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To Dr. John M. Burns
with the authors thanks
ON THE
Signals

TREATMENT OF ANEURISM

BY

MANIPULATION.

BY

WILLIAM FERGUSSON, F.R.S.,
PROFESSOR OF SURGERY IN KING'S COLLEGE, ETC., ETC.

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TREATMENT OF ANEURISM

MANTON'S

WILLIAM MANTON, F.R.S.

Faint text, likely a preface or introductory paragraph, mentioning the author's name and the subject of the work.

LONDON

A. & C. BLACK, 7, BISHOPSGATE

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ON
THE TREATMENT OF
ANEURISM BY MANIPULATION.

BY
WILLIAM FERGUSSON, ESQ., F.R.S.,
PROFESSOR OF SURGERY IN KING'S COLLEGE, ETC., ETC.

Received Oct. 14th.—Read Nov. 11th, 1856.

THE term given to this paper means a particular manipulation of an aneurism, whereby the fibrin within may possibly be so displaced as, either in part or in whole, to block up the main artery on the distal side of the disease.

The pathology of aneurism seems to have reached its limits, and few, if any, points of great apparent importance have been enunciated in recent years. The practical bearings of the knowledge we already possess may be said to be still fruitful; and the modern history of the treatment of aneurism by compression shows, by its successful results, that the Hunterian doctrines, in the ordinary sense, should not be deemed final on such an important subject.

It is well known that, every now and then, the ordinary form of aneurism, as seen in the popliteal, superficial femoral, subclavian, and other great arteries, undergoes a spontaneous cure—a cure by natural means, as we say; and

every one who has given even slight attention to this subject knows how these cures are brought about, or are supposed to be so, by nature. The theory, if I may so call it, of the process of cure in such cases is so simple pathologically, and at the same time admirably demonstrative, that, in so far as I am aware, an objection has never once been raised to those views which are usually included under the "natural means" whereby this formidable disease occasionally disappears as it were spontaneously.

It is generally allowed that if the current of blood passing through an aneurism be in any way diminished in bulk or force, there is a tendency to a diminution in the size of the tumour, and to the cure of the disease; the latter being effected partly, perhaps, by the contraction of tissues, but chiefly by deposit of fibrin, which is more likely to take place under such circumstances than when the blood courses along in a full and impetuous stream. The results of the Hunterian operation have given ample proof on this subject; for the circulation through an aneurism has frequently been noticed after ligature of the main artery, yet in due time it has gradually and permanently ceased. Modern experience of the treatment by pressure has also amply proved that aneurism may be cured, even rapidly, by simply diminishing the force and current of the circulation through the main artery leading to the disease. The modification of the operation of Brasdor, as inculcated by Mr. Wardrop, was founded on this view; and it seems proved by the results of the operations performed by that gentleman, and those who have repeated his practice, that the application of a ligature on the distal end of an artery affected with aneurism, although it may not entirely stop the circulation through the disease, may so modify its force and volume as to permit those changes above alluded to, to take place, which lead to a cure.

So thoroughly is the pathologist aware of the fact that the cure of aneurism is effected chiefly by the deposit of fibrin, and thereby the blocking up of the cavity of the aneurismal sac, so that fluid blood can no longer flow

through it, that the treatment of this disease, whether by the physician or surgeon, is based upon such knowledge. Whatever is done seems, more or less, an imitation of nature's ways.

It is needless on this occasion to write at much length on such points; suffice it to say, that all plans of treatment, by starving, or giving such diet as might increase the fibrin of the blood, by ligature on the proximal or distal side of the disease, by pressure, or by electricity, have been founded on the necessity of aiding nature to accomplish this desirable condition.

For many years I have entertained the opinion that surgeons have not yet taken full advantage of all they know regarding the pathology and cure (by natural or artificial means) of this disease, and it is my intention in the present communication to this learned Society, to attempt a step in this interesting field.

