TRANQUIL TRACHEOTOMY, BY INJECTING COCAIN WITHIN THE WINDPIPE *

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As a general rule the opening of the trachea is accompanied by so much disturbance that there often ensues a scene which the elder dramatists would have described as one of "wild excursions and alarms." It is thus depicted by Clinton Wagner:¹

The introduction of the knife, together with the flow of blood, produces violent reflex action. The larynx rises and falls spasmodically and very rapidly, and the use of a knife or scissors is fraught with danger. The operator at this moment has need of all his coolness and presence of mind. Blood will find its way into the trachea and lungs, and death on the table from asphyxia may suddenly take place.

Apart from the risk of such a catastrophe, I remember the days when, before opening the trachea, one had to advise the audience to "take cover" behind the head of the operating table, as the cough started with the first entry of air into the windpipe frequently resulted in blood being shot out with such force that it bespattered the assistants, the walls and even the ceiling.

All this commotion can easily be avoided by the intratracheal injection of cocain in the way to be described. I acknowledge my indebtedness for the idea to Dr. Crosby Green,² who, in an article on "Thyrotomy for Cancer of the Larynx," describes how, before splitting the larynx, he injected a 1 per cent. solution of cocain through the cricothyroid membrane into the cavity of the larynx. He, it appears, is not in the habit of performing a preventive tracheotomy in this operation, and he makes no mention of injecting cocain within the trachea. If not the first to use it in tracheotomy, I think I am the first to employ it in England. This I did in the year 1913.

It is employed in the following way: An ordinary hypodermic syringe is charged with about 20 drops of a 2.5 per cent. solution of cocain. As soon as ever the tracheal rings are laid bare the syringe is grasped, as one does a pen, with the forefinger about 1 inch from the extremity of the needle, and with this the windpipe is sharply stabbed between two rings. The middle, the ring and the little finger of the operator's right hand

are resting on the neck, and they prevent the point from penetrating more than one-fourth to one-half inch within the lumen of the trachea. The cocain solution is injected into the cavity of the windpipe, from 5 to 15 drops, and the needle is sharply withdrawn.

The liquid in the windpipe at once gives rise to a slight, stuffy cough. It causes no spasm or distress; and as it trickles down toward the region which endoscopists know to be the sensitive spot of this area, namely, the carina at the bifurcation of the trachea, this tickling cough soon ceases. If there is no great urgency, ten minutes should be allowed to elapse, the time being occupied by clearing the front of the trachea, checking all bleeding, preparing the tube and so forth. At the end of that time, the incision can be made into the trachea and the cannula introduced without pain, spasm or even the slightest cough, as quietly and smoothly as the original incision through the skin. The calm with which this proceeding takes place is in striking contrast with the agitated, hurried and often bloody and dangerous operation of former days.

I have used cocain of the strength of 2.5 per cent.

for the simple reason that a 5 per cent. solution is usually at hand, and it has been convenient to dilute it one half. In children, a 1 per cent. solution and 5 drops would be sufficient.

The method is employed with either general or local anesthesia. Local anesthesia is sufficient in adults when opening of the trachea is the only operation to be performed at one sitting. With procain used endermically

Injection of cocain within the lumen of the trachea.

mically and the cocain used in this way within the windpipe, there is neither pain, spasm nor coughing in performing a tracheotomy. A patient gets up from the table and walks back to his ward, to eat his usual meal.

I have records of twenty-five cases of laryngofissure in which this method has been used in performing the preliminary tracheotomy, and the numerous visitors to my practice have been able to see the calm which it secures. In these five years it has been used in dozens of cases of tracheotomy by myself, my assistants and the house men in King's College Hospital, with uniformly good results and no drawbacks.

It has not come my way to use it in children younger than 4 years, but, with the precaution I have advised, I think it can be safely employed. Nor have I had occasion to use it in sudden asphyxia—the "opération d'urgence." Most cases of extreme stenosis of the larynx ought to be provided against by a timely tracheotomy, and even when there is dyspnea, the few minutes entailed by this useful detail are more than compensated by the calm and security with which the operation can be completed.

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1. Wagner, Clinton: *M. Rec.* 49:1, 1896.

2. Green, Crosby: *Tr. Am. Laryng. Assn.* 35:163, 1913.

ABSTRACT OF DISCUSSION

DR. FRANK C. ROSE, London, England: This morning I received a letter informing me that I had been elected to honorary membership in this Association. I should like to thank you all very sincerely for that honor. I recognize, of course, that the honor is intended for the society in London of which I happen to be secretary at the present time. I should also like to thank the Fellows of this Association for the great kindness and generous hospitality that has been extended to the visitors from my own country and others. We have heard much of American hospitality, but the reality surpasses my expectations. For a number of years past we have realized that any young man who wishes to become thoroughly efficient in the practice of laryngology and otology must study what is being done on this side of the Atlantic. We have read the papers published, we have had opportunity to meet certain of the American workers in London, and it only added to my own desire to come over here and see for myself what was being done. And now that I have come and have had opportunity to listen to your discussions and hear the various papers read, and seeing some of your operators at work—in addition to the pleasure I have also a feeling of regret—regret that I did not come before; regret that this is my first visit instead of the second or third visit to this side. In this department the American surgeons have a great past; this meeting alone shows how important the present is, and I am convinced that in the future lies the most splendid era for American work in this and other branches of medicine and surgery. And on my return home I shall endeavor to impress as far as I can on my colleagues of my own age and standing, and particularly on the younger ones, how important it is that they, if they mean to perfect themselves in their own branch of work, make a visit to this side and see for themselves what is being done.

