Case of aneurism of the arch of the aorta, pressing upon the left bronchus, and annihilating the ordinary physical indications of pneumonia / [Robert Spittal].

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OF

ANEURISM OF THE ARCH OF THE AORTA,

PRESSING UPON THE LEFT BRONCHUS, AND ANNIHILATING THE ORDINARY PHYSICAL INDICATIONS OF PNEUMONIA:

WITH REMARKS.

BY

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PRESSING UPON THE LEFT BRONCHUS, AND ANNIHILATING THE ORDINARY PHYSICAL INDICATIONS OF PNEUMONIA:

WITH REMARKS.

The subject of the following observations, a gentleman of the legal profession, aged 47, unmarried, and somewhat irregular in his habits, had for several recent winters suffered from bronchitis. During these attacks he took very little care of himself; and, in the winter of 1839–40, the disease assumed a chronic form, and continued varying in severity according to the state of the weather, or the attention he bestowed upon himself, until the period of his death, which took place early in December 1840.

Not having visited the patient, professionally, since May 3d of the same year,—the catarrhal affection having become abated as the summer progressed,—I was again requested to see him on the 18th October. From this period, the case assumed a new and complex character, full of pathological interest; while, at the same time, the risk of life was greatly increased. On examination of the thorax, a tumour or fullness was observed a little above the centre of the sternum, in the mesial line. The elevated portion measured between two and three inches in diameter, and was of a rounded form, somewhat conical in appearance, although the extreme degree of elevation did not appear to exceed half an inch. The sternum was distinctly perceptible across even the apex of the tumour, and continued to be so until the fatal termination of the case; while the integuments over the latter, at first of a normal appearance, subsequently became reddened, especially at the apex, presenting very much the aspect of the skin over a pointing abscess.

There was a considerable heaving impulse in, and around, the tumour; and the sound of percussion over the latter was dull; as was also the case to the left, to nearly two-thirds of the clavicle, from its sternal extremity; the dullness likewise extending down below the second rib of the same side. Very little impulse, however, was perceptible in the subclavicular region. The respiratory murmur was absent, where the percussion was dull; but distinctly audible over other parts of the left side of the chest; frequently however mixed with catarrhal *râles*, chiefly of a mucous character, and which had always been more or less present, in this situation, during former examinations. The sound of percussion over the chest, with the exception mentioned, was normal; and the respiratory sounds on the right side were pure, and somewhat increased in intensity. At this time, also, frequent cough, with yellowish, tenacious expectoration, especially troublesome at bedtime, and accompanied with slight acceleration of the breathing, formed a progressively increasing source of much annoyance to the patient.

These indications continued much the same until the 15th November, when the catarrh became more severe, accompanied with slight febrile action, and short and frequent breathing; and the respiratory murmur, at the same time, was observed to be feeble on the left side whenever heard; still inaudible in the region of the tumour, as before detailed,—puerile over the right side,—while the tracheal respiratory sound had slightly assumed a stridulous character, and dysphagia had begun to manifest itself.

No farther particular change took place in the symptoms until the 20th November, when, after unwarrantable exposure to cold in the open air, and exertion in his professional avocations, the right lung also became affected with bronchitis. From this period to the 26th, the pulse varied from about 90 to 100, and was of good strength. On the latter date, however, having seen the patient in his ordinary state in the early part of the day, I was sent for about 10 P.M., when I found him labouring under a very considerable aggravation of all his symptoms. The pulse had risen to 120, and of increased strength,—the skin was alternately hot and dry, or covered with a very profuse perspiration,—respirations 40 in the minute,—catarrhal *râles*, chiefly mucous, were observed to have increased in the right lung, while scarcely any respiratory sound was perceptible over the left, and then only on coughing, or on forcible respiration, catarrhal in its character, and evidently only in the large air-tubes.

Œdema of the feet and ancles, together with lividity of the face, and slight apparent protrusion of the eyes, now began to complicate the case; while the patient became unable to maintain the horizontal position, except for a very short period, and always with most ease in the morning.

After the exhibition of antimonials, and the free application of blisters, slight relief was obtained. The respirations diminished to 32, and the pulse on the 27th fell to 112, and softer; but the lividity and œdema continued as before. On the 28th there was still much mucous *râle* generally, over the right side of the thorax; with increase of cough, and much thin frothy mucous expectoration; while the left continued as before. On the 29th the respirations fell to 28,—pulse 112, rather stronger and fuller, with less lividity of the face; and for several days he had little and disturbed sleep. On the 30th the dyspnœa increased,—pulse became more rapid and feeble, in spite of stimulants,—face, and upper part of the trunk of a slightly livid aspect—increase of œdema of lower extremities, and he gradually sank, and died early on the morning of December 1, 1840, having been unable to assume the horizontal posture for several days previously. The sounds perceived in the region of the tumour were similar to those in the precordial region—which were of the normal character—except on one or two occasions during the earlier part of my attendance, when a short and sharp murmur was heard, synchronous with the first sound of the heart, a little below and to the left of the external tumour or elevation. The patient thinks he observed the commencement of the tumour about half a year before the period at which he called my attention to it. He likewise stated, that, about two years ago, he had an acute "cutting" pain, as he termed it, under the sternum, but had had little or none since.

The treatment, apart from that applicable to the acute pulmonary attacks, was directed to the alleviation of the symptoms arising from the aneurism, and especially with a view to hindering as much as possible its increase. For this purpose, the ordinary means of rest, both mental and physical, were enjoined; with, at the same time, absence from all unusual stimuli; and a very moderate diet was ordered. Some of these measures, especially the former, were not very strictly adhered to; nevertheless the tumour did not make any advance externally, but appeared rather to have diminished, as was also the opinion of the patient.

Sectio cadaveris.—On examination of the body, 36 hours after death, the following appearances were observed,—a large sacculated aneurism was found to arise from the anterior and a little to the left side of the ascending aorta, about an inch above the semilunar valves; involving likewise the whole of the lower and anterior portion of the arch, which was very much dilated. The tumour admitted easily the doubled hand, and projected considerably to the left side, though not to the extent indicated by the dull sound on percussion during life; but the tumour was flaccid, containing only a small portion of recently coagulated blood. The aneurism extended from the upper part of the sternum to that

portion of it nearly in a line with the cartilages of the third ribs; the sac was firmly adherent to the edge of the sternum throughout the whole length and breadth of the portion described, the latter having served as part of the anterior parietes of the tumour. At several places the bone was quite exposed internally; at some hollowed out and quite diaphanous, especially at the upper part and left side, near to the sterno-clavicular articulation, and at the lowest part of the sternum affected, where, in consequence of this, the latter broke through on raising the bone in the usual manner during the examination.

The interior of the tumour was quite irregular from rounded elevations, the normal structure of the artery becoming obscured or lost immediately at the commencement of the dilatation. At the posterior and upper portion of the arch the normal structure of the vessel was less indistinctly observed, having, though not to the same extent as in the walls of the sac, an irregular appearance. The great vessels arising from the dilated arch were all pervious; at their origin from the aorta, however, they were somewhat thickened in an irregular manner, and were of a reddish colour; and this affection was more or less present in the aorta and great vessels of the neck generally. The portion of the aorta occupied by, or involved in the tumour, terminated at the descending portion of the aorta.

The tumour contained numerous layers of fibrine of a pale ash colour, varying in hue, and not unlike some limestone depositions familiar to the mineralogist. About one-third of the sac,—that most out of the current of the blood on its way to the descending aorta,—was occupied in this manner. The coagulated mass was dense, and adhered tolerably firmly to the parietes of the sac.

The left ventricle was slightly dilated and hypertrophied, the aortic valves were a little thickened at their attachments and edges, the mitral valve was normal, with the exception of a few yellowish patches on its larger or aortic segment.

The right lung had its air-tubes loaded with mucus of a thin and frothy character, and was slightly emphysematous. The left lung again, presented the various stages of the well-marked results of pneumonia. Its upper third was in a state of sanguineous engorgment; the lower portions in a state of red hepatization, insensibly passing into purulent infiltration towards the base of lung, where also there existed several abscesses filled with a reddish-brown purulent fluid; around these the lung was hepatized. Immediately below the bifurcation of the trachea, five of the cartilaginous segments of the left bronchus were more or less completely exposed, and this great bronchial division was somewhat flattened in its appearance. No tubercles existed in either of the lungs. There was some serous effusion in both sides of the thorax.

Remarks.—The above case is interesting in several particulars to which the attention of the pathologist may be directed with advantage. The commencement of the aneurism may, perhaps, be dated from the period when he perceived the "cutting" pain which has been alluded to; and although no indication of its existence was observed by me until about six weeks previous to his death, it is proper to state that, on visiting him, at the commencement of this period, he at once not only informed me of his too well founded suspicions, that he laboured under aneurism of the aorta, in support of which, he laid before me the evidence contained in a paragraph under this head in a popular dictionary,—but at the same time stated, that for several months past he had suspected the presence of this disease, chiefly from the unusual "beating" he felt in the region of the tumour, an indication which was set forth as one of the chief symptoms in the article he had been perusing; he also stated that he had observed some degree of the external swelling about the period mentioned, which had continued gradually, but slowly, to increase, with scarcely any pain or uneasiness. From the first, no doubt presented itself as to the nature of the disease, an opinion which became more and more confirmed, and supported by subsequent events. The progress of the tumour internally, where alone it extended, was clearly manifested in the occurrence of pressure on the neighbouring parts; involving the œsophagus, blood-vessels, nerves, and great air-tube on the left side of the thorax and neck; as proved by the dysphagia, lividity of face and upper part of trunk, and œdema, dyspnœa, and the progressive diminution of the respiratory sounds over the left lung,—together with the stridulous character of the tracheal respiratory murmur, proving the contraction of the trachea to a certain extent,—while, in the progress of the case, the left bronchus became completely blocked up, and all but perforated by the pointed pressure of the tumour in this direction; and it seems evident, that had the patient lived, the aneurism would have burst into the left great division of the trachea. As it was, the patient sank under the combined effects of obstruction to the respiration and circulation directly from mechanical pressure,[1] together with the effects consequent on the morbid state of the lungs described.

Perhaps the most interesting point to the semeiologist, is the impediment which the mechanical obstruction of all respiration in the left lung placed in the way of the ordinary means of diagnosis,—*denying us altogether the aid of those indications of a respiratory and vocal character*, and limiting us to those afforded by

[1] The aneurism must, from its position during life, have pressed upon the vena innominata and left jugular,—also on the descending cava to some extent,—and on the left pulmonary vessels, hindering somewhat the free passage of the blood in these, and thus accounting for many of the symptoms and appearances.

percussion and the general indications; and on referring to my notes, I find that the sound on percussion posteriorly was, three days previous to death, "pretty good on both sides of thorax;" so that it is fair to conclude that hepatization had not occurred to any great extent at this time. That the pneumonia, however, had commenced at an earlier period, is highly probable, if not certain, from the indications of fever, of an inflammatory character, which took place on the 26th November, five days previous to death, together with the advanced progress of the affection observed on examination of the lung after death. The total absence also of the characteristic sputa, formed an additional bar to the diagnosis of the inflammatory condition of the left lung.

The two sounds, similar to those of the heart, perceived in the region of the tumour, as well as the all but complete absence of any morbid *bruit*, corroborate the observations of previous investigators, that aneurisms, in the situation described, with large communication with the aorta, rarely give rise to morbid murmurs, single or double, and this especially when the tumour commences in a gradual dilatation of the vessel. In such cases, the sounds, which are louder in the region of the arch of the aorta than in a normal condition of the parts, owe their increase, there is little doubt, to the altered force of the blood, and dimensions and elasticity of the containing parts. For example, according to Dr Williams, in his recent excellent work on the "Pathology and Diagnosis of Diseases of the Chest," &c.: "The aorta, thus dilated, and wanting its proper regulating elasticity, receives the contents of the ventricle with more abruptness than usual; this circumstance, with the greater size of the vessel, increases the force and loudness of the pulsations at the upper part of the sternum."[1] Something more, however, it appears to me, is necessary to be taken into account, in order to arrive at a satisfactory explanation of the phenomenon, than this view of the subject, that the first sound is "exaggerated," merely "by the impulse of the blood against the dilated walls of the artery."[2] In the conditions described, and in accordance with several experiments and observations detailed elsewhere,[3] I cannot but agree with the observations of my colleague, Dr Henderson, "that the stroke of the expanding sac against the sternum or ribs, or the sudden infringement of the wave of blood against these solid parts, affords a very probable explanation of the phenomenon—at all events, such actions are perfectly adequate to produce such a sound."[4] In the experiments alluded to, it was observed,

[1] 1840. P. 284. [2] Ibid.

[3] Experiments and Observations on the Sounds of the Heart. Ed. Med. and Surg. Journ., No. 128, 1836. By the author.

[4] Ibid. vol. xlv., 1836. On Substernal Aneurisms.

that no impulse, even of a gentle character, could be made against any, especially a bony part of the chest, from within, as well in air as under water, without giving rise to a sound of an analogous character; and to this explanation I claim the support of Dr Williams, who, though very properly hostile to the exclusive view advocated by Magendie, that the stroke of the heart against the chest is the sole cause of the sounds of the latter, admits, nevertheless, "that in forcible pulsation, and when the lung does not too much intervene, he has no doubt that the impulse does produce sound; and if we listen to the sound of the heart when it is beating strongly, or when, by leaning forward or by breathing out, the heart is brought in contact with the walls of the chest, we hear the first sound has something like a knock in it, which we can *scarcely help referring to the impulse.*"[1] If, then, these facts be admitted in regard to the heart, the same views cannot be denied to the explanation of the inordinate aortic or aneurismal, but pure heart sound, and in this I believe Dr W. will concur.

As to the morbid sound heard on one or two occasions early in my attendance, and which was of a "whizzing" character, short, and by no means loud, this may have arisen from the vibration caused by the current of blood from the ascending aorta, passing into the aneurism, immediately at the commencement of which, from the left side of former, there was an abrupt edge formed by the angle of junction of the sound aorta and tumour. The feebleness and subsequent absence of the murmur, may be accounted for, partly by the large size of the communication with the tumour, as above alluded to, and perhaps its progressive enlargement; although there is no doubt that the comparative rest, both mental and physical, together with the absence of many accustomed stimuli, aided perhaps by the fibrinous deposition in the tumour, may also, to a great extent, assist us in explaining this occurrence. The murmur, in this case, may be regarded as a mere vestige of an important diagnostic indication perceived in aneurisms, in which the communication with the aorta is narrow and abrupt, and in which case there is sometimes not only a murmur synchronous with the contraction of the ventricles, but also another synchronous with their dilatation, or, what is next to the same thing, with the dilatation and subsidence of the aneurism. This, however, is rare; nevertheless both Dr Hope,[2] (whose untimely death all must deplore,) and Dr Williams,[3] who has not met with a case of this nature, admit the possibility of such an occurrence; and in a case published by Dr Henderson, which I had several opportunities of

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[1] Op. cit. p. 205.
[2] On Diseases of the Heart, &c., 3d ed., 1839, p. 443.
[3] Op. cit. p. 286.

examining along with him and Professor Fergusson, the double murmur from this cause was very distinctly marked.[1]

The second heart sound perceived in aneurisms about the arch of the aorta, is generally admitted to arise from mere transmission from the ordinary site of its origin in the semilunar valves, augmented, it may be, by reason of the aneurism affording a better medium of conduction of sound than the aorta in its normal state, not close to the sternum, and often covered by a portion of pulmonary tissue. And there is little reason to doubt that the first sound must also to a certain extent owe some degree of augmentation in its intensity, to transmission from the original site of the first sound of the heart, wherever this may be found to arise.