It was my good fortune to receive part of my surgical education from the late Professor Turner, of Edinburgh, who was himself one of the most zealous of the pupils and assistants of John Thomson, so distinguished for his lectures on Inflammation and other subjects. Professor Turner had paid particular attention to the diseases of blood-vessels; and his 'Essay on the Spontaneous Obstruction of Arteries,' published in the third volume of the 'Transactions of the Medical and Chirurgical Society of Edinburgh,' sufficiently attests his industry and originality in this department of pathology. The lectures of Professor Turner were, I have no doubt, based on those of John Thomson, who was Professor of Surgery to the Royal College of Surgeons of Edinburgh. They were replete with interest, and particularly so on the subject of aneurism. I recollect, that in referring to the possible spontaneous cure of this disease, Mr. Turner dwelt on the probability that a layer of lymph from the inner side of a clot might by some accident get displaced, and being carried by the current into the artery on the distal side of the aneurism, might so impede or actually obstruct the circula-

tion in the usual course, as to send the blood on the collateral vessels, and so, by giving comparative or total quietude to the circulation in the aneurismal tumour, lead to a natural cure, just as pressure or ligature might do. To illustrate this doctrine Mr. Turner referred to the case of a gentleman who had a distinct and formidable aneurism of the subclavian artery. In spite of all remonstrances to the contrary, this patient would persist in his favorite amusement of swimming in the open sea. On one occasion, soon after his usual indulgence, a change was noticed in the tumour. I cannot now charge my memory with the particulars, but it is sufficient for my present purpose to state that the aneurismal disease underwent a spontaneous cure in this instance. Professor Turner cited the case to illustrate the possible cure of aneurism by the displacement of fibrin; for he supposed that in this instance such an occurrence had taken place during the movements of the arms in the act of swimming.

I remember being interested in this case as embodying an important pathological theory, and the leading features remained permanently on my mind. Many years afterwards, when in practice in Edinburgh, I was engaged in the treatment of a case of remarkable interest. A man about the middle period of life was, on getting into bed at night, suddenly seized with severe pain in the leg, which induced him to send for Dr. Russell, then in practice in Edinburgh. Besides the pain of which the patient complained, the only thing peculiar which that gentleman could make out was that pulsation could not be felt in the arteries, or in the lower part of the superficial femoral. The symptoms led Dr. Russell to conjecture that sudden obstruction had taken place in this vessel, and that the case was analogous to some of those which Professor Turner had brought under notice some years before in the paper above alluded to. The distress in the limb in this patient was considerable, and the case being thought remarkable, many men of note were asked to see it. Among them I may mention Sir George Ballingall and Sir Charles Bell. The progress

towards free use of the limb was slower than was in accordance with the patient's ideas, and he was induced to consult a charlatan, who applied a bandage to the foot and leg. This pressure speedily induced mortification, and the patient, in throwing himself back on his former attendants, was obliged to submit to amputation in the thigh, which, unfortunately, after all, did not save his life. All were interested in the examination of the arteries of the amputated limb, and it was with no small astonishment that a small aneurism was discovered in the popliteal artery, well plugged with a firm mass of fibrin. The limb had been, during life, a very stout one; there had been no suspicion of this disease, and after the patient was laid up, although the ham had frequently been examined, there was nothing perceived to induce a suspicion of the presence of this tumour. The artery above and below the disease was remarkably healthy in tissue; and the conclusion drawn from the history of this case was that, on the occasion of getting into bed, either a portion or the whole of the mass of fibrin had been so displaced as to obstruct the circulation in the arteries below, and thereby cause the pain or peculiar sensations of which the patient had complained, and that the spontaneous cure of aneurism was in favorable progress until the tight bandage had so obstructed the collateral circulation as to bring on mortification.

This case seemed to me an illustration of the reasoning adopted by my old teacher.

Some years after I was present at a consultation, which had been invited by a surgeon of great eminence and skill, on a case of popliteal aneurism, for the cure of which he proposed to tie the superficial femoral artery. The patient had been seen by this surgeon some three weeks before, and at that time the symptoms were so clear that he had indicated the proper course to be pursued, to which a willing assent had been given. The patient went home to arrange some affairs, and the surgeon, who had given him the customary advice, saw him on his return for the first time when the consultants were met. A brief history of the

case was given, and on examination of the ham by the surgeon chiefly interested, it was declared that the disease had disappeared. No one doubted that a spontaneous cure had taken place in the interval between the dates when the patient had been seen, and in my mind it served as another illustration of the doctrines above referred to.

