Two Lectures

ON

THE ANÆSTHETISATION OF SO-CALLED "DIFFICULT" AND "BAD" SUBJECTS.

*Being the Emeritus Lectures on Anæsthetics delivered at
the London Hospital on Nov. 21st and Dec. 5th, 1902,*

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LECTURE II.¹

Delivered on Dec. 5th, 1902.

GENTLEMEN,—I now propose to discuss the second class of bad subjects—those whose respiratory tract is in some way encroached upon or whose respiration is in some way hampered by pathological or other conditions.

As the vast majority of complications during anæsthesia are dependent upon some intercurrent asphyxial state the true nature of which is often not recognised, it follows that patients whose respiratory tract is encroached upon or whose respiration is in some way hampered are specially liable to give trouble to the anæsthetist. It is, as a rule, more important in examining a patient before an anæsthetic is administered to test the freedom with which respiration takes place through the nose than to listen to the heart. The healthy-looking schoolboy with enlarged tonsils and post-nasal growths, the strongly-built youth with fixity of the lower jaw from rheumatoid disease of its articulation, the soldier suffering from an extensive sub-lingual abscess and the drayman with angina Ludovici are examples of this class. I may also include patients with large glandular or other tumours of the neck, which either interfere with the mobility of the lower jaw or press upon the trachea, those affected by septic or diphtheritic pharyngitis, tonsillitis, or laryngitis, and those with any morbid state of or about the lower respiratory passages rendering respiration difficult.

In dealing with patients of this class all asphyxiating anæsthetics or methods of administration are to be avoided. Thus, to a patient with angina Ludovici, pure nitrous oxide may be a direct poison; whilst the use of ether by means of a narrow-bore inhaler may lead to serious or even fatal effects when the trachea is pressed upon by an enlarged thyroid. Speaking generally, chloroform or a mixture of chloroform and ether must be given to patients of this group, although ether is, in exceptional circumstances, preferable. Cases of angina Ludovici are best treated by the slow administration of a mixture of chloroform and ether with plenty of air, only moderate anæsthesia being advisable in the worst cases. As regards operations for goitre, chloroform is the only permissible anæsthetic. There are certain of these cases in which bronchial secretion is more or less imprisoned below the obstruction and in these it may be impossible to secure deep anæsthesia without danger of the imprisoned mucus closing up the flattened trachea. Where there are general bronchitis, tracheal stridor, orthopnoea, and some lividity it may be hazardous to administer chloroform even in analgesic doses. It is in certain cases of this group, in which cyanosis and respiratory distress exist before the administration, that the use of oxygen with the anæsthetic is to be recommended. Thus, in several bad cases of empyema—and particularly in a case in which double empyema was present—I have administered oxygen in conjunction with ether with the best results. I need hardly remind you that the posture of the patient is very important in all cases of respiratory derangement. As a general rule the patient should be anæsthetised in the posture in which he breathes most comfortably and an endeavour should be made to move him as little as possible into other positions. When any change of posture has to be effected the moving should not be carried out during any struggling. As regards simple

bronchitis and emphysema the administration is not, as a rule, attended by any great difficulty provided chloroform (the only admissible anæsthetic) be carefully and gradually given. Curiously enough these patients do well with a moderate anæsthesia, displaying little or no reflex movement even during such operations as lithotomy and abdominal section. I have on two occasions known a long administration of chloroform to an elderly patient with chronic bronchitis to be followed by a fatal increase in the bronchial affection, which fact seems to point to the danger, not perhaps always realised, of lengthy administrations in certain bronchitic subjects.