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[1] Ed. Med. and Surg. Journ., vol. xlv. 1836, p. 314.

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CASES IN SURGERY,

OCCURRING IN THE PRACTICE

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Extracted from the London and Edinburgh Monthly Journal of Medical Science.

The following short Series of Cases of Surgical Diseases and Injuries, I have been induced to publish, as they present some important Practical considerations.

P. D. H.

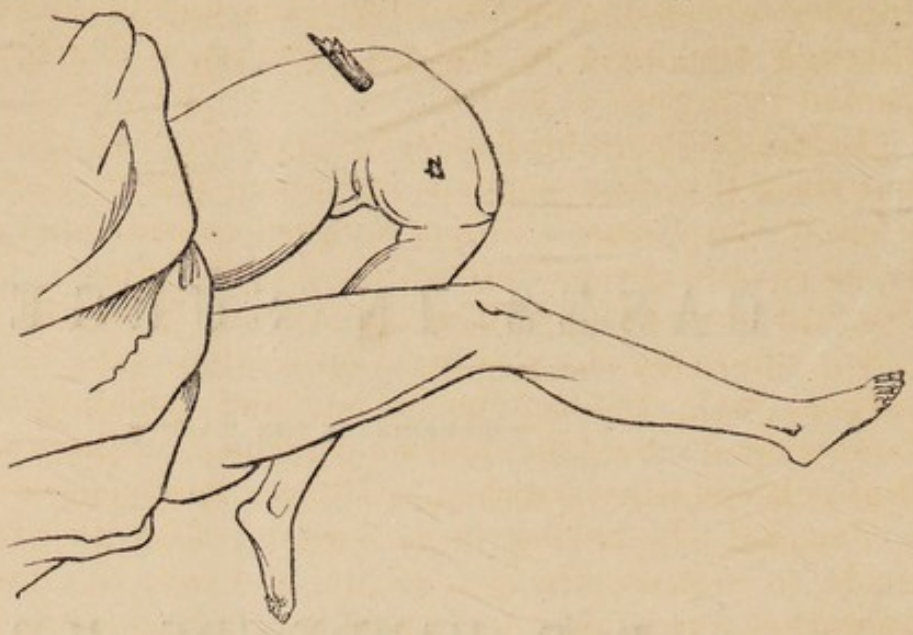
I.—NECROSIS OF THE OS FEMORIS.

Case 1. *Extensive Necrosis of the Os Femoris, with Protrusion:—Recovery without Amputation.*

Jane Roy, aged 9, was admitted into the Royal Infirmary, under Dr Handyside, on December 20, 1843, with extensive Necrosis of the left thigh-bone.

On examination the left thigh was found remarkably twisted,

and distorted, being enlarged and unshapely, and bent nearly to a right angle at its middle. The leg of the same side was completely drawn up, and lay obliquely below the opposite thigh, with the foot thus projecting beyond the right hip, as represented in the accompanying outline.



The shaft of the os femoris appeared as if fractured near its middle. The upper end of the lower half projected through an opening in the soft parts to the extent of above two inches. The upper part of the thigh bone was in its normal position, but felt much thickened, and the soft parts over it were much swollen and indurated. A dark coloured cicatrix existed over the inner condyle.

The projecting portion of bone was destitute of periosteum; smooth and dark coloured on the surface; rough and spicular at the extremity; its medullary canal was hollowed out, and continually discharged fœtid pus; and, when handled, it appeared to be firmly connected with the lower half of the shaft of the os femoris. The patient had no power over the hip and knee-joints, but could move the foot and toes freely. The knee-joint allowed of passive motion to a limited extent, and the pain thence arising was referred to the middle of the thigh.

Previous history.—Exactly nine months before being brought to the hospital, she was awakened during the night by a violent pain in the left thigh, which was soon followed by swelling. For this she could assign no cause, except her having taken more exercise than usual the previous day, during which she had leant principally on the left leg, in consequence of some wound, or other temporary cause of lameness, of the right foot. Friction with vinegar cloths was assiduously applied for a fortnight over the painful part; but, as by this time the pain had become worse, it was then thought necessary to apply for medical advice. Twelve leeches were now applied, followed by hot fomentations: the latter were continued for two months. The pain, however, continued. Soon after this time an opening formed spontaneously in the situation marked by the cicatrix before mentioned, and after a plentiful escape of matter, the pain somewhat subsided. Poultices were then applied. Two months ago the thigh began to bend, and

quickly assumed its present position. This change was followed by constitutional disturbance, and great local pain and redness, which rapidly subsided, a month afterwards, on the protrusion of the bone through the integuments, an occurrence which was also accompanied by a gush of matter.

Before the pain in the thigh began, she had always been healthy, but since that time she has lost much flesh. Throughout the progress of the disease she has suffered considerably from pain, sleeplessness, and severe constitutional disturbance. Of late, also, she has had nocturnal sweatings, and loss of appetite.

On admission she was in an emaciated state, the pulse 100, and rather weak, the tongue moist, and inclining to red, and the bowels open; but she had no diarrhœa. There is no pain in the limb, except when touched.—*To have nourishing diet.*

Dec. 26. It having been resolved that an attempt should be made to remove the sequestrum and save the limb, the following operation was to-day performed by Dr Handyside in the theatre of the hospital:—

The sequestrum not having yielded to moderate traction with strong forceps, an incision several inches in length was, with a strong scalpel, made down to the new bone, in the direction of the sequestrum; the soft parts were then dissected a little to each side, and the incision was carried through the substitute bone, down to the sequestrum, which being again seized with the forceps, now readily yielded to strong evulsive force, exerted in a rotatory manner. The operator, then, placing firmly a hand on each portion of the still bent thigh, proceeded to undo the distortion, by re-bending the substitute, which had been felt during the previous steps of the operation to be as yet soft and pliable, and which now yielded to moderate and continued extension.

The hemorrhage from the incision, though profuse, was now arrested by the application of cold, and a strip of dry lint having been inserted into the upper angle of the wound, a bandage was next applied. The patient being then put to bed, the limb was placed on a double inclined plane, with the view of effecting gradually still greater extension, and also as the knee-joint still remained semi-bent and stiff. An opiate was given, and ordered to be repeated at night.—*To have only the common diet of the hospital.*

Jan. 3. She expresses herself much easier since the operation, having slept more soundly than usual. So much of the wound as has not healed by adhesion, granulates kindly; and the limb, both at the seat of the operation and at the knee-joint, is becoming daily more straight, from the gradual extension, made by means of the M'Intyre splint.

An opening was made to-day to evacuate matter which had formed in the upper third of the thigh.

13*th*. There has been some constitutional disturbance for the

last two days. Free dilatation of the above-mentioned opening was therefore to-day made, and was followed by the escape of much matter.

15*th*. Doing well; appetite improving.—*To have steak diet; and two grains of quinine daily.*

Feb. 1. The wound, which was healing rapidly, has assumed a phagedœnic appearance.—*Intermit the steak and tonics; a poultice to be applied; and to have four grains of Dover's powder, twice daily.*

10*th*. The above symptoms have declined. Matter flows freely from the openings.—*To have steak, and three ounces of wine daily.*

March 1. A wooden splint along the outside of the limb was substituted for the double inclined plane. She is now to rise, and take exercise with the assistance of crutches.

April 1. The symmetry of the limb is much improved. A starch bandage to be applied, now that the swelling is diminished. The discharge from the openings has almost wholly ceased.

29*th*. The thigh is now only slightly bent outwards, the limb being thereby shortened about an inch. She walks with the ankle-joint partially extended, as in talipes equinus, resting the weight on the ball of the foot, and thus compensating for the shortness of the limb. She has recovered the use of the hip and knee-joints, and can use the limb freely. Her general health is excellent. *Dismissed,—cured.*

Appearance of the Sequestrum.—On examination, it was found to be from four to five inches in length, and to involve the whole circumference of the os femoris at its middle, and also the entire thickness of that bone. The medullary canal is empty and pervious, except at the middle, where it is obstructed by a cribriform bony septum. The whole sequestrum is uniform in its appearance, and its distal extremity is rough and irregular, indicating that it has been detached at Nature's line of separation.

Remarks.—This case has been deemed worthy of notice from its peculiar nature, and from the success which has attended the treatment pursued.

In regard to its previous history, the case presents nothing very peculiar. The absence of an apparently sufficient exciting cause is of frequent occurrence, and the subsequent progress of the case is what might have been expected considering the treatment,—at first injurious, and subsequently inefficient,—which was had recourse to.

The shaft of the bone itself had been inflamed, both internally and externally, as indicated by the size and nature of the sequestrum—the upper end of which had become separated by the seventh month, as shown by the bending of the thigh, the substitute bone having been then either broken or bent, from its inability as yet to support weight or to resist force. The case had thus become seriously complicated, and it illustrates well the important practical indication, to support the limb during the progress of Necrosis.

The protrusion of the sequestrum is the next feature of importance, which, along with the free escape of the matter that had formed around it, afforded, as usual, great relief.

Hectic, however, had fairly manifested itself previously to the patient being sent to the Hospital; and her health was then considerably reduced.

Two lines of practice then presented themselves,—either the immediate removal of the limb, in accordance with the hitherto general rule, that, " when the necrosis is extensive and near a large joint, and when the new bone has given way and immense deformity and vast irritation resulted, amputation ought not to be delayed to save the life, if not the limb, of the patient,"—or on the other hand, by removing the sequestrum, to give the patient a chance of preserving the limb. In favour of the latter view, there was the probability, that the sequestrum had been already separated by the natural process, and being only bound down mechanically by the new osseous case, might therefore be easily and safely removed by operation,—that sufficient callus had now been formed to supply the place of the necrosed shaft, and that, though the thigh was greatly bent and distorted, from the giving way of the substitute, still such had not been the case for so long a period, as to preclude the possibility of rebending it, and afterwards modelling the bone anew. The patient's health also was not yet so far reduced as to render her unable to bear up against the subsequent calls on the resources of the system;—her time of life also was in her favour, and there was the probability that the hectic, instead of increasing, would cease, so soon as the sequestrum should be removed.

This line of practice was therefore followed, and it is fully borne out by the result of the case.

After the removal of the sequestrum at nature's line of separation, the bending of the substitute,—the most interesting feature of the case,—was safely accomplished, and without the employment of much force. The old and new bones were thus brought nearly into a line with each other.

The subsequent progress of the case is likewise interesting, the indications being—to restore still more the symmetry of the thigh, by moderate and continued extension,—to restore the functions of the hip and knee joints by passive motion,—to support the system by nourishing food, wine, and tonics,—to evacuate, by timeous incisions, the collections of matter which formed from time to time,—and, lastly, by gentle and increasing exercise, to restore gradually the use of the limb.

This case, then, affords another example in corroboration of the propriety of the modern practice of removing large sequestra instead of the whole limb;—and it farther shows that a case may not be irremediable, as regards the healthy functions of the limb, although, from the giving way of the substitute bone, the greatest deformity may for a time have existed.

Case 2. *Complicated Fracture of the Os Femoris followed by Necrosis, with Protrusion:—Recovery after Amputation.*

Andrew Finlayson, aged 18, farm servant, was admitted into the Royal Infirmary, under Dr Handyside, late in the evening of April 19, 1844, having, whilst intoxicated, been knocked over by a cart, the wheel of which had passed over, and injured the right thigh and knee-joint.

On examination, the right knee and the lower third of the thigh were found much swollen and discoloured. A nearly transverse fracture of the os femoris was easily recognised, a few inches above the condyles, there being great displacement, and marked deformity.

No fracture through the condyles or into the knee-joint could be discovered. The latter, however, was immensely swollen, and the seat of severe burning heat, and much pain. Two contused and lacerated wounds were visible on the outside of the joint; but they did not communicate with its cavity.

The accident happened in the afternoon, and the patient had been driven to the hospital in a cart, from a distance of ten miles. On his arrival there was no collapse, the skin being moderately warm all over, the pulse 100, and inclining to be full.

The fracture was immediately reduced. The broken ends, on being brought into accurate coaptation, were retained so, by the limb being placed on a double inclined plane, and one roller applied from the toes upwards to the knee, while another reached from the middle of the thigh downwards, over the seat of fracture. The limb was restored to its proper length.

The knee-joint being thus left exposed and free from traction, twenty-four leeches were applied over it, and hot fomentations ordered to be continued during the night. An opiate also was administered. The bowels had been previously opened, and the tongue was clean.

20*th*. Doing well; pain, heat, and swelling of the joint diminished.—*To be kept on low diet.*

21*st*. Swelling, pain, and heat of the joint increased; tongue white; skin hot, and dry; bowels opened by enema; pulse 120, full, bounding, and incompressible.

He was now bled from the arm to 14 ounces, which nearly induced syncope, after which the pulse fell to 100, and became soft and compressible. An opiate was then given, and repeated some hours afterwards, to meet the moderate reaction which ensued. *An ounce of the following mixture was ordered to be taken every second hour:—R. tartratis antimonii, gr. ii, bitart. potassæ ℥ij, aquæ ℥xxiv. Solve.*

24*th*. Pain and swelling decreased. *Continue fomentations and the antimonial solution.*

27*th*. One of the wounds on the outer aspect of the joint now discharges much dark-coloured glairy serum, which appears to flow from the cavity of the articulation.

May 4. The above discharge has now become purulent; pain and swelling of the joint much less.—*To have the common diet of the hospital.*

20*th*. To-day the splint was removed, a slough having formed over the popliteal cavity. When the loose slough was removed, pus escaped freely, and appeared to come from the seat of fracture. The fracture was then found not to have made any progress towards union, although the ends of the bone had been retained in coaptation. The splint hitherto employed being found more available in this case than the straight splint of Dessault, was accordingly reapplied, and pressure made, so as to direct the pus towards the surface, and favour its escape from the seat of fracture.

25*th*. The ends of the bones now no longer remain in coaptation, the upper end rises over the lower, and the least motion or pressure causes such intense pain, that all attempts to remedy the displacement are fruitless. The discharge from the knee-joint and the seat of fracture continues free. Tongue rather red; pulse 100, and small; he has nocturnal sweatings.—*To have full diet, and an acidulated tonic mixture.*

June 20. Continues much in the same condition, only the hectic is becoming more evident.—*To have four ounces of wine daily.*

July 9. An opening has now formed in the soft parts, some inches above the inner condyle, through which a large sequestrum protrudes, which, on being handled, is found to be connected with the shaft of the os femoris. Some pus exudes along the lower surface of the sequestrum.

14*th*. An incision having been made down to the bone, two inches above the point where the sequestrum protrudes, much matter made its escape. The patient's health has rather improved since the bone protruded. The purulent discharge from the knee has ceased, and the wound on the outside has closed, but there is still dull pain in the joint.

