THE BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LVII.

THURSDAY, JANUARY 21, 1858.

No. 25.

CROUP IN AN ADULT—TRACHEOTOMY—RECOVERY.

[Read before the Boston Society for Medical Improvement, and communicated for the Boston Medical and Surgical Journal.]

BY GEORGE H. GAY, M.D., ONE OF THE SURGEONS OF THE MASS. GEN. HOSPITAL.

THE patient was under the care of Dr. MINOT, who gives the following account of the case previous to the operation.

Jane —, æt. 20, an Irish domestic, rather tall and stout, had a cold, with hoarseness, for several weeks, and latterly almost complete aphonia. She was, however, about the house, Nov. 26th, 1857, though very unwell. On the 27th, she kept her room, having had dyspnœa during the night. Dr. M. saw her in the afternoon, between one and two o'clock. She was in bed, sitting up, and breathing with great difficulty. The air seemed to enter the trachea with difficulty, inspiration being accompanied with a loud, hissing sound. The muscles about the neck and face were strongly contracted. Her expression was that of suffering, but without much anxiety. The pulse was 120. The skin was cool. The countenance was free from lividity. The voice was almost extinct. A blister was applied to the front of the neck, an emetic was administered, a solution of nitrate of silver was applied to the throat and upper part of the larynx, and a solution of the carbonate of potassa was given internally. During the night she had much trouble in swallowing, with a pain shooting up to the ears. There was tenderness, also, under the angle of the jaw on the right side. The dyspnœa continued to increase during the night and on the following day, though the countenance was not livid until the time of the operation, when it was somewhat so, and covered with perspiration. By accident, she took about five grains of the nitrate of silver in solution.

I saw the patient, with Dr. M., on Saturday, Nov. 28th, at about 9, A.M. At that time the respiration was much labored, noisy, hoarse and accelerated. There was no interval of comparative ease or quiet. She was very restless, and struggling from want of breath. Swallowing anything, particularly liquids, increased the

dyspnœa, and brought on a paroxysm of hoarse and ringing cough. The voice was guttural and scarcely audible. She was sitting up in the bed, resting almost entirely upon her hands. The head and neck were constantly moving, as if to get relief by a change of position. The front of the neck was swollen. The nostrils were much dilated. The eyes were prominent, with an expression of great distress. The pulse was frequent and small. The skin was hot, and more dry than it had been. The cheeks were somewhat livid. The veins of the neck and face were swollen and full. The noisy and hurried respiration masked any sound from the lungs and trachea. There was some flatness in the right lower back. The tongue was covered with a thick white coat. No membrane could be seen in the throat.

Before resorting to tracheotomy, it was proposed to try the effect of constant hot applications to the neck, and the breathing of steam from hot vinegar and water.

At 1 o'clock the symptoms were much more alarming. The voice was merely a faint whisper. The cheeks, lips and hands had become more purplish. The veins of the neck were full. The breathing was more difficult and hurried, and she was becoming every moment more and more asphyxiated. It was not deemed advisable to defer the operation any longer.

Operation—Nov. 28th, at 1½ o'clock, with the assistance of Drs. Lewis, Minot and Morland; without ether. The patient was lying on her back, with her shoulders raised by pillows, and her head and neck slightly drawn backward and downward, and held straight and steady by an assistant. The left hand then partially controlled the movements of the thyroid cartilage, and an incision was made in the median line, from the top of the crico-thyroid membrane downward two inches or more toward the sternum. The dissection was then carefully carried through the subcutaneous fat, about half an inch in thickness, the small veins of which were much distended and bled freely. The lips of the wound were then held separated by spatulæ, the blood was sponged away, and the fascia freely divided. The muscles covering the trachea were then drawn to each side, exposing the isthmus of the thyroid gland, with several distended veins. The two principal ones were separated, and the isthmus, which was narrow, was divided. The hæmorrhage was now pretty free, but it soon lessened.

It was noticed, while separating the muscles from the trachea, that there were some bubbles of air mixed with the blood. At first this was supposed to be owing to some divided vein. But this would not account for it. This point will be alluded to again. The hæmorrhage being momentarily checked, the point of the knife was passed into the trachea, and three or four rings were divided from below upward, but no bubbles of air were seen. The point of the finger was then passed between the divided rings,

and a hard, firm substance was felt in the cavity of the trachea, like injection in a prepared artery, or like the interior of an aneurism. A director was then passed in between the inner wall of the trachea and this substance, but it did not remove it. It was then seized with a pair of dressing forceps, and a portion torn off. Air was immediately inspired, and the hæmorrhage instantly stopped. Some more of this membrane was then taken out, which was pretty firm, and looked as much like the coats of the aorta as anything else. There were two or three severe paroxysms of coughing, which expelled many membranous shreds and some tenacious mucus. The tube was then inserted; in a few minutes the breathing was much relieved, and the tube was fastened by tape passed round the neck.