3. Patients who have been confined to bed for a considerable time owing to some constitutional disease are not, as a rule, bad subjects for anæsthetics. A deceased friend of mine, indeed, went so far as to say that he would sooner anæsthetise a moribund person than a healthy and powerful man. But it by no means follows because a patient is in a grave state of health that a smooth anæsthesia will result. Much seems to depend upon the type to which the patient belonged before his illness and the duration of the malady. When, for example, a vigorous man is suddenly seized with perforating appendicitis he may be a difficult subject to anæsthetise, even though he be in a condition of profound collapse, with cold extremities, a barely perceptible pulse, and a skin bedewed with perspiration; whilst the patient who is moribund from a chronic malady may be perfectly passive during a surgical operation, even though the conjunctival reflex has not been abolished. The collapsed patient from acute appendicitis may display inconvenient reflex movement even during comparatively deep anæsthesia. Similarly, acute cases of pleuro-pneumonia, going on to empyema, and requiring an operation, are more difficult than chronic cases, even though the general condition of the latter be very serious. A further parallel may be drawn between acute and chronic cases of intestinal obstruction, the management of which will be discussed when dealing with the fifth class of bad subjects. As regards patients suffering from morbus cordis, these are not bad subjects for anæsthetics provided the methods employed be suitable. As all asphyxial strain upon the heart should be avoided air-limitation must be practised with caution. Personally I consider the administration of pure nitrous oxide to be contra-indicated in the more advanced forms of heart affections, and I should not be surprised if future experience indicates that, even in normal hearts, the strain imposed by a full dose of this gas may sometimes be detrimental. As a general rule the C.E. or A.C.E. mixture produces good results. Occasionally in practice one meets with a patient with an abnormally slow pulse. I have notes of two cases in which such a pulse became so slow under chloroform that the defective cerebral blood-supply led to halting breathing, very much of the Cheyne-Stokes type. The treatment in such cases is to change from chloroform to the C.E. mixture or ether.

4. It is still customary to explain many of the difficulties of practice by the assertion that the particular patient was "very nervous." My experience, however, is that it is exceptional for mental disquietude to lead to any great difficulty. Very nervous subjects may hold the breath or breathe with violence, and in a few cases I have satisfied myself that certain eccentricities in the anæsthesia have resulted from the patient's nervous state before the administration. Large quantities of the anæsthetic may be needed for patients of this class in order to abolish reflex movement. The nitrous oxide-ether sequence is well suited to neurotic subjects. Chloroform is best avoided for inducing anæsthesia but it may be given after ether. Patients with nervous diseases may display peculiarities in breathing according to the part of the nervous system involved and recourse to artificial respiration may possibly be needed. Such cases are, however, so exceptional that they do not admit of consideration here.

Alcoholic subjects are notoriously difficult to anæsthetise; I have notes of a large number of these who have given me trouble. In some of the worst cases there has been a reliable history of the patient having drunk as much as a bottle of brandy or whisky a day, and one patient whom I anæsthetised at this hospital confessed to drinking six gallons of beer in the 24 hours. In such subjects as these enormous quantities of the anæsthetic may be required; the excitement stage is prolonged; it is difficult to prevent all reflex movement during operations; muscular rigidity tends to persist; and recovery of consciousness, even from deep anæsthesia,

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rapidly takes place. In extreme cases of alcoholic indulgence nitrous oxide may be practically useless as an anæsthetic, at all events from the surgeon's point of view. I have, in fact, in one or two instances been obliged to resort to ether in order to obtain sufficient anæsthesia for a simple dental operation. The worst cases are those in which the patient, apart from the question of alcoholism, is himself a difficult subject.

I have been very interested in the influence which the excessive use of tobacco undoubtedly has in disturbing and modifying the usual phenomena of anæsthesia. Great smokers may be quite as difficult to anæsthetise as great drinkers. Repeated swallowing, hesitating and suspended breathing, the excessive secretion of mucus, inconvenient muscular rigidity, especially about the jaws and neck, obstructive stertor, dilated pupils, and exaggerated reflexes are common incidents in the anæsthetisation of these patients. So much anæsthetic may be needed to produce a proper degree of anæsthesia in an excessive smoker that the toleration may be erroneously attributed to alcohol. In two cases of which I have notes—one that of a dark, muscular man 45 years of age who had smoked 30 cigars during the three days preceding the operation, and the other that of a man of about the same age who "always had a pipe in his mouth except at meal times"—I was obliged to push the anæsthetic to an almost dangerous degree before I could obtain anything like a good anæsthesia. In both cases ether was taken so badly that I had to change to chloroform. In another case, that of an officer in the army who smoked to excess, I had somewhat similar difficulties coupled with asphyxial symptoms from jaw-spasm. But as this patient had given so much trouble to another anæsthetist that he (the anæsthetist) had had to deprive him of nine teeth before he could get him to breathe, my task was a comparatively easy one. One of the most difficult patients I have ever had to anæsthetise was a great smoker. He was a middle-aged man, a waterman, and an in-patient of this hospital. He had barely audible heart sounds and a slow pulse. He smoked "plug" tobacco. Ether was very badly borne and chloroform, to which I changed, produced no better result. Intense jaw-spasm, mucous rattling with expiration, cyanosis, and general rigidity combined to make the administration very difficult, and I am bound to confess that I was unable by any device to obtain an anæsthesia which satisfied me. Fortunately such cases are exceedingly rare. The intensity of the jaw-spasm in these smokers is interesting. It seems to suggest that by the suction, puffing, and other movements essential to the smoking of a pipe, cigar or cigarette some muscular hypertrophy takes place, the result being that during the stage of general muscular rigidity, which is usually marked in these subjects, considerable spasm of the muscles about the jaws and floor of the mouth occurs.