24*th*. Tongue red, glazed, and aphthous; pulse 120, small and weak; hectic blush very marked; has had great nocturnal sweatings, but as yet no diarrhœa. The sequestrum still adheres firmly to the upper portion or shaft of the bone. The sloughing in the popliteal region has now extended so far that the flexor tendons are exposed, and the lower portions of the fractured bone can be felt bare and rough. *Amputation was now deemed inevitable.*

26*th*. The limb was accordingly removed to-day, by the double-flap operation, in the middle of the thigh. The flaps were necessarily oblique in their direction, owing to the sloughing condition of the skin above the ham, and the protrusion anteriorly of the shaft of the bone. The anterior and outer flap was formed by transfixion and cutting outwards, but the posterior and inner one was completed by cutting from the surface inwards, owing to the awkward position of the lower end of the bone. The bone was healthy

where the saw was applied. About 4 ounces of blood were lost; 10 vessels were tied; 7 sutures were introduced; and a pledget of dry lint, with a bandage, were applied to support the stump, which was long and fleshy. An opiate was given on his being replaced in bed. Two hours after the operation, the pulse being 150 and weak, and the patient faint, 2 oz. of wine were given. Moderate re-action followed some hours afterwards, and was met by an opiate.

27*th*. Feels vastly better; pulse 140 and stronger; has slept and eaten well. To have 6 oz. of wine daily, in small and frequent doses, combined with a little light solid nutriment. No heat or pain in the stump.

29*th*. Pulse 130, full and soft; tongue less red; bowels open. The stump was dressed to-day for the first time. Primary union has taken place, except at the mere margin and outer commissure of the flaps, at the latter of which places a sloughing sore formerly existed. Most of the stitches were removed, and straps substituted.

Subsequently to this date, the case progressed favourably and without any thing remarkable occurring,—the ligatures came away in due time, the discharge ceased, and the stump became solid. The patient had a slight attack of bronchitis, which was completely removed by a blister, and on the 8th of September he was dismissed in good bodily health, with the stump solid and fleshy, and affording an ample and useful covering for the bone.

State of the diseased parts.—On opening the knee-joint, the synovial membrane generally, was found thickened and increased in vascularity. The articular cartilage, particularly over the condyles, was thickened, and appeared also to be vascular; while on the centre of the external condyle, a deep irregular ulcer was found penetrating through the cartilage to the bone, and communicating with the recently cicatrized external opening from which the matter had formerly flowed. The fracture was found to be nearly transverse, and about two inches above the condyles. The lower portion of the os femoris was partly overlapped by the upper, and the now empty cavity of a large abscess intervened. Both ends of the fractured bone were necrosed,—the upper end for about two inches in length, including the whole circumference of the os femoris,—and the lower end to a less extent. No new bone existed at these extremities, but began to show itself at about two inches from the end of each portion. Over the lower portion it extended as far down as the epiphysis, but not over it, and the upper portion was covered by a thick crust of new bone, for about three inches. The usual lines of separation could not yet be recognised. Lymph was found plentifully effused into the tissues surrounding the new bone.

Remarks.—This case is more particularly interesting, as showing how a case of Necrosis of comparatively limited extent may require amputation of the member, from the peculiar circumstances which may accompany the disease.

The violent synovitis, resulting from the injury of the joint, and

running on, notwithstanding the most active antiphlogistic measures of which the case would permit, to suppuration, and latterly to ulceration of the articular cartilages, and surface of the bone,—combined with the profuse discharges early occurring from the seat of the fracture, could scarcely have failed to oppose, or at least to retard, the sanatory process of union of the fracture; but the possibility of this was effectually prevented, by the inflamed and subsequently necrosed condition of the fractured extremities of the bone. That necrosis, however, had actually taken place, was proclaimed by the sequestrum showing itself on the surface; and then the character, and consequently the treatment of the case, changed from one of disunited and complicated fracture, to one of Necrosis, complicated with deformity and with disease of an important neighbouring articulation.

Amputation might at this time have been justifiably performed; but, in consideration of the youth and constitution of the patient, an attempt was first made to combat the hectic, and afford nature an opportunity and time to detach the sequestrum, and furnish sufficient callus. The hectic, however, soon declaring itself strongly, and the case continuing to be further complicated by symptoms of ulceration of the articular cartilages of the knee, and sloughing in the popliteal region, it was at length unavoidable to have recourse to amputation. The chief indication after the operation was to extricate the patient from the danger of the shock, by bringing about re-action; and this being effected by carefully administered stimuli, he was comparatively safe, requiring afterwards only nourishing food, moderate stimuli and tonics, with the usual local treatment, to restore him to his former health.

Viewing the two cases at the period when the sequestra protruded, they present a remarkable contrast to each other. In both a large sequestrum protruded at the same spot; but in the *former* case it had already been undergoing separation, by a natural effort, from the living bone, and only waited for the co-operation of the surgeon. An ample substitute was already formed, and the powers of the system were yet able to furnish more; whereas, in the *latter* case, the sequestrum adhered as yet firmly, the system being unable either to effect the tedious process of separation, or to produce a sufficient callus, were the separation to have been completed by art; the joint also was still diseased; and lastly, the hectic was so advanced that there remained not the slightest chance of recovery, without having recourse to the summary measure at length adopted.

Although, then, we have seen it to be possible, in some cases of extensive Necrosis,—notwithstanding the existence of immense deformity,—to save not only life but limb, where formerly, to preserve life it might have been deemed necessary to sacrifice the member:

it is obvious that other cases will still occur where any treatment short of this serious sacrifice, and the concomitant danger to which he is exposed from the operation, will fail to save the patient's life.

II.—SPASMODIC AFFECTIONS OF THE LARYNX.

Case 1. *Bronchocele giving rise to Spasmodic Dyspnœa—Tracheotomy—Recovery.*—Jaret Dixon, aged 18, was admitted into the Royal Infirmary, under Dr Handyside, on April 16, 1844, with a large Bronchocele.

On admission, both lobes, as well as the isthmus of the thyroid body, were much enlarged. The swelling was soft and yielding, and of a pyriform shape; the base extended downwards to the clavicles, filling up the jugular fossa, and the apex reached upwards to above the thyroid cartilage. Pulsation was communicated to the tumour, on each side, from the impulse of the carotid arteries, over which it lay; and, in addition, a gentle pulsatory thrill was perceptible in the tumour itself. The patient's neck appeared to be peculiarly long, and his tone of voice was higher and more shrill than natural.

Previous History.—Until two years ago, he states, that he was free from any swelling of the neck. At that time, however, being 16 years of age, he began to work as a farm servant, and simultaneously with this, the swelling arose. It has gradually increased ever since, and of late has afforded him considerable uneasiness. He is a native of Carlisle, and states that he has been employed on a low marshy farm.

In all other respects his health was good when he came to the Infirmary, and he expressed extreme anxiety to get rid of the disease.—*He was ordered to take ten drops of the tincture of iodine internally, three times a-day;—and an ointment consisting of hydriodate of potass and camphor, of each ʒss, and of the unguentum hydrargyri, and the unguentum simplicis, of each ℥ss, was ordered to be applied twice a-day over the tumour.*

May 9. Since last report, the above treatment has been continued. To-day, for the first time, there is considerable irritation of the integuments over the tumour, which is found by admeasurement rather to have increased in size. His system appears now to be affected by the mercury, which has been used externally only, and without much friction. The gums are tender, there is increased salivary flow, and the salivary glands are enlarged and painful. The bowels are open, the tongue is red, the skin hot and dry, the pulse is small, and he is in an anxious and excited condition. The internal use of the iodine, and the application of the ointment to be discontinued. Let him take night and morning the following medicine:—*R. Pulveris Jacobi veri gr. iss.; pulveris Doveri gr. iij. M. Fiat pulvis.*

7 P.M. He has now had a severe and sudden attack of dyspnœa, which lasted some time. From this he was much relieved by his assuming the semi-erect posture, and by the inhalation of steam.

9 P.M. He has now had another attack of dyspnœa, but of a more severe and lasting nature. He complained of pain, and of a sense of constriction of the glottis. The epiglottis was felt to be erect and somewhat tumid, and he expectorated what was said to resemble thickened mucus. The attack of dyspnœa had been so severe, that it was deemed advisable by the house-surgeon, (Mr J. W. Reid,) to propose tracheotomy, but to this the patient would not submit, as the urgency of the symptoms had at the time decreased.

11*th May*, 4 A.M. During the night he has had several severe attacks of dyspnœa, the last of which was so severe and protracted, that he is now glad to submit to the operation of tracheotomy. It was accordingly performed by the house-surgeon in the following manner :—An incision of about two inches in length was made in the usual situation. The enlarged isthmus of the thyroid body was then felt, and avoided; and, on deepening the incision, the trachea was found to have been pushed deeply towards the left side, by a portion of the right lobe of the gland, which at the same time overlapped and covered it. An attempt was now made to raise this portion of the tumour from off the trachea, but this was found to be impossible, from the extent and adhesions of the tumour ; an incision was accordingly made through it to reach the trachea, into which a sufficient opening was then made. On the tube being inserted, the patient felt relieved, though at first much cough was excited by the trickling of blood into the trachea and along the tube, which was much too short, although the longest in the house.

The hemorrhage was very profuse, though principally venous in its character. It however continued, notwithstanding the aplication of pressure, for nearly two hours,—when Dr Handyside was sent for. It was then entirely arrested by increased pressure.

The quantity of blood lost was supposed to be about a pound; but from its having flowed on the bed-clothes, the exact amount of it could not be ascertained.

The epiglottis and glottis were at this time felt by Dr Handyside, and there was no œdema.—*The wound to be kept covered over with a light piece of linen gauze; and* 20 *drops of the solution of muriate of morphia to be administered.*

At 10 A.M., he breathed easily, and entirely by the mouth and nares,—air passing through the tube only when a forced expiration was made. He had no dyspnœa when the mouth of the tube was closed by the finger. He still complains of pain in the region of the salivary glands and mouth.

At noon. The tube was removed by Dr Handyside, without the slightest recurrence of dyspnœa.

There has been likewise no return of the hemorrhage.

Lint dipped in cold water was applied to the wound, and covered over with oiled silk.

He spoke at this time not in a whisper, but with a pretty full and strong voice.

8 P.M. He continues to breathe easily by the mouth and nares, and there has been no return of the dyspnœa, or of the hemorrhage. Pulse 140, soft, and small. *Bowels opened by an enema.—To have a draught, consisting of* ℥ss *of the tinctura hyoscyami, which is to be repeated if necessary.*

11*th May*. He continues to breathe naturally, and has had no recurrence of the dyspnœa. The wound has assumed a glazed appearance from the effusion of lymph, and there has been no recurrence of the hemorrhage.—*To have the following mixture. R. Spiritis ætheris nitrosi.* ℥ss*; aquæ acetatis ammoniæ* ℥j*; Misce.—of this he is to take a teaspoonful every hour in a little water.*

12*th*. The respirations are easy and natural; tongue dry and brown; bowels open; the pulse remains as before; and the mouth and fauces are red and tender.—*Continue the same care and treatment, and let him have in addition a gargle.*

13*th*. To-day he has the usual symptoms of mild bronchitis.

The wound has been kept carefully from exposure to the air, by a napkin applied round the neck. The ward also has been kept at as equable a temperature as possible. Air has had ingress by the wound, only when the dressings were being changed.—*To be cupped between the shoulders to six ounces; and a blister* 6 *inches by* 4 *to be applied to the left hypochondrium, where he complains chiefly of pain.*

14*th*. He refused yesterday to be cupped; but is to-day much relieved, from the application of the blister.

He now expectorates thick mucus, both by the mouth, and by the wound in the neck.

7*th*. *Another blister to be applied on the same part.*

The wound is granulating well;—the discharge from it is healthy.

20*th*. The bronchitic symptoms are entirely gone.

The wound does not now communicate with the trachea, and is cicatrizing rapidly from within outwards.

He has had no return of the dyspnœa.

The tumour is evidently diminishing in size.

June 1. The wound is now all but cicatrized, there remaining only a small granulating fissure.

The Bronchocele is now so much diminished in size, that the line and form of the sterno-mastoid muscles, and of the trachea, are visible; and the usual depression, constituting the jugular fossa, exists. *Discharged—cured.*

CASE 2. *Spasmodic Dyspnœa from the Introduction of Sand into the Pharynx and Larynx:—Tracheotomy:—Recovery.*—Margaret Campbell, aged 17, a servant, was admitted into the Royal Infirmary, under Dr Handyside, near midnight, on June 4, 1844.

On admission, she was suffering from severe and continued dyspnœa, which underwent frequent exacerbations.

It was stated by the medical gentlemen who accompanied the patient to the hospital, that, about an hour and a-half previous to the time of her arrival at the hospital, a handful of sand was thrown into her mouth by a young boy, while she was speaking to him. Some of the sand accordingly entered the pharynx and larynx; and soon afterwards, she became suddenly affected with dyspnœa and violent cough. Since then, she had had continued dyspnœa, with frequent exacerbations; and the latter are becoming on each accession more severe.

As the patient was now almost in a state of suffocation, and no adequate obstruction was found by the finger in the mouth or about the glottis, the house-surgeon, (Dr Fleming,) had immediate recourse to tracheotomy. No unlooked-for difficulties occurred during the operation,—a few particles of sand were discharged through the wound, before the tube was introduced,—and immediately thereafter the patient felt greatly relieved.

June 5, 9 A.M. She has passed a good night, having slept well. —*An ounce of the following mixture was ordered to be taken every third hour:*—R. *Sol. mur. morph.* ℥ss; *vini antimonii* ℥ss; *misturæ camphoræ* ℥iv. *Misce.*

At noon. She continues to breathe partially by the mouth and nares, but chiefly through the tube. When the latter is closed by the finger, there is considerable dyspnœa. She expectorates freely by the tube, which is regularly emptied of the mucus, that would otherwise accumulate in it. Pulse rather quick, but otherwise natural.—*To have the above mixture every second hour.*

4 P.M. She complains of pain, of an inflammatory character, in the larynx.—*Twelve leeches to be applied over the larynx.*

June 6, 10 A.M. She has passed a restless night. The symptoms of acute laryngitis became more marked this morning, there being acute pain in the larynx, wih the usual signs of inflammatory fever.—*She was accordingly bled from the arm to* 24 *ounces.*

At noon. The pulse has become more frequent, but is now small and compressible.—*The tube has now been removed;* and she breathes easily by the mouth and nares. There is no œdema of the glottis. —*She was ordered to take one of the following powders, every* 6*th hour.*—R. *Calomelanos, pulv. Jacobi veri, āā gr. iij. Misce. Fiat pulvis.* —*The mixture ordered yesterday was intermitted.*

7*th.* She breathes easily by the mouth.—*Continue the powders.*

8*th.* Pulse 112, small, and weak. Perspiration profuse.

The mouth has now become affected by the mercury.

The wound is granulating well, under the tepid water dressing.

She still complains of pain in the larynx.—*Twelve leeches to be applied over the larynx; and the powders to be intermitted.*

12*th.* The pain in the larynx is now gone, but there is superficial pain and swelling in the hyoid and submental regions.

She has occasional cough, and still expectorates a little mucus by the natural passage.

The wound is healing rapidly.—*Continue the water dressing; and let a poultice be applied below the chin, and rami of the lower jaw.*

July 1. Since last report the patient has progressed favourably, as far as the larynx and wound are concerned. A diffuse abscess which formed superficially in the sub-mental region, has been evacuated by the knife, and the opening is now nearly closed. The wound from the operation is now also nearly closed, and there has existed for the last eight days no direct communication between the trachea and the surface. The patient's voice remains husky. She is now taking wine, and nourishing food.

