANCY COMPLICATED BY TORSION OF THE PEDICLE; OPERATION; RECOVERY.

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IN searching through the literature of hæmatosalpinx I have succeeded in finding only one recorded example where torsion of the pedicle complicated a hæmatosalpinx due to tubal foetation. Martin¹ of Berlin describes a case and gives a drawing of the specimen. The patient, a woman, aged 28 years, had a left-sided ampullary tubal pregnancy at about the second month. The peritoneal cavity contained a large amount of sanious ascites. The tumour was bluish-black in appearance and had two twists in its pedicle. When removed it was found to consist of the left tube and ovary. It had a length of 13 centimetres and a breadth of six centimetres. The Fallopian tube was S-shaped and the ampullary end was dilated to the size of a goose's egg. No foetus was found, but there was a placenta infiltrated with blood, and there were also blood, hæmatoidin crystals, and fatty detritus. The ovary was the seat of a large hæmatoma and the ovarian tissue was infiltrated with blood. This case presents certain points of resemblance to that recorded in

this paper, for in both a foetus was absent and the torsion of the pedicle was well marked.

In May, 1898, I was asked by my friend, Dr. D. T. Macleod of Sydenham, to see a patient, aged 34 years, who was then suffering from a purulent uterine discharge. Curetting was recommended and performed. No abnormal condition of the appendages was detected at this operation. As a result of the curetting her general health improved and this improvement was maintained. In October, 1900, she was suddenly seized one evening with very acute pain, said to be in the "kidney region," which extended round towards the costal margin in front. Rest and the application of heat for two or three hours relieved this attack. In March, 1901, this pain recurred and the same treatment was again successful. She did not consult a medical man until her third attack, which occurred in the following April. Dr. Macleod was then consulted and he has kindly furnished an account of this and a subsequent, attack, which I shall give in his own words:—

The patient was certainly suffering most acutely and I came to the conclusion that it was due to renal colic. I gave a hypodermic of morphia and applied warmth. The pain subsided in six or eight hours. The urine failed to reveal gravel and the pain, which was felt well over the ribs under the right breast, did not give me any clue to its exact origin—indeed, intercostal neuralgia was even thought of.

The next attack was the final and was accompanied by a rise of temperature (102° F.). It occurred on May 25th, 1901. The pain was distinctly abdominal, not pelvic, occupying the right lumbar region in front. It was most distressing in its acuteness and I felt certain that there was peritonitis (localised) from the general appearance of the patient and the condition of the pulse.

On May 27th Dr. Macleod detected on examination a swelling in the position of the right ovary which was very tender on pressure; and I saw the patient in consultation with him on June 11th. I had the advantage of anæsthesia

Tubal gestation with twisted pedicle. The figure represents the natural size of the tumour and shows the three twists in the pedicle.

during my examination. A smooth, rounded, slightly moveable swelling was felt occupying the right posterior quarter of the pelvis. As the patient had never been free from pain since the last attack abdominal section was recommended.

On June 15th, assisted by Dr. Macleod, I opened the abdomen. The anæsthetic (ether) was administered by Mr. Rickard W. Lloyd. After the escape of some ascitic fluid a swelling on the right side of the uterus was exposed. It was bluish black in colour, but at certain points a greenish-yellow shade was noted. The intestines adhered to it. The adhesions were carefully separated and the tumour, with its