5. From a careful study of the preceding classes of difficult and bad subjects it will, I think, be clear to you that if in any given patient we find associated the characteristics of one or more of these four classes, our difficulties will be proportionately greater. With the object of making my meaning clear I have up to this point endeavoured to present to you pictures of patients who are difficult or bad subjects by reason of their having a single distinguishing feature or peculiarity. But in practice these pure types are not common. Thus, some of our greatest athletes have nasal obstruction; and a combination of a highly developed muscular system, a blocked nasal air-way, and good teeth may readily give trouble unless precautions are taken. Young officers in the army, of athletic build, may by the excessive use of tobacco prove to be very unsatisfactory subjects even for nitrous oxide. The combination of muscular development, nasal obstruction, and excessive smoking will still further embarrass the inexperienced anæsthetist. When we come to add what I may term the alcoholic element the combination becomes even more unwelcome. But in all cases such as I have just mentioned you will find that by providing for, and maintaining a free air-way and by steadily administering large doses of ether till you attain the desired degree of anæsthesia you will overcome your difficulties. Powerfully built young men who have drunk very freely may require so much anæsthetic to abolish reflex movement that the spasmodic tongue retraction—which in certain subjects of this type takes place in deep anæsthesia—actually occludes the air-way and the anæsthetist may find himself in a dilemma. In order to maintain a free air-way

the tongue must be drawn forward, whilst chloroform, the only possible anæsthetic, is freely given. When the type of your patient changes, so to speak, from the young, thin, and muscular to the young and fat, or young, fat, and muscular, and when such complications as nasal obstruction, good teeth, a receding lower jaw, alcoholic indulgence, and excessive smoking are present, considerable difficulties will be liable to arise. It is in such cases as these that the use of the nitrous oxide-ether sequence may be attended by trouble, more especially if no mouth-prop has been inserted before commencing the administration and if the bore of the inhaler be narrow. The best plan, as a rule, is to employ the C.E.-ether sequence or if the ether be badly borne the C.E.-ether-chloroform sequence. If the C.E. mixture or chloroform be used throughout it is difficult or impossible to avoid struggling. Should the anæsthetist especially wish to administer nitrous oxide and ether a mouth-prop must be inserted and a wide-bore inhaler used, in which circumstances a fairly good result may generally be relied upon. Somewhat allied to patients of this type are middle-aged or elderly men who, from having eaten and drunk too freely and from having lived sedentary lives, have become corpulent and breathless on exertion. Such patients are not, so far as my experience goes, quite so difficult to manage as are younger subjects. Speaking generally, the best line of treatment to be adopted is gradually to administer the C.E. mixture, to be most careful to provide for and to maintain an oral air-way throughout, repeatedly to withdraw the anæsthetic during the stage of rigidity, and to substitute chloroform for the mixture should indications of ether irritation present themselves. The most critical juncture with such subjects occurs during the stage of rigidity and it may be necessary at this stage to adopt one or other of the numerous little devices which are available for preventing an undesirable suspension of breathing in order to avert any risk of syncope. Finally, we come to the worst subjects of all—those who not only present difficulties by reason of their belonging, when in their usual state of health, to difficult types, but who present, in addition, difficulties dependent upon some recently acquired and grave constitutional disorder. Thus, when a stout breathless old man who has smoked and drunk to excess and has for years suffered from nasal polypi is seized with symptoms of acute intestinal obstruction, no worse subject can be imagined. The issue of such a case depends largely on the skill of the anæsthetist. One of the most important points in these anxious cases is the posture of the patient. The nearer he can be brought into the lateral position the better, for in this position the ejection of the contents of the stomach will be comparatively free from risk. It is often possible, by placing pillows under one shoulder, to obtain the advantage of the lateral posture without interfering with the position of the pelvis. The mouth should be kept open by a Mason's gag, mucus or other fluids within the fauces should be repeatedly sponged away, and a moderate anæsthesia obtained. Generally speaking, an ether and chloroform mixture, suitable to the particular case, should be employed. As another instance of an exceedingly bad subject I may mention the alcoholic man of corpulent or burly build, who, having been seized with pleuro-pneumonia, requires an anæsthetic for an operation for empyema. In certain desperate cases of this class the administration of even a small quantity of chloroform may prove fatal, the patient dying, not from the toxic effect of the drug, but from cardiac syncope dependent upon the slight additional embarrassment of breathing incidental to the excitement stage. Although apparently opposed to all recognised principles I hold that in such cases the safety of the patient is best consulted by employing the A.C.E. or C.E. mixture for the first half minute, then substituting for it ether on a semi-open inhaler, and subsequently keeping up merely a light anæsthesia. One of the worst subjects I ever had to anæsthetise was a youth 17 years of age who had been an imbecile from birth, and who had, prior to the operation at which I assisted, suffered from diphtheritic paralysis and mitral disease. He now had pyopneumothorax and was sitting up, with a very feeble pulse and in a state of much dyspnoea. I adopted the treatment to which I have just referred and free pleural drainage was successfully established. As instances of similarly desperate cases I may mention patients who, being originally bad subjects, have become worse subjects by reason of such conditions as angina Ludovici, septic pharyngitis, tonsillitis, laryngitis,