August 7. The patient, though dismissed only to-day, has been considered as cured for some weeks, as she has remained under medical treatment in the hospital, on account of a rheumatic affection of the articulations of both the upper and lower extremities, accompanied by the usual debility. Her health is now restored; and her voice is natural. *Discharged—cured.*

Remarks.—These cases present many points of interest to the pathologist, and of practical importance to the surgeon.

In regard to the *first* case, there can be little doubt that the dyspnœa arose from a spasmodic affection of the muscles of the glottis, and not from change of structure in the lining membrane of the larynx.

The occurrence of tumours in the neck giving rise, in various ways, to dyspnœa, so as to have demanded the performance of tracheotomy, is by no means rare; but in this case, the tumour was of such a nature, as to render the treatment complicated and difficult, and the ultimate result of it doubtful.

The Bronchocele was simple in its nature, and had nothing peculiar either in its history or disposition, except in its having encroached more on the trachea than might have been expected from its outward appearance.

The treatment adopted for the removal of the thyroid enlargement, was that which is found to be most efficacious when the tumour is of a simple nature, namely, the internal administration of iodine, with the external and topical application of the hydriodate of potass and mercurial ointments, with friction. The efficacy of this treatment was not, however, in this case, fairly tested, as it was not continued after the operation was performed.

On the day on which the dyspnœa occurred, the patient was found to be in an extremely excited and uneasy condition, resulting from the action of the mercury, which had affected the system solely by its external application; and this condition would predispose strongly to the occurrence of the spasmodic affection of the muscles of the larynx, which was excited by the irritation of, or

recent and moderate pressure on, the recurrent or motor laryngeal nerves, by the still increasing Bronchocele.[1]

That the dyspnœa arose from a spasmodic closure of the rima glottidis, and not merely from an inflammatory affection, is evident from the fact, that the dyspnœa was sudden and intermittent, having occurred without any previous affection of the larynx, or alteration of the voice, and also because there was no dyspnœa in the intervals between the fits; and farther, likewise, by the fact, that there was no affection of the voice, such as occurs in all inflammatory affections of the larynx, whether acute or chronic.

This consideration, indeed, is one of the chief points of interest in the case, from its showing how a Bronchocele may occasion dyspnœa to such an extent as to require the performance of tracheotomy, under circumstances too, where it has never, I believe, been hitherto performed.

The operation of tracheotomy in this case was in itself both difficult and uncertain, but no other alternative was left, except that of allowing, as must otherwise be done, the patient to die from asphyxia; and consequently, the operation was not only warrantable but demanded.

The division of a portion of the Bronchocele, and the consequent profuse hemorrhage, were unavoidable, but at the same time, not necessarily attended by much danger; as pressure will be found in such circumstances, a sufficient hœmostatic, when it is firmly and methodically applied. The hemorrhage, however, in this case was rather salutary in its effects; as to it must be attributed the immediate, as well as the subsequent diminution in the size of the tumour, and the consequent removal or diminution of the pressure on the recurrent nerves, or on the trachea itself, which had given rise to the dyspnœa. The chief danger to be feared from the hemorrhage in this case, was the entrance of blood into the trachea, and thence into the bronchi, as the depth of the former from the surface rendered the tube, which was the longest in common use, almost inefficient,—thus illustrating the great importance of having a tube of sufficient length for such cases; as well as for others, where the parts over the trachea have become infiltrated and vascular.

[1] The recurrent or motor nerves of the larynx, it will be remembered, lie immediately behind, and by the side of the trachea, at its upper part; and they would necessarily suffer pressure from the increase of the tumour, either directly, or through the intervention of the trachea. That considerable pressure had been exerted on the latter, is evident, from its having been found forcibly displaced to one side, by that part of the tumour which embraced it so closely. The first effect of this pressure would be to irritate or stimulate the nerves, and thus to cause the spasmodic contraction of the muscles of the glottis, to all of which this nerve is distributed. Hence, closure of the rima glottidis would result, giving rise to the croupy or crowing inspiration, with the difficult and prolonged expiration; but after long-continued or severe pressure, the opposite condition—or paralysis of these muscles—would ensue, giving rise to sudden asphyxia, from mechanical closure of the rima glottidis; unless one only of the recurrent nerves was affected, when the closure would be less complete.

In the case, however, of the patient Dixon, the dyspnœa evidently arose from spasm, and not from paralysis, of the muscles of the glottis.

It is worthy of remark, that the tube was removed next day at visit, from there having been no return of the dyspnœa; although the orifice of the tube had been intentionally occluded for some hours previously to its being removed. Moreover there was no recurrence of the hemorrhage, an event which would also have contra-indicated the removal of the tube at that early period; but the surface of the wound had become rapidly covered with plastic lymph, and after this hemorrhage was no longer to be feared.

It is interesting, also, to observe the remarkable diminution of the Bronchocele which occurred in this case. This was no doubt owing, in a great measure, to the extensive local bleeding which followed the operation, and to the subsequent contraction from the cicatrization of the wound; though it may also have been due to the previous treatment, and to the change of locality which the patient had made.

This case then shows that the pressure exerted by a Bronchocele may not only be sufficient to cause so much dyspnœa as to require tracheotomy for its relief, but that the operation may be performed in these circumstances with success. The latter fact points out also the propriety of having recourse to this operation in those cases—not uncommon in districts where the Bronchocele prevails—in which the patient has begun to suffer severely from dyspnœa, as well as from the consequent affection of the lungs and heart,—and where either death has been allowed to take place from the severity of these symptoms, or where the unwarrantable operation of complete excision of the tumour has been had recourse to, as the only apparent means of relief.

In the *second* case also, the dyspnœa was of a spasmodic character, arising, however, not from primary or direct irritation of the muscles or motor nerves of the larynx, but from reflex motor influence, which was excited by the irritation,—from the particles of sand,—of the sensory nerves of the mucous membrane of the glottis, and of the neighbouring parts.

After it had been ascertained that no foreign body was lodged above the rima glottidis so as to cause its occlusion mechanically, the line of practice to be followed was very evident; namely, the immediate establishment of an artificial opening into the trachea, to save the patient from being speedily asphyxiated. Much relief accordingly was felt as soon as the tube was introduced.

The operation was thus performed as a measure of necessity, and on account of the dyspnœa alone; but it was also attended by an unlooked-for advantage, as a few particles of sand which had entered the trachea, were thus afforded an opportunity, though unintentionally, of making their escape.

That the latter advantage was not part of the object or design of the operation, is sufficiently evident from the fact, that information as to some particles of the sand having actually entered the trachea

(To be continued.)

V.—Ovariotomy.

By Dr Bennett and Dr Handyside.

(*From the Edin. Med. and Surg. Journal, No.* 167.)

History of the Case previous to the operation. By Dr Bennett.

Jessie Fleming, unmarried, aged 20, residing in Crail, was admitted into the Royal Infirmary under Dr Bennett, July 5, 1845, recommended by Mr Crabbe, Surgeon.

She states, that eighteen months ago she first perceived a tumour in the lower part of the abdomen, deep seated in the middle of the hypogastrium. She remembers that she could push it aside in various directions without pain, and that at this time it was about the size of an orange. She can assign no cause for its appearance. The tumour rapidly increased in bulk, until at the end of ten months the abdomen was greatly distended, so much so, that respiration and progression were rendered difficult. Paracentesis was now performed, and forty imperial pints of a viscid yellowish-coloured fluid were removed. The abdomen, however, again rapidly increased in size, and paracentesis was again had recourse to. The operation has now been performed six times, the intervals between each becoming less and less lengthened, and the amount of fluid, though always considerable, varying in amount. She says that immediately after every tapping a tumour can be felt about the size of a child's head on each side of the abdomen; that these tumours (she thinks there are two,) are moveable laterally, but seem to grow from below. She thinks the one on the left side is larger and higher up than that on the right. Her general health has been little affected by the disease.

At present, July 6th, she complains of pain in the head, which is stated to be dull and heavy, and seated principally over the forehead. It comes on occasionally, and lasts for three or four days at a time. She has pain in the loins very frequently, especially when the dropsy is large. Special senses and common sensibility normal. Her sleep is much disturbed by breathlessness, and by the semi-erect posture the dropsy requires. Motion is impeded by the size of the abdomen, and from its great weight. There is much muscular weakness.

The abdomen measures 48½ inches at its largest girth, which is just above the navel. It fluctuates distinctly. Dulness of the liver cannot be defined by percussion. The skin of the abdomen is marked by transverse fissures or marks of a purplish colour; it often feels very hot and as if it were bursting; tongue clean; appetite a little impaired; no thirst or sickness; bowels regular; stools somewhat fluid, but of healthy aspect; urine scanty, thick, high coloured, of acid reaction, containing a yellowish brown sediment, but unaffected by heat; skin dry, not warmer than usual. She states that she never perspires. Has no cough or pectoral complaints except dyspnœa, which is very severe at night. On auscultation the chest appears to be healthy. Pulse 88, sharp and small; heart's sounds apparently abrupt, but natural. The catamenia have appeared at irregular intervals, sometimes of three weeks, at others five weeks, and when present are profuse.

From this time she remained generally in about the same condition. The urine passed in the twenty-four hours never exceeded twelve ounces, and on one occasion was as low as six ounces. The abdomen gradually became more tense and the dyspnœa more urgent.

12th. Mr Syme performed the operation of paracentesis of the abdomen. The trocar was introduced to the left of the *linea alba*, about two inches above the pubic bone. Five imperial gallons of a yellow-coloured transparent fluid were removed. The last four ounces which came off were viscid like white of egg, and contained a few yellowish opaque flocculi. The fluid was densely coagulable on adding heat or nitric acid.

The flocculi when examined with the microscope were found to be composed not of lymph, as was at first supposed, but of numerous cells, varying in size from the $\frac{1}{100}$th to $\frac{1}{40}$th of a millimetre in diameter. The great majority were about $\frac{1}{50}$th of a millimetre. They were slightly granular, of round and oval shape, unaffected by water, but becoming more transparent on the addition of acetic acid, and exhibiting a distinct nucleus about $\frac{1}{140}$th of a millimeter in diameter. The nucleated cells were imbedded in a granular matter which could easily be broken down.

Shortly after the operation, she complained of considerable pain in the abdomen towards the left side, which was not increased on pressure. Fifty minims of tincture of opium to be taken immediately.

7 P. M. Experiences pain over the abdomen analogous to cramps, not increased on pressure. Pulse between 70 and 80.

℞ *Opii* gr. i.; *Pulv. Antim.* gr. ij.; *Con. Aromat. q. s. Ft. pil. 4ta hora sumend. Mittantur* vi.

13th. To-day has felt considerable trembling and faintishness, which were relieved by tightening the roller. Bowels not relieved since yesterday morning; pulse 100; pain in abdomen very slight, not affected by pressure; has passed forty-eight ounces of urine since yesterday; vomited her breakfast; tongue much furred.

The pills were stopped; and one drachm of the compound jalap powder was directed to be taken immediately.

14th. Passed a good night, and has now no pain in the abdomen; but there is considerable tenderness on pressure towards right side, where the swelling appears to be greatest. Passed fifty ounces of urine. No powders have been taken since the morning of the 12th. Bowels freely opened by jalap powder. Breathlessness.

15th. Passed a restless night, having experienced much nausea and vomiting. She also felt considerable pain in the right iliac and hypochondriac regions. The pain still exists, and she says is much increased on pressure. The source of pain is very deep-seated; is certainly not in the peritoneum. The puncture is now healed; the abdomen is still voluminous, but soft. On palpation, a tumour with distinct margins, about the size of the adult human head, may be distinctly felt, firmly attached inferiorly within the pelvis, but its upper portion moveable to a considerable extent from side to side. She describes the pain as being of a dull, gnawing, and continued character; not lancinating nor increased on movement. Pulse 98, of natural strength; tongue slightly furred; has tolerable appetite; no thirst, but says she vomits everything she takes. The matters vomited are thrown up about ten minutes after each meal, in successive mouthfuls, accompanied by gnawing pains at the stomach. These latter pains are felt under the false ribs on the right side. The stomach is often felt to be distended, followed by considerable eructations of gas; bowels have been open four or five times; urine much increased in amount since the operation; to-day she passed thirty-eight ounces. On the 10th passed ten ounces of urine, on the 17th sixteen ounces. The compound jalap powder was directed to be given again.

July 18th. To-day she was carefully examined by Professor Simpson, who employed his uterine bougie. By this means the

fundus of the uterus was raised above the brim of the pelvis, where it was distinctly felt presenting its obtuse, rounded, natural form. The Professor stated his opinion that the tumour was connected to the left ovary by a narrow pedicle. Urine ten ounces.

19th. The examination of yesterday was followed by great pain. She described this as being "tremendous," and seated in the back. The nurse says she cried out as a woman in labour. About two and a half hours afterwards a draught containing one drachm of solution of morphia was given. It relieved the pain, but it continued until 11 P. M. An anodyne and ether draught was then given, which was immediately rejected by vomiting. Since the examination the vomiting has been more urgent; everything taken has been brought up *en masse*, and there is still dull pain on pressing deeply into the right hypochondriac and iliac regions. Urine sixteen ounces.

The powders were stopped. She was directed to take three times daily one ounce of a mixture consisting of one drachm of medicinal naphtha, three drachms of tincture of foxglove, three of spirit of nitrous ether, and five ounces of water.

20th. Urine twelve ounces. 21st. Urine ten ounces; still complains of vomiting.

Seven leeches were applied to the epigastric region.

22d. Leeches bled well; vomiting continues; it comes on now ten minutes after taking meals, but sometimes sooner; it is more quickly excited when fluid is taken than when solid food only is swallowed; for the last eight months has had occasional vomiting, and since entering the house it has become more frequent and continued; no pain on pressure of the epigastrium; the stomach is much distended with air; there is frequent eructation of gas in considerable quantity; twenty ounces of urine passed since yesterday's visit; the fluid in the abdomen is again increasing; the tumour can be felt very moveable; it can be pushed freely from one side of the abdomen to the other, and seems only attached by a long pedicle; considerable pain in back. Continue powder.

℞ *Pulv. Opii* gr. ij.; *Creosoti.* gtt. ij. *Ext. Taraxaci q. s. Ft. pil.* ii. 1. *h. s et post hor.* vj. *si opus sit.*

23d. No vomiting yesterday after the visit. Complains of pain in the back and some cephalalgia. Passed thirty-six ounces of urine.

A plaster of extract of belladonna was applied.

24th. Urine eighteen ounces; presents a more copious sediment of urate of ammonia; it is high coloured. Acid reaction on litmus; copious orange-coloured sediment, which is dissolved on addition of heat or nitric acid; no vomiting.

25th. Urine twelve ounces. 26th. Urine eighteen ounces. 27th. Urine twenty-four ounces. 28th. Urine sixteen ounces.

29th. Twenty-two ounces. 30th. Twenty-six ounces. 31st. Ten ounces. August 1. Urine sixteen ounces.