These cases, with others, served to cause further reflection on my part on what I had heard from Professor Turner, and what I had learnt from the admirable writings of Mr. Hodgson on this subject.

One result of my reflections was that, although professional men had attempted to aid or imitate nature in almost all respects, there had been no suggestion or effort made to imitate the accident above alluded to; and that, if so-called spontaneous cures did in reality occur by accidental displacement of a portion of or the mass of fibrin, the hint had never been taken advantage of in any way. I was young when these thoughts first crossed my mind, and more diffident than varied experience has now taught me to be; but soon after I was in the yearly habit in my lectures of stating that possibly some imitations of the accidental displacement made purposely by the surgeon might result in a cure on the same principle and in a similar way. As a matter of course, I adverted to the extreme caution and care with which a surgeon usually handled an aneurism, but I stated that possibly a more vigorous manipulation might cause some displacement, such as described, and so bring about a cure. All this, however, I need hardly say, was stated to my pupils with great precautions.

The Hunterian operation being so generally applicable to all cases of aneurism usually coming under the surgeon's notice, I had few, if any, opportunities of putting the doctrine above propounded to the test; and I felt that it would be unwise to give it further publicity until I could produce some practical corroboration which might add some force and weight to a speculation which might be deemed startling and even dangerous in aspect. The course of time has brought about the desideratum in question, and

one of my principal objects in this paper is to lay the following particulars before this Society, so that the whole subject may be brought under the notice of the profession.

A. L—, æt. 40, a healthy man of average weight and bulk, recommended to me by Dr. Wright, of Halifax, Yorkshire, and the late Dr. Taylor, of Huddersfield, formerly of University College, came under my notice for the first time on January 29th, 1852. There was a tumour at the bottom of the right side of the neck about the size of a small orange, which presented all the ordinary indications of aneurism of the subclavian artery; the part of the vessel involved seemed chiefly between the scaleni muscles. The patient had noticed the swelling for about two years, but it was only recently that he had taken advice about it, and he had come to town to submit to any treatment which I deemed advisable.

It was evident that, in the event of any operation by ligature being determined on in this case, the vessel must be tied either on the tracheal side of the scaleni, according to the Hunterian doctrine, or on the distal side, in accordance with the views of Brasdor and Wardrop. Considering the latter proceeding as in most respects a last resource, and entertaining a conviction that ligature of the subclavian on the tracheal side of the scaleni is all but a hopeless proceeding, it appeared to me that this was as fair an instance to put my own views to the test as I was ever likely to meet with. Pulsation in the tumour was remarkably distinct, and it did not appear that much fibrin was present; yet any interference with the knife seemed so objectionable, that I thought the patient's chances less hazardous by such a project as my own than by any of the usual methods of practice.

Some of these views I had already decided in my own mind irrespective of this case, and it seemed to me that a fair opportunity had arisen to test them. Accordingly, on Saturday, January 31st, 1852, when this patient made a morning visit to my house, I put the experiment