Directions were given to sponge away whatever was forced out of the tube. In the course of the afternoon a considerable quantity of membrane, with some purulent-looking mucus, was expelled through the tube. At 6, P.M., the pulse was 130, the skin hot and dry. The respiration was much less labored, though hurried, being nearly fifty in a minute. The lividity of the face had gone. The cheeks were red. At times, there was considerable thirst. On taking any liquid, some of it entered the larynx, producing a paroxysm of coughing, and was then blown from the tube.

Sunday, Nov. 29th.—A large quantity of membrane and mucus was expelled last night. The tube was obstructed, taken out in the night, cleaned and replaced. Had some sleep. This morning, there is considerable distress in breathing; during the paroxysm of coughing, membrane, with much stringy mucus, was expelled. The tube was again removed and replaced. The respiration was then more easy and quiet. The pulse was 130. The skin was slightly moist. The wound and the neck are swollen. The blistered surface about the wound was covered with a white exudation. There is a slight erysipelatous blush on the lower part of the neck and upper part of the chest. A cathartic of calomel and jalap was given, and a powder of calomel and Dover's powder was ordered every three hours. Beef-tea and arrow-root were taken as food. Toward night, the pulse was 120. Skin softer. Patient appears more comfortable. The tube is removed, without much difficulty, three or four times a day. A portion of the liquids taken by the mouth is still forced out of the tube after a paroxysm of coughing.

Monday, Nov. 30th.—Coughed and raised much through the tube in the night, of tenacious, stringy mucus. At intervals, had some pretty quiet sleep. Was not so well during the latter part of the night, on account of the obstruction in the tube. Dr. M. was called up, cleaned and replaced the tube. This morning, is easier. The tube was again cleaned. The expectoration was more of a purulent character. The skin is still hot and dry. The pulse was

120. The tongue looks pretty well. The erysipelatous blush is fainter. 6, P.M.—Has had a quiet day. The respiration is less frequent. The pulse 112. Has not expelled any membrane. Has taken considerable nourishment. Is menstruating. Expelled much mucus by the tube, by the mouth and by the nose. The bowels are sufficiently free.

Tuesday, Dec. 1st.—Had a good night, and slept well. There was occasional coughing, with the expulsion of a muco-purulent secretion. There was no sign of any membrane. This morning, is decidedly better. The swelling and redness of the neck is much less. The blistered surface is tender, but improving. Feels generally more comfortable. The pulse is 113. The tongue is nearly natural. The skin is still dry. On taking out the tube and closing the wound with the finger, the air passed through the glottis with considerable ease. Can speak in a hoarse whisper while the tube is in place. Appetite sufficient. At noon, was comfortable. At 5, P.M., the breathing was very quiet. The pulse was 100. There was not much discharge from the wound. In coughing, some of the secretion is raised by the mouth and some by the tube. Some dulness on percussion and bronchial respiration are heard in the right lower back.

Dec. 2d.—Dr. M. was called at 4 this A.M. to remove the canula, which had become obstructed. At 9, A.M., the pulse was about 100. The tongue had a moist brownish coat. There was more thirst. Is still menstruating. Sonorous râles are heard in both backs. Had two dejections from Epsom salts. The discharge from the trachea consists now of frothy mucus. Syrup of scillæ and wine of antimony were given.

3d.—Had much pain yesterday evening, in the right lower back, with a loud soufflé at that point and along the side. There was also a soufflé and coarse crackling in the left side of the back. The pulse was 112. To-day, there is much pain in the right side, particularly during inspiration. The respiration is feeble or inaudible, on account of the noise in the trachea. The pulse is 100. She slept tolerably well. The countenance is good. The tongue is moist. The expectoration is less and less purulent, containing, in fact, a large quantity of pure mucus. In the afternoon, raised some bloody sputa. The cough is hoarse.

4th.—Coughed and raised a good deal in the night, at times—mucus, muco-pus and blood. Was rather uneasy from the pain in the right side. Had a Burgundy pitch plaster to side, and took some calomel and Dover's powder. Afterward, slept somewhat, and the breathing was then quiet. This morning, the respiration is easy, not quick nor noisy. The skin is softer, and somewhat moist. The tongue is pretty clean. The pulse is 100. On removing the tube, the breathing is easier than before. Some discharge from the wound. One dejection. The expectoration is

chiefly mucus, with some blood, and occasionally some tenacious mucus. The lower part of the right lung is still congested. The râles are not so strong as yesterday. In the evening, there was some dyspnœa, apparently as if from some obstruction in the trachea. The pulse was 100.