August 7th. Since last report the amount of urine passed daily has diminished to from ten to twelve ounces, whilst the increase of fluid in the abdomen has gradually rendered respiration difficult. To-day this fluid was removed by Dr Duncan. A trocar was introduced in the mesian line, above the pubes low down. Five and a half gallons of yellow slightly viscid fluid were removed. Towards the end the viscidity of the fluid was increased, and flocculi, as on the last occasion of tapping, were observed. Examination of the flocculi microscopically presented the same appearances as on the last occasion. Fluid the same chemically.

Soon after the operation she experienced considerable pain in the back and over superior portion of abdomen, which was not increased by pressure. Pulse became quick and full. At 8 P. M. she had experienced no relief, and was ordered half a drachm of the solution of muriate of morphia in the form of draught immediately, and repeated at midnight if necessary.

August 8th. The pain ceased at midnight. Had little sleep. To-day slight pain under false ribs of left side; otherwise easy. Pulse natural. She has passed more than fifty ounces of urine.

August 9th. Passed a good night; slight pain in abdomen on pressure. Amount of urine less than yesterday, but not measured.

August 16th. Since last report has been in the Surgical Hospital. Dr Bennett proposed to the acting-surgeons severally the operation of ovariotomy, which they declined to perform. To-day, accordingly, she returned to the medical ward. During the interval her general health has been good. The fluid in the abdomen, however, is again accumulating. By a careful examination the tumour can be ascertained to be quite free from adhesions to the anterior walls of the abdomen. These latter can be pulled forwards and held steady, while the tumour is made to roll free beneath. Passed during the last 24 hours eighteen ounces of urine. The liver was carefully percussed. Its extreme dulness in the right hypochondrium is three inches; it is pushed considerably upwards, the upper line of dulness being on a level with the nipple. She denies ever having suffered from dyspeptic symptoms, or so-called attacks of bile; and her general health is in every respect good, and the amount of urine discharged diminishing. Her general health is not so robust as when she first entered the house.

Dismissed from the infirmary August 24th. The fluid of abdomen somewhat increased in amount.

September 2d. After leaving the house she went into lodgings, having been placed by Dr Bennett under Dr Handyside's care. The fluid gradually accumulated again, and for the last three days has rendered respiration difficult. Yesterday, paracentesis was

performed by Dr Handyside, and about four gallons of fluid were removed. The character of the fluid was exactly the same as on former occasions, except that the flocculi were not so large and numerous. About an hour after the operation considerable pain in the abdomen came on, which continued until 2 A.M. this morning, notwithstanding two anodyne draughts. To-day is free from pain. Slight cephalalgia. Bowels not open since yesterday morning.

September 3d. This evening a consultation was held; present Dr Handyside, Dr Simpson, Dr Spittal, Mr Crabbe, and Dr Bennett. Patient is doing well; no pain; tumour very moveable, and distinctly felt, as after previous tappings. The propriety of ovariotomy was agreed on, Dr Handyside having now satisfied himself that this was a case urgently calling for the performance of that operation, and feeling that he could no longer conscientiously decline the proposal to this effect, previously made to him by Dr Bennett. To have half an ounce of castor oil.

September 4th. Partly vomited castor oil. Bowels open only slightly; is in good spirits; face pale and a little anxious.

℞. *Ext. Colocynth. c.* gr. x.; *Ext. Hyoscyam.* gr. v. *Ft. pil.* iii. s.s. A domestic enema in the morning.

September 5th. Bowels opened four times during the night, the last time at 8 this morning. In good health and spirits. Tongue clean. To-day the operation was performed by Dr Handyside, in the presence of Dr Beilby, Dr J. Y. Simpson, Dr W. Campbell, Dr A. D. Campbell, Dr Baillie, Dr Bennett, Mr Goodsir, and Dr Struthers.

Description of the operation and subsequent treatment up to October 3d. By Dr Handyside.

The operation was performed at half-past 12. The temperature of the room was raised to 72°. The patient was placed on a table before a good light, her feet resting on a stool, and her shoulders raised and supported by pillows. The other necessary arrangements for the operation having been made, Dr Handyside, now, standing to the right side of the patient, made, with a strong scalpel, an incision of about three inches in length through the skin and subcutaneous cellular tissue, midway between the umbilicus and pubis, and over the *linea alba*. This incision was deepened carefully, the *linea alba* divided, and the peritoneum reached. A fold of this membrane was pinched up with the forceps, and a small opening made into it. Through this opening some glairy fluid escaped, indicating that the cavity of the abdomen had been opened. With a probe-pointed bistoury the peritoneum was now slit open to the extent of an inch less than the

external wound. A large quantity of the glairy fluid then escaped, which occasioned some delay. Through this opening Dr Handyside now introduced two of his fingers, in order to ascertain that no adhesions existed on the anterior surface of the tumour. None being felt, the wound was now dilated upwards for other three inches. This was done with a probe-pointed bistoury, which was guided by two fingers introduced into the abdomen. Through this opening Dr Handyside now introduced his whole hand, in order to ascertain whether the tumour was adherent at any part of its surface. The hand was passed over, around, and down to the pedicle of the tumour, and the latter was found to be attached only by its pedicle, which was felt to be small. The operation was therefore proceeded with. From the size of the tumour it was evident that a large opening was required for its removal. Accordingly, the wound was extended upwards to rather more than midway between the umbilicus and the ensiform cartilage, and downwards to within two inches of the symphysis pubis,—the probe-pointed bistoury being employed as before. In dilating upwards, the umbilicus was avoided, the incision passing to the left side of it. Through the large opening the fundus of the tumour now presented, and the charge of it was committed to Professor Simpson, who drew it gently outwards. At this time, as well as before and after, care was taken to prevent protrusion of the intestines. This was done by Mr Goodsir, who, with both hands, pressed the edges of the wound downwards and backwards against the intestines and from the tumour. On the anterior aspect and fundus of the tumour were now observed several round smooth-edged apertures, through which some of the glairy fluid was seen to escape, being of the same character as that which had flowed from the peritoneal cavity, but rather more viscid in consistence. One of these openings was dilated with a bistoury, which allowed of the escape of a large quantity of the glairy fluid. This had the desired effect of diminishing considerably the size of the tumour. The pedicle of the tumour was next examined, and it was found to consist of the left broad ligament of the uterus, somewhat elongated and enlarged, but not altered in texture. The uterus was seen to be of normal size, though of a rose-red colour, and to be unconnected with the tumour, except through the medium of the ligament. The pedicle of the tumour being now put on the stretch by exerting slight traction on the latter, a strong curved needle, in a fixed handle, and carrying a strong double ligature, was passed through its middle. The double end of the ligature being divided, each half was tied separately, so that each included one-half of the pedicle. Some delay was occasioned by the difficulty experienced in tying the ligatures, as the elasticity of the part included caused the first

half of the knot to slacken before the other half could be thrown. The tumour now required to be removed. This was done by cutting carefully with a scalpel at about an inch beyond the part surrounded by the ligatures. In doing so a cyst, which had extended down to the pedicle, was necessarily opened, and some more of the glairy fluid escaped. During the division of the pedicle venous blood escaped freely from the tumour, but, after the removal of that latter, no bleeding occurred from the divided surface of the pedicle, although the mouth of at least one large artery was visible. The right ovary was now examined, and it was found to be enlarged to the size of a walnut, and to contain several small cysts. Accordingly Dr Handyside proceeded to remove it also. A needle carrying a double ligature was passed through the middle of the ligament of the ovary, and the ends tied separately in the same manner as on the other side. No bleeding followed the division of the ligament beyond the ligatures. The portions of the broad ligaments which were left were unaltered in structure. The four ends of ligature attached to each broad ligament were now tied together around the latter, and then three of the ends cut off so as to leave one only from each side hanging at the lower angle of the wound. The blood mixed with the remainder of the glairy fluid was now sponged carefully out of the lower part of the abdomen and the pelvis, which were exposed. The peritoneum lining the abdominal wall, as well as that covering part of the intestines, was now examined, and seen to be of a red colour, as from congestion or chronic inflammation; but on no part was there any mark of the effusion of lymph. Beneath the part of it which lined the abdominal wall, the appearance as of numerous ecchymotic spots was visible.

Part of the intestines which were seen towards the termination of the operation, though they did not protrude, were quite natural in their appearance. All oozing of blood from the incisions in the abdominal wall having ceased, no vessel having required ligature, the edges of the wound, with the careful exclusion of the peritoneum only, were approximated and retained in accurate apposition by means of twisted sutures, ten of which were employed. Corresponding parts of the edges of the incision were indicated by the dark points and cross lines which were previously marked with the nitrate of silver, and which, on the now flaccid skin, were found to be of great use. A long pad of tint was now laid, as a compress, along each side of the wound, and a lighter one over it, and these were retained by broad strips of adhesive plaster. Lastly, over these pressure was made, and support given, by the ends of a double many-tailed bandage, which had been placed under the patient before the operation began, and which were crossed and pinned alternately at opposite sides of the abdomen. The patient

was then placed in bed, a dry blanket having been previously wrapped round the thighs and pelvis. The patient bore the operation well. At one time she felt faint, but syncope never occurred, so that no stimuli were given. The pulse never sunk below 80, but remained most of the time between 90 and 100. The operation occupied in all about forty minutes. Fifteen of these were occupied in the preliminary incision, examination and removal of the large tumour,—five in the removal of the small one, and twenty in sponging out the pelvis, introducing the sutures, and applying the compresses, straps, and the many-tailed roller.

September 5th,* 1½ P. M. Pulse 60.

To have one drachm of the solution of muriate of morphia.

3 P. M. Pulse 90, and of good strength.

4 P. M. Pulse 90, and full. She complains of acute pain of abdomen. To have two grains of solid opium in pill.

8 P. M. Pulse 100, and full. To have another grain of opium.

9 P. M. Pulse 100, and soft. The pain of abdomen now ceased on her being turned in bed. Eight ounces of urine withdrawn by the catheter, several ounces having been passed at 5 P. M.

12 P. M. Pulse 100. She complains of thirst. She has had no sleep as yet.

To have one drachm of the solution of muriate of morphia.

6th, 1 A. M. She complains of sickness, and has made some efforts to vomit. For this a drop of hydrocyanic acid was given.

3 A. M. She has had some more vomiting. The fluid vomited is thin, and of a green colour. No sleep as yet.

To have half a drachm of the solution of muriate of morphia.

10 A. M. She has lain in a drowsy condition during the night, but has had no sleep. Pulse 122, of moderate size, and soft; tongue rather dry; less pain of abdomen. Four ounces of urine withdrawn, some having been passed during the night.

2 P. M. Pulse 134, full, but soft. Complains of difficulty of breathing, from a feeling of constriction of the chest.

9 P. M. Pulse 148, full, and rather strong. Difficulty of breathing increased. Pain of abdomen less. She was now bled from the arm until the pulse became soft and compressible. She was bled in the recumbent posture, and twenty ounces were taken. After the bleeding the breathing became easy. Was ordered twenty drops of black drop.

11 P. M. Pulse 160, small and vibrating. She has passed urine twice during the day.

7th, 9 A. M. She has had some hours sleep towards morning. Passed urine freely during the night. Pulse 130.

2 P. M. Pulse 140. She has as yet taken no nourishment since the operation, except a little warm coffee. To have some warm

* From this time up to the 15th the case was treated in consultation by Drs Handyside, Bennett, J. Y. Simpson, W. Campbell, and Messrs Crabbe and Goodsir.

gruel. Fifteen drops of the "black drop" were now given, as she was restless and irritable.

9 P. M. Pulse 130. Has passed urine three times during the day,—the quantity each time being about four ounces. The bandage was now loosened for the first time. Some sero-purulent fluid oozed from around the ligatures. Except where the latter intervene the wound seems to be united throughout. The bandage was replaced, as she complained of a feeling of tightness of the abdomen. To have some beaf-tea and toast.

8th, 9 A. M. She has slept several hours during the night, and passed urine twice; pulse 120, and not so soft as before; skin hot and dry; complains of griping pain in abdomen; no motion of the bowels as yet. An enema of warm water to be administered.

2 P. M. Pulse 120. The enema has acted twice, but no intestinal matter has come with it. Griping still continues. The compresses were removed, and the wound dressed for the first time. Union by the first intention has taken place throughout, except where the ligatures interpose. Some sero-purulent fluid oozed from around the latter. Light compresses were applied along the side of the wound, and retained by a few straps, and the bandage was again replaced.

9 P. M. She has slept some time since last report. Passed urine twice during the day; bowels again moved in the afternoon, but no fæces in the stool; pulse 120.

It may be here stated, to save repetition, that she continued to pass urine regularly and freely, the quantity gradually increasing.

9th, 9 A. M. She has passed a good night, but her sleep has been occasionally interrupted by tormina, which caused several watery stools, with the passage of flatus. Pulse 120; skin cool. Has had some arrow root with new milk. She has also been troubled with flatulence and eructation, for which she was ordered half a wine glassful of a mixture of equal parts of milk and lime water occasionally, and she is to have "Dalby's carminative," one drachm for a dose, if the flatulence continues.

2 P. M. After a dose of each of the above the tormina and flatulence diminished. The wound was again dressed. The tepid water dressing was applied to the lower part of the wound. No tenderness of abdomen.

9 P. M. Had bread with milk to dinner. Bowels moved, and feculent matter in the stool.

10th, 9 A. M. She has slept a good deal during the night. Pulse 130, and soft; respirations 35; tongue white and furred; complains of tormina; wound discharging freely around ligatures. The three lower alternate needles were removed, and their places supplied by straps of adhesive plaster. To have chicken broth for dinner.

1 P. M. Complains of great tormina and restlessness.

℞ *Bismuthi Albi* ʒss.; *Olei Anisi* m. iij.; *M. et divide in pil.* vi. One of which she is to have every three hours.

6 P. M. She has had since last report two copious feculent stools. She is now irritable and restless; skin dry; tongue furred; expression anxious.

Let her have three grains of genuine James' powder with two grains of calomel.

9. P. M. Pulse and general condition as before. There is now tenderness of the abdomen, which is elicited by pressure over the iliac regions. This was the first symptom of local inflammatory action.

Twenty-four leeches were ordered to be applied,—and after the bleeding let her have gr. iij. of the *Pulv. Jacobi Ver.* and gr. i. of opium in pill, which is to be continued till the pain is abated and the frequency of the pulse diminished.

11th, 9 A. M. The leeches bled well last night. One of the pills was given, and in addition, two grains of solid opium during the night. After the bleeding she felt relieved, and she has passed a tolerable night; pulse 130, but softer; respirations 35, easy and full; skin moist; iliac region still the seat of pain though less than before.

Twenty leeches to be applied, after which let her have three grains of genuine James's powder, with half a grain of opium, which is to be repeated at noon. To allay thirst let her have some soda water with raspberry vinegar for drink.

2 P. M. Leeches bled freely, and she feels again relieved. The remaining sutures were removed, and union by the first intention is found to have taken place throughout. Discharge from around the ligatures free. Had milk and tea with rusk to breakfast, and to have broth for dinner.

9 P. M. Pulse 128; respirations 22.

12th, 9 A. M. Has had three of the opiate pills. Slept several hours towards morning; starts during her sleep, and awakes unrefreshed; pulse 120; tongue covered with whitish fur; skin warm and moist; wound discharges small sloughs of a blackish colour amongst the pus.

9. P. M. Pulse 120. Has had two opium pills during the day. She has slept occasionally. Bowels not open. To have half an ounce of the electuary of senna, and afterwards the yolk of a soft boiled egg.