&c. These cases must be treated on the lines already indicated.

6. The last class of difficult and bad subjects comprises those who give trouble to the anæsthetist without any discoverable cause. As our clinical knowledge increases these cases become more and more exceptional and it is to be hoped that as time goes on the class will cease to exist altogether. I have notes of a few of these interesting and exceptional cases and they certainly seem to my mind to warrant the retention of the term "idiosyncrasy." As an example I may mention that I have known certain peculiar and highly inconvenient nervous phenomena occurring in connexion with the use of nitrous oxide to be displayed by more than one member of a family. Unfortunately the opportunities one has of investigating these peculiar cases are very limited, whilst the history obtainable from patients or their friends is often unreliable. I regret to say that the data at my disposal are not sufficient to enable me to give you any useful information concerning patients of this class.

In concluding these imperfect lectures in which I have attempted to direct your attention to an aspect of the subject of anæsthesia which has not perhaps attracted sufficient notice, let me say that I hope I have not given you the impression that every case with which you will have to deal will be a difficult one. Difficult and bad subjects are comparatively rare, but when considered in the aggregate they admit of some such classification as that which suggested itself to me. I can only add that if I have helped you to understand any exceptional cases that may already have come under your notice, or if I have succeeded in fixing within your memories mental pictures of those subjects who, when you leave your hospital and go into practice, are most likely to give you trouble, I shall feel that the time that has been so pleasantly spent in preparing and delivering these lectures has not been altogether wasted.

A Clinical Lecture

ON

THE INTRACRANIAL COMPLICATIONS OF SEPTIC EAR DISEASE.

Delivered at the Medical Graduates' College and Polyclinic on June 15th, 1902,

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GENTLEMEN,—I propose to consider with you to-day the intracranial complications following suppurative or septic inflammations of the middle and internal ear and mastoid antrum. It is unnecessary to speak of the important relations which these structures have with the meninges, the lateral sinus, and the brain itself. This being a clinical lecture I shall make no apology for illustrating my remarks as far as possible by reference to cases which have come under my care.

Pachymeningitis externa.—The first and least important complication to mention is pachymeningitis externa—a thickening of, with formation of villous granulations on, the external surface of the dura mater. It is most common over the sigmoid bend of the lateral sinus and is frequently associated with the formation of pus between the bone and dura mater. I observed this change over the anterior surface of the temporal bone in a recent case of temporo-sphenoidal abscess. It may be regarded as a danger signal. A similar change may exist on the inner surface of the dura mater and thus septic organisms may pass to the lymphatics of the pia mater and brain leading to meningitis or cerebral abscess.