5th.—Had a good night. The tongue is nearly clean. The pulse is 100. Patient breathes partly through the canula, and when this is removed, and the opening is partly closed, she breathes comparatively well through the larynx; that is to say, without much difficulty, though hoarsely. Takes nourishment well. No souffle is heard in the chest. Toward night, had much pain in the right side. The pulse was 96 to 100. There is some mercurial fœtor of the breath, on account of which the calomel was omitted from the Dover's powder. The voice is hoarse and not full.

6th.—Slept well till toward morning, when she coughed a great deal. The pulse is 104. Complains of great pain in the right side. On auscultation, there is heard beneath the right axilla a loud sound resembling a souffle, but not perfectly synchronous with respiration; that is, it begins after the commencement of the inspiration and ceases before the end of the expiration. Moreover, it is sometimes of longer duration than at others, seeming to depend, in this respect, upon the force of the respiration. Accompanying it are some crackling sounds. The percussion over the right back is decidedly dull compared with that of the left, and patient lies on her left side. The margin of the wound is covered with dry crusts. The expectoration is muco-purulent. A blister was applied to the right side, and one sixteenth of a grain of tartrate of antimony given every two hours.

7th.—Has been much troubled with the cough, but otherwise appears better. The cough is looser. Has much less pain in the side. Has taken more food than yesterday. The skin and tongue are moist. Complains of soreness in the mouth. There is some mercurial fœtor in the breath. The pulse is 100. Had one dejection yesterday. The expectoration is abundant, and of the same character as yesterday. Has taken the antimony as directed. There is nothing like salivation.

8th.—Was much troubled with coughing yesterday and this morning. Otherwise, remains about the same.

9th.—Coughed much all night, and seems much exhausted this morning. The pulse is 112. The skin is moist. The tongue is clean. There is a souffle in the lower part of the right back, with dulness on percussion. A double canula, with fenestra, was substituted for the one she had previously worn. The inner tube being removed, a cork was placed in the orifice of the outer one, through which, at the convex opening, the patient breathed easily. In about an hour and a half, she was found asleep, with accelerated respiration (48 per minute). The cork was removed to enable

her to expectorate, and then replaced. It remained in place *eight* hours without much inconvenience. When removed, there was much coughing, followed by an expulsion of a large quantity of purulent mucus. At 10, P.M., she had been coughing much all the evening, and was greatly exhausted. The pulse was 108. Took, during the day, iodide of potassium, for the condition of the mouth.

10th.—Souffle and dull percussion throughout the right back. The respiration seems healthy in the left back. The Dover's powder made her sick last evening. The tube was removed this morning. Through the day the respiration was mostly through the nose, and easy. The chief complaint is from the pain in coughing. Appetite is poor. Slept most of the day. There is still hoarseness in the voice, and cough.

11th.—There was less cough; in fact, but very little during the night, till this morning. The respiration is now tranquil, and free from noise. When she coughs, some air is forced out of the orifice in the trachea, which is contracting daily. The souffle is muffled, with coarse râles in the right back. The pulse is 100. Some little appetite.

12th.—More comfortable to-day. The cough is less.

13th.—She had an uncomfortable night, and more cough. There is still a souffle and dull percussion in the right back. The pulse is from 96 to 100. The bowels are free. Mouth is much better. A cough mixture, with naphtha, was prescribed.

14th.—Had a better night, with much less cough. To-day, feels generally better. The appetite is improving. Sits up a few hours.

16th.—Slept well, but had a severe paroxysm of coughing this morning. The tongue is nearly clean. The skin is rather warm. The pulse is from 108 to 112. (The patient was sitting up, and had just passed through a paroxysm of coughing.) The expression is improving. The voice is decidedly stronger. No air comes out of the wound, except during hard coughing. The percussion is very flat over the lower part of the right back, right front and side. In these regions, tubular respiration is heard, which is loudest and most harsh in the lower part of the back, and ceases at about the level of the angle of the scapula. It is less loud in the lateral and anterior regions. Above the level of the angle of the scapula, the respiration and percussion is quite natural, as they are throughout the left chest. No distinct ægophony is heard in the region of the tubular respiration, but some tremulousness of the voice approaching that sign. But on account of the state of the patient's voice, and the difficulty of speaking, no certain result could be ascertained. By measure, the left chest appears to be slightly larger (one third of an inch) than the right, both below and above the mammæ. For the account of the preceding auscultatory phenomena, we are indebted to Dr. Minot.