13th, 9 A. M. Has passed a pretty good night. Bowels not yet moved, but she had an enema of warm water, which has just come away, but without bringing any fæces with it. Pulse 116; tongue cleaner. To have half an ounce of castor oil.

9 P. M. Has had five bilious stools since the castor oil was given. Feels much relieved. Has had beef-tea for dinner.

Pulse 108 ; tongue cleaner ; has occasional hiccough ; flatulent distension of the abdomen, which appeared yesterday, has subsided. To have sixty drops of the *Sol. Mur. Morph.*

14th, 8 A. M. Has slept several hours during the night ; pulse 108.

10 A. M. Pulse 120. Has taken an egg with rusk and coffee to breakfast. Wound discharging freely.

9 P. M. Pulse 102. Has had four scanty bilious stools since morning ; complains of tormina and eructation.

15th, 9 A. M. Has had no sleep during the night ; pulse 100 ; skin natural. To have two of the bismuth pills ordered on the 10th instant, and some beef-tea.

9 P. M. Has had two scanty motions of the bowels ; no eructations since the bismuth was taken ; pulse 118. To have twenty drops of the Lancaster black drop. To have farinaceous food only for the present.

16th, 9 A. M. Has had several hours' sleep. Has had other two bismuth pills, as the eructation returned during the night. Wound discharges freely sero-purulent matter, mixed with dark flocculi ; pulse 108.

9 P. M. Has had one free motion of bowels. Has had other two of the bismuth pills. To have one drachm of the *Sol. Mur. Morph.*

17th, 9 A. M. Has slept well during the night ; pulse 118.

9 P. M. Pulse 120 ; tongue natural ; she feels comfortable.

18th, 9 A. M. Has passed a restless night ; but has no particular complaint except a little cough. Bowels once opened during the night ; pulse 120. On auscultation no abnormal sounds could be detected. A sinapism to be applied to the sternal region.

9 P. M. Cough still present ; pulse 120, full and soft. To have one grain of opium with three grains of James's powder instead of morphia ; and to have a bottle of hot water to the feet. Bowels twice opened during the day.

19th, 2 P. M. Passed a good night. Had beef-tea and calf's-foot jelly for dinner. Pulse 120 ; has still a little cough ; discharge from wound very free, amounting to about three ounces at each dressing.

20th, 2 P.M. Had 80 drops of the *Sol. Mur. Morph.* last night. Slept well ; pulse 112 ; tongue covered with whitish fur, but moist skin, rather hot and dry ; bowels open.

21st, 9 P. M. Was restless last night. She is annoyed by irregular cough ; had three motions of bowels during the day. Has had 20 drops of the black drop, with the yolk of an egg. Sinuses discharging freely.

22d, 9 P. M. Feels better ; pulse 120 ; skin cool ; tongue

clean. Had two ounces of steak allowed for dinner to-day, with beef-tea and toast.

23d, 9 P. M. Had an opiate last night, after which she slept well. Has been restless during the day, with want of appetite; pulse 120; discharge free. About three and a-half ounces of pus escaped at the dressing. The pus escapes more freely when she is raised in bed, and when slight traction is made on the ligatures. Cough continues; no expectoration; no râles audible in chest.

24th, 9 P. M. Slept well last night after the usual opiate. Had two ounces of minced collops for dinner. Appetite rather improved; bowels open; pulse 120, and sharp. To have 15 drops of the black drop, with one drachm of the *Aq. Acet. Ammon.*

25th, 9 P. M. Slept well last night. Had dinner to-day as yesterday. To have a little porter. Draught to be repeated to-night.

26th, 9 P. M. Feels better to-day; pulse 116; tongue clean; respirations 32, and thoracic; appetite improved; bowels open thrice during the day.

27th, 9 P. M. Had her opiate last night, and slept well. Has been troubled a good deal with eructation. She is now able to sit up in bed during her meals, and to read in bed.

28th, 9 P. M. Slept well after the draught last night. Eructations removed by a dose of the hydrocyanic acid. Bowels open twice during the day, and with tormina. For this she had 20 drops of the *Sol. Mur. Morph.* in half a glass of wine, made into negus. She sat up in a chair to-day and read for some time. The cough is now attended with slight mucous expectoration, but there is no pain of chest. Discharge less to-day. To have a grain of opium with three grains of James' powder, and to have no more malt liquor at present.

29th, 9 P. M. Slept well last night, but has been troubled a good deal with cough during the day. There is a scanty expectoration of clear, and sometimes of tough greyish-yellow tenacious mucus. She complains of soreness of the throat, extending down the larynx and trachea, but the fauces seem natural. On examination of the chest, the respiratory sound is normal, but loud anteriorly, and especially in the upper parts of the chest. In the lateral regions it is less distinct; and posteriorly, especially in the lower parts, very feebly heard, and it is there almost inaudible during expiration. There are a few sonorous râles in the anterior part of the right axilla, on a line with the nipple, during inspiration. Pulse 112. To have a grain of opium.

30th, 9 P. M. Feels easy; appetite improved; still some cough; pulse 120. To have 20 drops of the black drop, with a drachm of the *Aq. Acet. Ammon.*

October 1st, 9 P. M. Slept well last night; bowels open; pulse 130. To have an opiate.

2d, 9 P. M. She feels weaker, and has less appetite to-day; but

still took two ounces of roast mutton with bread for dinner. Bowels thrice opened during the day; pulse 120. To have a grain of opium.

THE REMAINDER OF THE CASE IS REPORTED BY DR BENNETT.

October 3d,* 2 P. M. Dr Bennett on again taking charge of the patient found her pulse 120, weak; the discharge from the wound copious and fœtid; considerable diaphoresis and diarrhœa, the bowels having been open four times since last night's visit; and with loss of appetite. To have half an ounce of wine every two hours until the evening.

9 P. M. Has taken the wine regularly. Face somewhat flushed; pulse 112, of greater force; appetite improved; bowels open twice since morning visit. When she coughs air is sucked in, and forced out of the wound during expiration and inspiration. She feels the ligatures gnawing. On pulling the right ligature gently it came away together with a slough about three inches long, and the diameter of a crow quill. A quantity of pus followed, but no blood. The end of the ligature embraced the two loops which enclosed the halves of the pedicle. Immediately after the dressing the pulse was counted to be 132; ten minutes after it sunk to 114. This is the twenty-ninth day after the operation. To have a grain of opium. Omit wine.

4th, Notwithstanding the pill had a restless night. Discharge from wound abundant; pulse 132, weak; no appetite; bowels open four times during the morning; cough less troublesome. Considerable morning perspirations. Percussion of the chest every where good. No râles could be detected any where. Respirations short; chest not fully expanded. Inferiorly and posteriorly the inspiratory murmur is harsh, and the expiratory murmur is prolonged over the whole chest. Vocal resonance clearer than usual on the right side. Heart's action fluttering. To have a dessert spoonful of wine every two hours. Rice pudding with one egg. At night a dessert spoonful of castor oil.

5th, 2 P. M. Passed a tolerable night. Has taken wine regularly. Vomited the castor oil last night. Bowels have been open twice this morning. At present she complains of the cough, which causes her much pain in the seat of the ligature. The discharge from wound is abundant; pulse 140, soft; tongue clean; respirations hurried. Continue wine.

9 P. M. Dr Alison was invited to meet Dr Bennett and Dr Spittal in consultation, and he saw the patient at this visit. Bowels open five times since the morning; stools loose and feculent, with streaks of mucus floating in them; pulse 130,

* Dr Handyside at this period went into the country, leaving the farther surgical treatment of the case to Dr Struthers.

fuller. A thin purulent discharge squeezed from the wound. No tenderness of abdomen. To have one of the following pills every eight hours :—

℞. *Pulv. Opii* gr. i.; *Pulv. Plumb. Acet.* gr. ij.; *Pulv. Ipecac.* gr. ss. *Ft. pil.* Continue wine.

6th, 2 P. M. Has taken three lead and opium pills, which have checked the diarrhœa. Tongue clean; pulse 140, weak; morning perspirations. Omit pills.

9 P. M. Bowels have not been opened since taking the pills. Pain in the seat of ligature always induced on coughing. Pressure in the left iliac region causes pus to exude plentifully. Edge of the opening is somewhat wider, and the skin surrounding it is the seat of an erythematous blush, over a space the size of half a crown. Poultice to the wound. Continue wine. Meat soups, and nutritious diet.

7th, 2 P. M. Discharge from the wound this morning amounted to about two ounces. Pulse 140, soft; appetite improved; respiration hurried and thoracic.

9 P. M. On placing the trunk in a semi-erect posture pus flows freely from the wound without pressure. Pulse 130, very soft; feels weaker; bowels have been open three times during the day; stools natural, but soft. Skin covered with a damp sweat. Increase the wine to a tablespoonful every two hours. Repeat the *Pil. Opii c. Plumb.*

8th, 12 A. M. Bowels open once last night, and twice this morning. There is still cough, which is now followed by a tough expectoration. Occasional mucous râles are heard on inspiration over the posterior surface of chest. The inspiratory murmur, however, is generally harsh and dry; the expiration prolonged. Pulse 128, of greater strength. Discharge from wound less copious.

9th, 9 P. M. Since last report has been much the same. Discharge from wound this evening copious and thicker, mixed with small portions of slough.

10th, 2 P. M. On tightening the ligature, which is still firmly attached, about three ounces of thick greenish offensive pus flowed from the opening. On examining chest, a crepitating râle is heard for the first time about the middle third of left back, and inferiorly, sonorous râle, both with inspiration and expiration. Over the right back the respiratory murmurs are generally harsh, with increased vocal resonance, but no râle. Sputa are tenacious and slightly tinged of a rusty colour. To lie on the face as much as possible. To take a tablespoonful every four or five hours of the following mixture :—

℞. *Mucilag.* ℥i.; *Syr. Simp. Vin. Ipecac., aa.* ℥ss.; *Sol. Mur. Morph.* ℥ij.; *Aq. font.* ℥. *M.*

9 P. M. The report of this evening visit is in the words of Dr Struthers. Dr Bennett was not present. " For the last three

days the ligature has been pulled regularly at each dressing, with the view of at least accelerating its separation, but it has always firmly resisted the attempts at extraction. To-night, however, it suddenly yielded, when it was being firmly and steadily pulled at. The patient cried out that some one had struck her a severe blow on the belly, and she experienced considerable pain for a short time afterwards. The ligature was then entirely removed, having the same appearance as to loops and ends as the last one. No slough came with or after the ligature, but in the pus which preceded it were seen numerous flakes of dead tissue. Not a drop of blood followed the extraction of the ligature, neither was the latter itself tinged with it. Considerable pressure was made by pads over the iliac fossa and the umbilical region, so as to direct the pus towards the external opening. A little more force was used to bring away the ligature than is usually had recourse to in surgical practice; but it was thought to be very desirable that the ligature should come away, as the great discharge and irritation to which its presence apparently gave rise were evidently reducing the strength of the patient." This is the thirty-sixth day from the operation.

11th. 2 P. M. Amount of discharge from wound increased, amounting this morning to four ounces, of fœtid odour, mixed with shreds. Pulse 130, fuller; tongue clean; appetite improved; thirst less; bowels open once. Wine to be diminished to two drachms every two hours; omit lead and opium pills.

℞ *Opii* gr. i.; *Acid. Gallici* gr. ij. *Ft. pil.* One to be taken every eight hours.

℞ *Acid. Sulph. Dil.* ℥ij.; *Tr. Digit.* ℥iij.; *Sol. Mur. Morph.* ℥ij.; *Aq. font.* ℨxvj. A tablespoonful every three hours.

12th. 2 P. M. No material change. Bowels open once.

13th. 2 P. M. Cough has been very troublesome this morning; respirations still rapid and thoracic; expectoration tenacious, and slightly tinged with blood of a rusty colour. In right side of chest posteriorly, a distinct crepitating râle may be heard with the inspiration, and short sonorous rales with the expiration. Skin hot; pulse 140; tongue clean; bowels open once. Says that she is constantly hungry.

14th. 2 P. M. Much the same. No blood in sputa.

15th. 9 P. M. Less cough; pulse 120; bowels open twice; respiration still frequent and catching; no dulness on percussion could be determined. On left back, near spinal column in the middle third of chest, there is a space about the size of the hand, where both respiratory murmurs are harsh and exaggerated, with the vocal resonance of a shrill character. Crepitating rale has disappeared.

A blister to be applied to the left side early in the morning.

Oct. 20th. 2 P. M. Since last report there has been a marked improvement in all the symptoms. The blister rose well, and the cough and respiration have been easier. Mixture was not given. About one ounce of pus is discharged at each dressing. She has been eating animal food with appetite, and sitting up for an hour and a half daily. Last night she complained of severe tormina, increased on going to stool, and took one of the gallic acid and hyoscyamus pills. To-day the pain is still present occasionally. No tenderness on pressing abdomen. Bowels open three times last night and this morning. Blister nearly well.

To have a gallic acid and opium pill.

21st. 2 P. M. Has been taking vinegar and water three times a day for a few days.* With the exception of occasional tormina, doing well. Omit vinegar and water.

27th. Has had no tormina, and has been doing well since last report. To-day she was removed to another lodging in a carriage, under the care of Mr Crabbe, and bore the journey remarkably well.

28th,† 9 A.M. Expression of countenance much improved. Passed a tolerable night; had slight cough during the night, with no expectoration; chest examined with great care; respiration audible over the whole of the back, but more obscure on the right side inferiorly than on the left. Under the inferior angle of left scapula, over a space about the size of the palm of the hand, there was a distinct crepitating râle, loudest with inspiration. The vocal resonance here is also increased in intensity, but less so than formerly; and there is marked dulness on percussion. Anteriorly, bronchial respiration diminished. The inspiratory murmur is unusually harsh, but there are no anormal râles. Pulse 114; in other respects well. The wound discharges freely.

29th, 11 A. M. Passed a good night; discharge from wound slight; pulse 108; bowels open twice since yesterday. Absence of respiration over right back inferiorly, as high as lower angle of scapula; vocal resonance not increased; crepitating râle in left back diminished; little cough, very scanty expectoration.

℞ *Pulv. Digit.* gr. i.; *Sulph Quininæ*, gr. iss. *M. Ft. pil. Sumat* ii. *in die. Applicet. Emp. Lyttæ lateri sinistro* 2½ P. M.

30th, 11 A. M. Night somewhat restless, having experienced griping pains in the abdomen; bowels open at 9 this morning, since which the pains have diminished; tongue clean; blister was applied yesterday, but did not rise well; has no cough or expectoration; takes a breath without difficulty; respirations 36 in the minute. On sitting up, matter flows freely from wound.

* This had been given probably with the best intentions, but without the knowledge of the medical attendants, by a pupil who was assisting at the dressings.

† From this period the case was treated in consultation by Drs Alison, Spittal, Bennett, and by Mr Crabbe, whose attention throughout the case was most assiduous.

On pressing abdomen, an indurated, undefined swelling is felt beneath integuments immediately to the left and below the umbilicus. On pressure over the induration, the flow of matter is accelerated. About half an ounce of thick good matter discharged this morning. No tenderness; but feels slight pain on pressing deep.

November 1, 11 A. M. Has been doing well. At present feels easy; pulse 106, soft; tongue clean; respirations 26; on cough or expectoration. About two teaspoonfuls of good pus sponged from wound.