It remains for me to open the discussion of a paper which is not here. To hold a postmortem without a corpse is difficult. Only the title, so far as I am concerned, remains to discuss, and I wish to assure Sir St.Clair Thomson that I like his title. It is a very good title: Tranquil Tracheotomy. My feeling is that if the patient will be tranquil, and the surgeon will be tranquil, two of the most important factors for success are already present. In the matter of detail, my own feeling coincides with that of Sir St.Clair Thomson, that in approaching the trachea it is advisable and convenient to divide the isthmus of the thyroid. That has been my own practice for a number of years.

DR. FERNAND LEMAITRE, Paris, France: For eight or nine years I have been accustomed to inject cocaine in cases of tracheotomy exactly as Sir St.Clair has so well demonstrated. I may say that a tracheotomy done in this way is quite different from the ordinary tracheotomy we are accustomed to seeing. After the injection is made I wait a moment before beginning the tracheotomy, and I utilize this time in making the suture, in putting some catgut in, if necessary, and one or two stitches at the upper and lower part of the wound. Before the operation is quite finished, it seems we have forgotten one stage, and that is the opening of the trachea; but when this is done the operation is immediately finished.

DR. OTTO GLOGAU, New York: I first saw this method that Sir St.Clair described, the tracheotomy and the ligating of the isthmus, in the Bellevue Hospital about two months ago, and it is astonishing how easily the patients stand it and how little discharge comes from the trachea. I would also like to mention that in these cases the use of suction apparatus is advisable. It relieves the bleeding of the wound as well as the discharge.

DR. M. F. ARBUCKLE, St. Louis: I have had the pleasure of seeing several of these laryngeal fissure tracheotomies done, and it is marvelous to me. There is no cough, no excitement or worry.

SIR ST.CLAIR THOMSON, London, England: I am very pleased that this has been described before. I do not claim to be the Messiah of the subject, nor would I say that I am an apostle to the Gentiles, but I am very glad to spread the good news.

PHYSICAL RECONSTRUCTION APPLIED IN THE TREATMENT OF PUL- MONARY TUBERCULOSIS

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Physical reconstruction may be defined as continual treatment, carried to the fullest degree of maximum physical and functional restoration consistent with the nature of the disability of the patient, by the employment of all known measures of modern medical and surgical management, including curative, mental and manual work (in wards, workshops, schools, gardens and fields); physiotherapy (thermotherapy, electrotherapy, hydrotherapy and mechanotherapy, massage, calisthenics, gymnastics and the like), and sports, games and amusements indoors and outdoors.

The application of physical reconstruction in the treatment of soldiers disabled by illness and injury during the great war was a new policy of the Medical Department of the Army. The measure had a few advocates, some tolerant but doubtful friends, and many opponents in the medical department, including officers of the permanent military establishment and others holding temporary commissions.

The failure of many to recognize the therapeutic value of the measures enumerated is due chiefly to the fact that with the exception of the curative factors enumerated under physiotherapy (and of these electrotherapy, mechanotherapy and massotherapy have been too often exploited by unqualified people and by quacks), the medical profession as a whole has had little or no experience in the application of these additional forms of treatment of the sick and injured.

The profession has found no use for these curative measures because, as a rule, physicians and surgeons are satisfied with physical cure. The average physician rejoices when the patient with pneumonia has passed the crisis. Unless some unusual symptom attracts attention, he makes no investigation to ascertain whether the lungs and heart have regained normal function. The average surgeon is happy if his patient with a fracture of a long bone gets through without deformity or shortening of the lower limb, and the possible suit for malpractice is escaped. As a rule, he does not see to it that the function of the joints and muscles of the involved extremity are exercised and trained to restore function definitely.

Modern medicine and surgery must take heed of functional as well as physical restoration. The physician and surgeon must continue to have an interest in the convalescent patient and to prescribe the necessary measures in proper doses to insure restoration of function or to establish it as nearly as the nature of the disability permits.

The application of physical reconstruction in the treatment of the patient with pulmonary tuberculosis has been strenuously opposed by many conscientious and honorable physicians. The objections advanced are sound in the sense of the application of the measure embraced under physical reconstruction during the active and febrile stage of the disease. On the other hand, I maintain that, when indicated, physical and mental rest, even to the most absolute degree practicable, is as much a factor in physical and mental rehabilitation as physiotherapy, curative work or play when these agents are rationally called for.