17th.—The pulse is 96. The souffle in the right chest is con-

siderably diminished, both before and behind. General condition and voice are much improved.

18th.—The pulse is as yesterday. The soufflé as before, with ægophony.

21st.—Physical signs as before. The pulse is from 92 to 96.

23d.—A soufflé in the lower part of the right back and side. Scarcely any distinct sound is heard below the spine of the scapula; above that level, the respiration is vesicular. The percussion is as before. Still complains of pain in the right side, with some tenderness. The pulse is 96. The tongue is nearly clean. The cough, on the whole, is less, but she had a severe paroxysm this morning.

In this case it will be observed that the patient had had a cold, with hoarseness, for several weeks, and latterly it had been attended with almost complete aphonia. She was about the house on Thursday, Nov. 26th, 1857. That night she was troubled with difficulty of breathing. The next day, Friday, not feeling so well, she kept her room. Between 1 and 2, P.M., Dr. Minot was sent for, and found her with evident symptoms of the croup, in the breathing and voice. The proper remedial measures were immediately resorted to, both internally and locally. That night the symptoms increased in severity, and on Saturday morning the disease was still advancing, with indications of commencing asphyxia. Still further treatment was persisted in for three or four hours, but the symptoms became so urgent and alarming that tracheotomy was performed. From what examination could be made, there was some congestion in the lower part of the right lung.

Judging from the rapid progress of the dangerous symptoms, and the exhausted condition of the patient, she could have survived but a few hours without the operation.

It is impossible to say how much membrane there was at the time of the operation. The space occupied by the three or four rings of the trachea that were divided, was lined with it, at that point partially detached; so much so, that the director, without much force, passed between it and the mucous surface of the trachea. Its brittleness prevented the removal of but a small quantity. Portions of membrane continued to be expelled for *thirty-six hours*, after which the expectoration was somewhat purulent.

It may be asked, whether or not the patient could have lived twelve hours or more, without an operation, thus allowing her some chance of expelling at least a portion of the membrane. There is no hesitation in saying that at that period the powers of the system would have been too feeble to force it through the glottis, for the great obstruction to the passage of air is generally at that point. If the efforts of coughing had separated the membrane, the opening in the glottis would, in all probability, have been completely blocked up, causing a more instantaneous death.

The appearance of an erysipelatous blush below the wound, on the next morning, and the thick, white exudation on the blistered surface, made the prognosis look unfavorable. But these disappeared, and the patient was comparatively comfortable.

The following Tuesday, there was much suffering from pain in the right side, with symptoms of an attack of pleuro-pneumonia. These symptoms increased, so that the distress and restlessness became much greater. From day to day there was considerable fluctuation in the amount of pain, distress, difficulty in breathing and coughing.

There was no particular trouble in the larynx after the tube was removed. The pain in the side came back, and was attended with more marked auscultatory signs. From Dec. 23d, the cough has varied in frequency and intensity, and there was no decided and continued change for the better in it or in the auscultatory signs until within ten days. From that time an improvement has been noticed in these symptoms and her strength. Owing to the hard coughing, the opening in the neck was necessarily prevented from closing. It has now entirely healed. Her voice is still somewhat hoarse, and there is an occasional paroxysm of coughing.

Dr. Minot saw her three or four times every day, and was frequently called to her in the night. To his attentive exertions the patient's comfort and recovery are mainly attributable. With ordinary care, we do not believe that the patient would have lived.

This is the first case of membranous croup in an adult that I have ever seen. It is well known that cases of the kind are very rare. And it is still more rare for an adult to recover after the operation of tracheotomy for this disease, even when it is not complicated with a severe attack of pleurisy and lung fever.

[To be continued.]

PROF. SKODA ON EMPHYSEMA OF THE LUNGS.

[Translated for the Boston Med. and Surg. Journal from the *Allgemeine Wiener Medizinische Zeitung*.]

BY J. C. WHITE, M.D.

By emphysema pulmonum, in the sense in which this expression is generally used, we understand that condition of the lungs in which the contractile power of their parenchyma is lessened and unable to draw them together in the same degree as in a healthy state, where the contraction is limited only by the resistance of the thoracic walls and diaphragm, and when at the moment of expiration the latter is elevated as high as possible, and the thorax narrowed to its utmost. If, on the contrary, the contractile power of the lungs is diminished, the diaphragm is not so much drawn up, and the walls of the chest do not perform perfectly the respiratory movements. The diaphragm maintains, therefore, a