4½ P. M. About 1 o'clock, feeling excessively hungry, she took half a teacupful of arrow root, a small piece of roast beef, half a pint of strong soup, and a small piece of bread, without the nurse being aware of it. Immediately afterwards she experienced severe griping pains over the whole abdomen, followed by vomiting of the matters taken. She was seen by Mr Crabbe, who administered a few drops of the *Ol. menth. pip.*, which produced some relief, and ordered warm fomentations to the abdomen. After vomiting the pulse sunk to 80. At present the griping pains occur frequently with loud borborygmi. Abdomen somewhat distended, and generally tympanitic above the umbilicus. A curve of intestine is very prominent, and clear on percussion. Continued firm pressure on abdomen gives relief. Frequent vomiting of a greenish fluid. Pulse 100, soft. Cries for relief.

Dr Spittal, who was sent for at this time, administered five grains of opium, in the form of suppository.

2d, 12 M. Pain in abdomen only occasional. Had a good night. Still occasional sickness, bringing up a few mouthfuls of mucus. Tongue clean. An injection was given at 10 A. M., which has not yet come away. Pulse 98, soft. Injection to be repeated, with a little salt in it.

To have beef-tea and toast for dinner.

8 P. M. There has been no stool since 6 P. M. on the 31st. During the day there has been frequent retching, with discharge of mouthfuls of mucus. The coil of intestine noticed in the report of yesterday still prominent in abdomen, and tympanitic. Marked difference between fulness and distension above umbilicus, and flatness and collapse of abdomen below it. Pressure with points of fingers causes pain; but she is very irritable. Has had two injections, which have been for the most part retained, but no evacuation has been produced. Had nothing to eat; drank only a little coffee. Pulse 108; no shivering. Fomentations to abdomen.

℞. *Calomel.* gr. viij.; *Gum. Opii* gr. ij.; *Con.* q. s. *Ft. pil.* ij. *Sumat una stat. sumend.*

Four pounds of warm water to be injected slowly. If no motion by 12 o'clock to have a tobacco enema; six ounces of boiling water to fifteen grains of tobacco.

11 P. M. Injection of water was given about a-quarter of an hour

ago, and returned immediately, with much flatus and some small pieces of feculent matter. Uneasiness in abdomen has been relieved since. Had one of the calomel pills at 9 P. M. Pulse 100, of pretty good strength. Tobacco enema not given. Repeat the injection at 1 A. M., and again at 3 A. M., if bowels are not moved. Repeat calomel pills at 2 A. M. if requisite.

3d, 8 A. M. Slept occasionally during the night, and vomited twice. About 3 A. M. was very restless, threatening to get out of bed. Two injections have been given, also another pill, but no fæces have passed. At present countenance anxious; and pulse 120, smaller; tongue furred; great thirst; no appetite; still distension of upper part of abdomen, especially the knuckle of intestine formerly mentioned. There is slight tenderness on pressure.

Twelve leeches to be applied to the abdomen. Tobacco injection.

11 A. M.* The whole of tobacco injection, as formerly ordered, was not given. It was kept in ten minutes; produced considerrable collapse, with tremors and vomiting. Pulse now 120, small; great thirst; swelling of abdomen somewhat diminished, and knuckle of intestine shifted higher up; no tenderness. Turpentine embrocation to abdomen. Large warm water injection.

℞. *Acid. Hydrocyan.* gtt. xii.; *Aquæ* ℥iv.; *M.* ℥ss. every two hours.

8 P. M. Mixture has been given regularly, but always vomited shortly after. Some matters vomited immediately before this visit have a distinctly feculent odour. Two large injections have been given, which have been returned without fæces. Expression of countenance flushed and febrile. Thirst continues; pulse 140, of good strength. Still tympanitic swelling of upper part of abdomen, but more diffused; the knuckles of intestine prominent. She is occasionally seized with spasmodic pains of abdomen, and then the knuckles of intestine become very prominent and tense. Slight discharge from wound. Dr Handyside passed a probe a short distance into the sinus, which brought away a little blood. Apply eight leeches to the abdomen, to be followed by warm fomentations.

℞. *Gum. Opii* gr. iss.; *Calomel.* gr. iij. *Ft. pil.* Injection with ℥j. of tincture of assafœtida.

4th, 8 A. M. Passed a restless night; rather quiet about 5 A. M. Vomited frequently till about 4 A. M. Leeches bled well. Complained last night for the first time of throbbing pain in the calf of left leg, and swelling of foot and ankle. To-day the whole limb is swollen as high as the groin, and a slight degree of indu-

* Dr Handyside was now again invited to meet the other practitioners in attendance, as it appeared to them doubtful whether any part of these abdominal symptoms depended on the state of the wounds.

ration is felt in the course of the femoral vein. Pulse 120, soft, and rather smaller; vomited little since 5 A. M; matter ejected during the night more feculent; bowels not opened; tongue furred; thirst great. It was agreed to apply the electro-magnetic aura to the abdomen, which was done by Dr Handyside. Immediately after, she vomited about a pint of thickish brown-yellow matter of feculent odour. Pills and injections have been given as directed; fomentations continued.

To continue the pills every four hours. Flannel roller to be applied to abdomen. Sugar of lead solution, with opium, to left lower extremity to be applied hot.

5 P. M. Has taken two pills since last report. Vomited occasionally, the matter being stercoraceous; leg less painful and less tense; no pain in abdomen, except on sudden and deep pressure; pulse 140; tongue slightly furred; thirst diminished. Has taken at various times a little coffee, milk, and biscuit, which, however, for the most part were vomited.

To continue pills. An injection at 9.

10½ P. M. Pulse 140, small, and soft. Has vomited three times since last report; matter vomited small; less feculent; abdomen softer and less swollen; no pain except on considerable pressure; no stool; flannel roller has been applied since 5 P. M.; countenance anxious; cheeks somewhat flushed. An injection immediately, to be repeated at 4 A. M.

One pill now, and another at 5 A. M.

5th, 8 A. M. Has passed a quiet night, having slept a good deal. Has taken two pills and two injections, the latter having been returned without feculent matter. At 12 M. had a little wine, as she felt faint. At 3 A. M. took a small cup of coffee and a portion of rice biscuit, which were retained; no vomiting since 10 last night; pulse varies from 126 to 135, easily excitable, small, and soft; tongue furred; still thirsty, but less so since 3 A. M.; pain of limb less; abdomen less distended and bears pressure better.

℞ *Calomel.* gr. iij.; *Opii* gr. ss. *Ft. pil.* 1 *quartis horis.*

An injection some time during the day. A desert spoonful of wine every four hours. Fomentations to limb to be continued.

10 P. M. Vomited a little about 10 A. M.; again at 4 P. M. Matter not feculent. Has taken from time to time a little coffee, with bread. Wine taken returns, and apparently produces "heartburn." Has had two pills since morning. No complaint of pain. Is generally in a drowsy state, but easily roused. Upper, anterior, and lateral part of thigh more swollen. There is also a deep redness over a portion of the skin. Discharge from wound rather increased. She is thinner, and when she lies on the left side, matter from the wound flows over the left groin, occasioning erythematous redness. Had an injection of warm water at 3 P. M.,

returned without fæces; pulse 130, as before; abdomen tense and not so much swollen; loud borborygmi, heard at some distance from the bed. The stethoscope enabled amphoric resonance to be detected occasionally with these. To lie if possible on right side.

6th, 8 A. M. Between 10 and 11 last night had a warm water injection, which was returned in a few minutes without feculent matter. About 11 had a small beef-tea injection with forty drops of laudanum, which was retained. Had a pill at 11 P. M., and again at 4 A.M. Vomited at 2 and 7½ A. M.; matters ejected not feculent, but containing bile; abdomen less distended since last night, soft, and little or no pain on pressure; respirations decidedly show descent of diaphragm. There is still general enlargement of the limb, with an erythematic blush, extending from orifice of wound round to left hip, showing the surface over which the matter flows. She still lies constantly on the left side. Discharge scanty. Pulse 130, small. Thirst increased.

R *Ext. Colocynth.* gr. iv.; *Pulv. Scammon.* gr. iv.; *Ext. Hyoscyam.* gr. ij. *Ft. pil.* ij. s. s.

12¼ P. M. Lies a little on right side. Has slept at intervals during the morning, and taken a little coffee and bread, which has remained on the stomach. Complains of griping pains through the bowels. The aperient pills were retained.

8 P. M. About 2 P. M. had desire to go to stool. Nothing was passed, however, but felt sick and vomited a mouthful of matter, not stercoraceous. About 7 P. M. vomited half a basonful of dark-brown matter, decidedly feculent. At present pulse 140, of good strength. Tympanitic distension of abdomen disappeared; still loud on percussion, however, which is well contrasted with the perfect dulness below umbilicus; otherwise the same; no tenderness on pressure; swelling of leg and erythematous blush very much diminished.

Continue calomel and opium pills. To have beef-tea injection early to-morrow. One drachm of mercurial ointment to be rubbed into the axilla on both sides.

7th, 8 A. M. Vomited only once last night; matter bilious, not feculent; slept well; swelling of leg diminished; pulse 138, soft; otherwise the same.

Pills to be continued.

8 P. M. Had a beef-tea injection at about 10 o'clock, which was retained. Half an hour afterwards felt a desire to go to stool, but was unable to pass anything; then took the opium and calomel pill. About 11 had a teaspoonful of Dalby's carminative, which immediately induced vomiting. After this she felt very faint and exhausted. Three teaspoonfuls of sherry wine were then given in water. At mid-day a tablespoonful of yellowish fluid of feculent odour passed *per anum*. From this time till 5 P. M. small quantities of similar fluid, sometimes thick as cream, passed from the bowels, accompanied by considerable griping

pains in the abdomen. At 5 an injection of warm water was given, which was immediately returned with small lumps of feculent matter. She has since had two fluid feculent stools. Pulse 130, full; tongue clean, but dry; general appearance much improved; hungry.

℞ *Ext. Hyoscyam.* gr. x. s. s.; *Pil. Opii, si opus sit.*

To have coffee and bread, and in the night, arrow root.

8th, 11 A. M. Had short snatches of sleep during the night. There were, however, considerable griping pains in the abdomen. Since last report the bowels have been open twice, and loose feculent matter passed on both occasions, with small hardened portions of fæces. At present is suffering much from colic pains. The coils of intestine distended with gas, produce visible prominences on the surface of the abdomen. There are none of these, however, below the umbilicus. A small indurated mass may be felt, on the left of, and somewhat below umbilicus; matter discharged from opening more copious and of offensive odour; distension of leg gone, slight swelling of foot only remains; erythematous redness of left groin nearly disappeared; tongue slightly furred, rather dry; thirst; pulse 140, firm; appearance of exhaustion much less. Had a little coffee, bread, and a tablespoonful of wine during the night. An injection immediately.

℞ *Pulv. Opii*, gr. iss.; *T. Rhei*, gr. x.; *Syr. q. s. Ft. pil.* iv. Two for a dose. Hot fomentations to abdomen.

8 P. M. During the day had two stools, with small lumps of fæces. There have been tormina throughout the day, but less than formerly. To-night the upper part of abdomen is found still to be distended with air; pulse 144, firm; tongue furred and dry; thirst. Has had no nourishment, with the exception of a little coffee, which was again vomited. Skin hot, feverish.

To have draughts with ℥j. *Kali. Citratis et Vin. Antim.* gut. x. Draught at night, with *Sol. Morph. m.* xxv. Milk and water for drink.

Nov. 9th. 11 A. M. Passed a tolerable night; likes the effervescent draughts; vomited twice a slight quantity; is greatly exhausted and emaciated; tongue moist; less thirst; pulse 140, smaller. About two tablespoonfuls of soft feculent matter passed *per anum;* fever less.

Pil. Opii et Calomel. i. Milk and water for drink. Two teaspoonfuls of wine occasionally.

8 P. M. Has taken beef-tea and milk and water several times, but they have either been immediately vomited or retained a very short time. Between 1 and 4 P. M. had two stools, soft, but containing lumps of purulent matter and a little mucus. To-night pulse 140, thready; countenance anxious; eyeballs staring; ema-

ciation extreme. Has a sore on the left hip, the surface broken over the space of a five-shilling piece. Had one opium and calomel pill. Gums and mouth sore; spirits depressed, and expresses a fear of approaching death.

Beef-tea injection, with *Sol. Morph.* ʒj.; *Haust. c. Sol. Mur. Morph. M.* xxv. White-wine whey.

Nov. 10th, 8 A. M. Vomited much last night until 11 P. M. after which passed rather a restless night, with occasional sound sleep for short periods; pulse 150, small and more feeble. Had two drachms of wine six times during the night, and several times a little beef-tea. This morning had a wine-glassful of milk. Complains of mouth being hot and sore; countenance less anxious. Beef-tea injection was retained some time, and when passed was accompanied with much flatus. Sinapism was applied to epigastrium last night, but produced no relief. The upper part of the abdomen still distended. There are occasional tormina, preceded by loud borborygmi. Discharge from opening thin, fœtid, and tinging the bed-clothes blackish.

Repeat beef-tea injection with forty minims of solution of muriate of morphia; wine as before; beef-tea or milk for drink.

8 P. M. Passed the day tranquilly, with only occasional pain in abdomen. Appetite improved, asks for food; has taken four ounces of milk twice, and sometimes a few tablespoonfuls of beef-tea with a little bread. Two teaspoonfuls of wine have been given every hour; no vomiting. At present is tolerably easy; anxiety of countenance disappeared; voice more firm; pulse 130, firm; no motion; somewhat stronger. A beef-tea injection with forty minims of tincture of opium has been given and retained.

Lin. Sapon. c. Opio, to be rubbed on abdomen. *Haust. Anody.*

11th, 8 A. M. Passed a restless night from griping pains in abdomen and flatulency; vomited twice during the night; pulse 136; thirst; no stool; frictions on abdomen have produced no relief. Warm water injection.

8 P. M. During the day has vomited every thing taken; matters ejected are of a greenish hue, with flakes of mucus; bowels open slightly once, when about two ounces of feculent matter were discharged with several lumps in it; frequent desire at stool and tenesmus. At present pulse 140, of good strength; upper part of abdomen still distended and tympanitic.

℞ *Bismuth. Oxyd.* gr. x.; *Pulv. Opii* gr. ii. *M. Ft. pil.* iv. One every hour.

12th, 8 A. M. About one o'clock this morning the tenesmus and pain in abdomen have ceased; she had then taken two pills; has since been restless and vomited every thing taken; thirst; mouth very sore, with discharge of saliva; bowels not opened since last report; pulse 130, firm.

℞ *Ext. Colocynth.* i.; *Scammon.* gr. ij.; *Ex. Hyoscyam.* gr. i.; *Pil. Opii* gr. ss.; *Bismuth.* gr. iij. *Ft. pil.* ij. To be taken in four hours if the bowels are not opened. Fomentations and warm water injection.

7 P. M. Has slept occasionally during the day. Still continual vomiting of ingesta; has taken pills; no motion; abdominal pain and griping less severe; injection would not pass; pulse 126, weak; is very restless; hands and feet cold; countenance sunk; dark areola round the eyes. To have large warm water injection.

℞ *Pulv. Opii* gr. i.; *Bismuth.* gr. vj.; *in pil.* ij.