Extradural abscess.—The formation of pus between the skull and dura mater is much commoner over the sigmoid sinus, but may exist over the roof of the tympanum or antrum or over the internal auditory meatus. When in suppurative mastoiditis the antrum is dilated it frequently happens that the thin partition between this cavity and the lateral sinus is absorbed, the sinus being then

bathed in pus. I have met with this condition many times and have been surprised at the slight character of the symptoms, probably because the pus is not shut up under considerable pressure. Last year I performed mastoidectomy on a lady the day after she had travelled from Gloucestershire. The mastoid antrum was greatly enlarged and filled with pus, and the lateral sinus exposed for from one to one and a quarter inches, yet her only symptoms were severe pain over the mastoid region and side of the head, moderate pyrexia, and somewhat profuse otorrhœa. She made a rapid recovery without further complication; and this is the usual sequence.

The symptoms associated with suppuration around the sigmoid sinus when its bony walls are intact are somewhat more severe, yet not so marked as might be anticipated, seeing that pus is confined under pressure in immediate contact with one of the largest venous channels in the body. Of five cases the notes of which I have before me in not one was a *rigor* observed. The usual symptoms are those of acute mastoiditis—local pain, hemicrania referred to the posterior half of the side of the cranium and sometimes located just below the parietal eminence, perhaps tenderness on percussion or local œdema behind the auricle, otorrhœa or history of recent otorrhœa, and finally moderate pyrexia. In addition there are sometimes severe constitutional disturbance with vomiting, giddiness, and mental confusion. In one patient, a Post Office sorter, aged 23 years, who was under observations 12 days before the operation, the symptoms were of such a character as to suggest cerebral abscess. He had otorrhœa on the left side when a boy. This stopped and recommenced a fortnight before he came under observation. A week later he complained of giddiness and confusion in recognising addresses on letters, with occasional unsteadiness of gait. Finally, vomiting came on with the usual symptoms of acute mastoiditis. On admission haziness of the discs was observed, but no actual neuritis. The temperature was subnormal to 99° F., and the pulse was from 64 to 67. He recovered completely after mastoidectomy and evacuation of a considerable amount of pus around the sinus.

The presence of pus around the sigmoid sinus fortunately very frequently reveals itself after the mastoid antrum is exposed by the exudation of pus from a small channel opening on the posterior wall of the mastoid antrum. It is probably a small venous channel and if followed up with the gouge or burr leads directly to the purulent collection. I have repeatedly been led to discover an extradural abscess by its means. An extradural collection of pus above the anterior surface of the petrous bone may reveal its presence on examination with the otoscope by the dripping of pus through an opening in the roof of the attic into the tympanum. This symptom may also be present in temporo-sphenoidal abscess.

Treatment.—In all these cases mastoidectomy is required. A collection of pus around the sigmoid sinus can be readily evacuated by enlarging the opening in the temporal bone backwards in the direction of the base line. If it be situated above the tegumen it can be opened by enlarging the osseous cavity upwards in the direction of the superior wall of the bony meatus.

Thrombosis of the lateral sinus.—The deposition of clot in the sigmoid sinus most frequently follows the formation of pus around it or the growth of septic granulations from the mastoid cells through the bony partition which separates them from the sinus. Or it may result from the extension of a septic thrombus along small veins which pass from the tympanum and mastoid antrum directly into the lateral sinus. Lastly, it may rarely result from extension of a clot primarily originating in the superior petrosal sinus. The symptoms produced are general and local. The general symptoms are those resulting from breaking down and dissemination of septic clot and may be summed up as those of pyæmia superadded to those of acute mastoiditis—rigors, pyrexia with marked fluctuations of temperature, vomiting, with in some instances symptoms of cerebral disturbance. In the majority of cases the prominent symptoms are referable to the occurrence of septic embolism in the lungs. In others the septic intoxication manifests itself in profuse diarrhœa, meteorism, abdominal pain, extreme exhaustion, and a general condition which has been mistaken for enteric fever. Finally, the thrombosis may be complicated with meningitis, the symptoms of which mask those of the sinus lesion.