The warm water injection was given easily about 9, and was retained several minutes. When returned it brought away only one piece of feculent matter the size of a bean. Vomiting commenced shortly after. The coldness of extremities now increased. She complained of want of breath, *tinnitus aurium*, and frequently turned from side to side. Hot bottles were applied to the hands and feet, and they were also rubbed assiduously with warm flannels. Wine given freely, but was always vomited. Pulse small, weak, and thready. The pills were vomited. About 11 P. M. the restlessness was somewhat abated, and she expressed a desire to go to sleep. After lying some time, she requested the nurse to raise her up. This was done, when she fell back and expired, without a groan or struggle, at ten minutes after 12 o'clock, —the 70th day after the operation.

Examination of the body, November 14th, 4 P. M. Present, Drs Alison, Simpson, Spittal, Cowan, A. D. Campbell, Handyside, Bennett, and Mr Crabbe.

The body was greatly emaciated.

The *head* was not opened.

Chest.—The cavity of the pleura on the left side contained about one ounce and on the right about two ounces of serum. On the left side the pleuræ were adherent so strongly, that the lung was lacerated in removing it: this more especially between the inferior surface of the lung and upper surface of the diaphragm. On the right side the pleuræ were adherent at the apex, and over inferior lobe, but the adhesions were easily torn through.

The anterior margin of the upper lobe of the *left lung* was emphysematous; its posterior portion slightly engorged. On section it crepitated readily, and was healthy in structure. The inferior lobe felt dense externally, and on section the parenchyma was of a brownish red colour; splenified; easily breaking down under the finger, and portions of it placed in water sunk nearly to the bottom of the vessel. The two upper lobes of the *right lung* very emphysematous anteriorly, engorged posteriorly and inferiorly, but

otherwise healthy. The anterior half of the inferior lobe also emphysematous, with here and there indurated patches of chronic lobular pneumonia. The posterior half of this lobe was splenified throughout, as in the opposite lung. The lining membrane of the bronchi was healthy, here and there covered with mucus. Both lungs were small in volume.

The *heart* was small and pale. Its right cavities contained a firm dark coagulum. The valves and structure of the organ healthy. In the aorta there was a small but firm coagulum, partly decolorized.

Abdomen.—On reflecting the walls of the abdomen, a few chronic bands of lymph were torn through, uniting the opposite portions of peritoneum. The line of incision was firmly united except at its lower end, where a round opening existed about the size of a pea. On the peritoneal surface the union was marked by a dark blackish line, which was perfectly smooth and free from lymph. The omentum was thin and transparent, destitute of fat, and stretched tightly over the intestines. Its inferior margin adhered strongly to the visceral and parietal peritoneum, about an inch above the pubic bones. The omentum was cut through transversely about its middle, and the intestines below exposed, which were greatly distended with gas. These were found to be portions of the ileum, the coils of which were more or less adherent to each other, to the mesentery, omentum, and to the neighbouring organs by bands of chronic lymph. The adhesions were now carefully torn through, the gut liberated and traced downwards. Exactly five feet and a half from the cæcum, above and to the left of the umbilicus, the intestine was constricted by a band of lymph, as if a ligature had been tied round it. Above the constriction the gut was distended to about the size of the wrist; below, it was collapsed to the size of the little finger. Air could be pressed from the superior portion into the inferior, but the passage of water poured from above was completely checked at the seat of stricture. All the intestines above the stricture were greatly distended with gas; those below it, including the cæcum, colon, and rectum, were small and collapsed.

The cavity of the pelvis was blocked up, and separated from the general cavity of the abdomen by firm adhesions between the surfaces of the abdominal walls, the omentum, and knuckles of intestine. The peritoneum in this place, and especially in the left iliac hollow, was covered with a dense layer of chronic lymph. This lymph was about one-eighth of an inch in thickness, of a dirty greenish colour, mixed with black pigmentary matter, of great hardness to the feel, and cut under the knife like cartilage. With some trouble the united knuckles of intestine, and portions

of omentum involved were separated and drawn out. A cavity was thus exposed, about the size of an orange, situated between the uterus and rectum, lined throughout by the same dense, chronic lymph spoken of above. The anterior surface of the uterus was firmly united to the bladder by chronic adhesions. On the right side about one inch of the Fallopian tube and broad ligament remained, the extremities of which were closely united to the anterior wall of the cavity. On the left side the margins of the uterus and short pedicle of the broad ligament were so united to the walls of the cavity that they could not be separated. This cavity or pouch between the uterus and rectum communicated with the external opening, and was evidently the place where the pus during life had accumulated. A sinus opened into it superiorly, which on being traced upwards was seen to extend, above the descending colon, between the peritoneum and intestines as high as the diaphragm on the left side, where it terminated in a cul de sac, the size of a hen's egg. The sinus was about the size of the little finger, and lined throughout by the same dense, greenish lymph formerly noticed. The cul de sac was full of dirty-yellow offensive pus, and bounded by a portion of the stomach and left lobe of the liver internally; the diaphragm above and posteriorly; and the colon and spleen externally and inferiorly. It also was lined with dense chronic lymph.

The mucous membrane of the stomach and small intestines were healthy. The latter contained a clayey coloured soft feculent matter. The large intestines were empty. No appearance of inflammation existed at the constricted part. The internal surface of the rectum, extending seven inches from the anus, was intensely vascular, thickened, and inflamed. Six ulcers, varying in size from a sixpence to that of a shilling, were scattered over the diseased part of the gut, one of the largest being only an inch from its extremity. They were round in shape, and covered with a raised dirty greenish slough.

The *liver*, *kidneys*, and *spleen* were anemic, but healthy in structure.

The *femoral* and *saphena veins* could be felt hard and distended below the integuments. On dissection, these, as well as the external *iliac vein*, up to the point where it passed under the layer of lymph, in the left iliac hollow formerly described, were found to be obstructed by a coagulum of blood. This coagulum was adherent to the internal wall of the vessel, was partially decolorized, and of the consistence of soft cheese. This obstruction of the vessels ceased about three inches below Poupart's ligament.

Description of the tumours removed.

The tumour which involved the left ovary on being removed weighed nine pounds and a half. It was of an oval form, and measured thirteen inches in its longest, and nine inches and a half in its shortest diameter. Its envelope was composed of white, dense, and glistening fibrous tissue, having upon its external surface patches of various sizes, resembling chronic lymph. On its anterior surface might be seen openings, or ulcerations, varying in size.

The edges of these ulcerations were smooth and rounded, and of the same thickness as the fibrous envelope. The cut surface, which had been near the ligature, now presented a large opening into the tumour, through which numerous cysts, varying in size from a pea to that of a billiard ball, protruded. The incision into it, made during the operation, had opened up one of these cysts about the size of a cocoa nut.

Dr Bennett and Dr Handyside sent the tumour to the University Museum, where Mr Goodsir was forming a collection of these growths. By him it was minutely injected, and afterwards cut up, in order to show its internal structure. In dividing it, some of the internal cysts were found to be full of pus, whilst others contained the usual glairy fluid, common to these tumours.

Three preparations were made from this tumour, which may be seen in the museum, and which demonstrate the following facts.

1*st.* A portion of the fibrous sac, showing the attachment of numerous cysts varying in size and shape. A minute injection has been thrown into the arteries? and exhibits how richly the walls of the internal cysts are supplied with blood-vessels. One of these cysts, about the size of a small hen's egg, has its upper half fully injected, whilst the lower half is pale. The margin between the two is uneven but abrupt, and from the creamy and distended appearance of the cyst, there can be no doubt that it is full of pus.

2*d.* A portion of the fibrous sac, showing the incision which separated the tumour from its attachments. The opening is of an irregular form, about three inches in its longest diameter.

3*d.* A portion of the fibrous sac, showing the ulcerated openings formerly described.

The left ovary was about the size of a walnut. It was formed externally of a dense fibrous capsule, and internally of several small cysts. The natural stroma of the organ had entirely disappeared.

Remarks by Dr Bennett.

The question I have frequently asked myself is, was I warrant-

ed in proposing and urging others to perform the operation? The reasons that induced me to do so were the following,

1*st*, The youth and good constitution of the patient.

2*dly*, The disease was rendering her life miserable, and she earnestly wished the operation to be performed.

3*dly*, Death seemed unavoidable at no distant period. At least, it could not be anticipated that five gallons of fluid could be removed from the abdomen every three weeks, for any length of time, without injury to the vital powers.

4*thly*, Extirpation of the tumour appeared to be the only rational means of cure.

Again, on looking at the most recent statistics of the operation, published by Dr Atlee,* I found that abdominal section has been performed for ovarian tumours, real or supposed, 101 times. If we extract from this list cases where the operation was not completed, and those on the point of death before the operation was begun, we shall have ninety remaining, in all of which the tumour was excised. Of these sixty-two recovered and twenty-eight died. Thus, whatever may be thought of the correctness of the statistics, the broad fact still remains, that an ovarian tumour has been extracted from living women in sixty-two cases with perfect success. An acquaintance with the structure and mode of development of these growths must convince us that the only other possible mode of cure is by rupture of the cyst, and then only under particular circumstances. This I shall endeavour to show in a separate paper. At present it need only be said that this is an occurrence of extreme rarity, and yet, were we to be guided by the opinions of those surgeons who refuse to perform ovariotomy in any case, no other termination is to be expected, and the disease, notwithstanding the facts previously stated, is to be considered as irremediable by art. But every case must stand upon its own merits, and when all the circumstances of the one detailed are taken into consideration, the perfect diagnosis that was established, and the probability of a speedy fatal termination, (a probability afterwards rendered certain by the suppuration discovered to exist within the cysts), it must be granted that the operation, if admissible at all, was so in this instance.

An important practical question presents itself in regard to the treatment after the operation, on which there is a difference of opinion among the practitioners who witnessed the case and dissection, viz. how the cavity or pouch containing pus, between the uterus and rectum, and the sinus leading from it up to the diaphragm, were connected with the pressure made on the abdomen by the many-tailed bandages and compresses, in order to direct the

* American Journ. of the Med. Sciences, April 1845.

matter towards the external opening. Some have thought, that the pressure employed, instead of directing the matter downwards, may have forced a portion of it upwards ; while others are inclined to believe, that if the pressure, which latterly was much relaxed, had been more steadily continued, the formation of that cavity and sinus might have been prevented. The question is important, however, rather in reference to the proper treatment of future cases, than to the fatal event of this case ; for the symptoms of ileus and the death of the patient were obviously dependent on the constriction of the portion of ileum above noticed by a band of lymph which was at the distance of some inches from any part of the wound, and had no connection either with the cavity or the sinus.

Although various lesions were found after death, their origin and connection with each other will easily be understood from a perusal of the case, and of the *post mortem* examination.

Notwithstanding the unsuccessful termination of this case, I am still of opinion that ovariotomy is warrantable *when the diagnosis of the tumour is certain, and the other circumstances favourable.* The more frequently it is performed the more readily will experience dictate the avoidance of many errors that even now encumber the practice of it. When once recognised as a legitimate mode of treatment, and only performed in appropriate cases, there is every reason to hope, from the experience of the past, that the degree of mortality which has hitherto accompanied it will gradually diminish. Before such a result can be hoped for, however, it is necessary that our notions of the pathology and diagnosis of the disease should be improved. To these subjects I shall advert in a separate communication.

Remarks by Dr Handyside relative to the operation of Ovariotomy in general.

In the divided state of opinion existing among surgeons, relative to the propriety of undertaking the operation of ovariotomy, the profession may naturally look to me as responsible for the step taken in the case now narrated ; and expect a full statement of the reasons that led to the performance of that operation.

It is acknowledged, that the only justification and full warrant for such surgical operations as involve imminent peril and hazard, —(such as lithotomy, the ligature of a large artery, the operation for hernia, amputation through the thigh, ovariotomy, &c.,)—rest on this ground, that *their performance is essential to the preservation of the patient's life.* Thus, the patient in the present case had been much reduced by repeated tappings, the last three of which were found to be necessary during the very limited space of

about three weeks; and this was not a case similar to those described by Martineau, Portal, and others, which "amply attest the protracted duration of life in association even with this stage of the affection." But there are other important conditions which must coexist with the above requirement in order to warrant the step of a capital operation, such as that of ovariotomy. These are, *secondly*,—*the establishing a clear diagnosis* in a proposed case of ovariotomy, so as to determine accurately that the tumour is not malignant or of solid consistence, that it presents no serious adhesions, and that the uterus is not involved. *Thirdly*,—*that there is no hope of a palliative cure, or of a spontaneous declension in the severity of the urgent symptoms.* *Fourthly*,—that *there is no co-existent disease* or condition of the system such as contra-indicates capital operations in general. *Fifthly*,—that the patient and her relatives, on being made acquainted with the danger attending the operation, express their urgent request for its performance. *Sixthly*,—as to the *statistics* of the operation, I refer to the *Edin. Med. and Surg. Journ.* for April 1844, and to the *Monthly Journal of Medical Science* for February and May 1845, and January 1846; although these are *by no means unfavourable* as argument for its performance, still I would not make use of them as such, for these reasons: First,—that many cases in which the operation had been most recklessly and unjustifiably performed are included in these tables, which have thus perverted the statistical results, and made the operation appear in a less favourable light; and, Secondly,—because surgical statistics in general stand broadly forth against the performance of many universally recognised capital operations, for instance, some of the larger amputations, &c.

I am no advocate for the operation in cases such as those in which it has been generally had recourse to. Like many other surgeons, I had been previously prejudiced against and averse from the operation, (which aversion was in no degree lessened by the circumstance, that some Edinburgh surgeons had previously refrained from undertaking the operation in the present case); but, after a careful examination of the subject, I was forced to the conclusion, that it is the duty of the surgeon, *in certain rare cases*, to recommend and to practise the operation, and the case submitted to my care appeared to be one of those. This view I adopted only after having been informed of the opinion of those of my professional brethren versant in obstetric diagnosis, who concluded along with myself, that the tumour was non-adherent throughout; —that it was attached only by an elongated pedicle, the broad ligament;—that the uterus and peritoneum generally were healthy; —and that the fluid in the abdomen was either the result of the

irritation of the peritoneum from the presence of the tumour, or the produce of the tumour itself.

Such cases differ from those which generally come within the province of the surgeon, as, in arriving at a decision as to the propriety of the operation, he thus manifestly requires the co-operation of a skilful obstetrician, and hence a probable reason for the unfavourable reception that the operation had met with from the majority of operating surgeons—the tendency to which has been in no way lessened by the undeniable circumstance, that really little or no surgical skill is required for its accomplishment, and, consequently, that no credit for anatomical knowledge, or surgical dexterity, can accrue to the operator,—for in my opinion, the operation requires less of these qualifications than even the common operation of amputation through the leg.

I add that, while a diagnosis in most other cases requiring surgical operation can generally be at once and easily made by the surgeon himself,—much care, and repeated examination of the patient, are required in cases submitted to him for ovariotomy, as in the present case, in which he had not decided on the operation until he had made repeated examinations of the patient, both before and after, as well as during the last tapping. In this way a diagnosis was formed which has been amply verified, and which confirmed the original view taken by Dr Bennett.

Lastly, I must protest against the indiscriminate performance of the operation, and in such rare cases as the present, *but in such only*, I am quite ready to repeat it.

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