to the test. Having ascertained that the pulsation in the radial, humeral, and axillary arteries was as distinct as usual, I proceeded with my trial. The patient was seated in a chair, and I placed the flat end of the thumb on the aneurismal tumour so as to cover the prominence; I then pressed until all the fluid blood had passed from the sac, and I could feel that the upper side of the aneurism was pressed against the lower. I now gave a rubbing motion to the thumb, and felt a friction of surfaces within the flattened mass. The movements were little more than momentary, but they were such as I had preconceived. The immediate effect was startling. I had hardly raised my thumb from the neck, when I perceived the patient's hand become remarkably pale, and a confused expression in his countenance. He started from his seat, exclaiming, "What have you done? You have made me tipsy!" and staggered as if about to fall. I placed him on a couch at once, and at the same time ascertained that pulsation had returned in the tumour, but that it had ceased in all the arteries below. I then felt convinced that by some change in the position of the layers or mass of lymph which had been in the tumour, the artery on the distal side of the disease had been suddenly blocked up, and the giddiness of the patient I attributed to the sudden increased rush of blood to the head which might be supposed likely under the circumstances. The patient never lost consciousness, and ere long rallied from the mental confusion into which he seemed to have been thrown. He soon complained of pain in the hand and forearm, such as he had felt two years before. In half an hour he was able to leave the house for his lodgings in the vicinity, and at that time his hand felt cold and benumbed. At five o'clock p.m. of the same day I visited him, and to my disappointment felt that pulsation had returned in all the vessels of the upper extremity. I then thought that possibly only a thin layer of fibrin might have passed against or into the artery below the tumour, and that it might have been washed aside, or displaced by the action of the heart or some movement of the arm. The

impression on my mind was so strong that the procedure in the morning had, for a time at all events, realised my anticipations, that I resolved to give it another trial. The next attempt I delayed, however, until the following day.

February 1st, 1852.—I manipulated the tumour in the way described, having first carefully ascertained that circulation was going on freely in the arterial system below. The immediate effects were much the same as yesterday. Pulsation ceased in all parts of the arm, the hand grew pale, the pain returned, and he felt giddy as before. On this occasion he was kept quietly on a sofa.

2d.—Pain in arm less, no return of pulsation, tumour as before.

3d.—9.30 a.m. Pain in arm has ceased during the night, throbbing in tumour seems less distinct, both in my estimation and that of the patient.

4.30 p.m. A slight tingle perceptible in the radial artery at wrist.

4th.—10 a.m. Radial artery full of blood, but no thrill in pulse to be felt. Tumour less in size, and throbbing much diminished. Has had considerable pain in arm during the night.

6 p.m. A feeble movement can be felt in the radial artery. Patient declares his consciousness of great change in condition of tumour, both size and throbbing being less.

5th.—11 a.m. Pulse at wrist scarcely so distinct as last night, tumour seems a little larger, but in other respects much the same.

6 p.m. Much the same. The tumour is tender to the touch at its distal end, where the artery may be supposed to be plugged. Arm and hand warm and perspiring.

6th.—6 p.m. Pulsation in radial can just be felt. Slight tingling pain in back of arm and numbness of joints of fingers. No pulsation to be felt in humeral artery, but when it is compressed the radial collapses.

7th.—6 p.m. Pulse in radial so distinct that it can be counted.

8th.—10 a.m. Pulse equally distinct as last night. For

the first time I perceive pulsation in an artery crossing the upper part of the tumour, probably the transversalis colli or posterior scapular, which feels larger than natural. Tumour much the same as for several days back. Throbbing, perhaps, less distinct. When moderate pressure with the finger is made on the tumour, the throbbing is a little more distinct than in the carotid artery of the same side, but it is more diffused. Patient states that he can now lie comfortably on the left side, which he could not do before, owing to the uneasiness which this attitude produced in the tumour and at the root of the neck.

9th.—10 a.m. Pulse at wrist distinct, that in transversalis colli more distinct than yesterday. Humeral artery full and pulsating slightly, axillary not to be felt.

10th.—Much the same as yesterday. Patient feels as if worms were moving about the shoulder and back of shoulder-blade.

19th.—From the 10th until this date matters have been much the same. Various professional friends who have been watching progress have considered both pulsation in tumour and its size have diminished. To-day Dr. Taylor from Huddersfield has seen the patient. He thinks that the throbbing in the tumour has manifestly declined, and that there is more change in this respect than in the size. With the stethoscope he finds that the sound is now louder in the left subclavian artery than in the tumour. Altogether, he is much struck and pleased with the change.

March 5th.—Up to this date there has been no material change, the tumour is decidedly smaller and somewhat harder, and the throbbing less distinct both to the eye and touch. Pulsation in arteries of the arm and forearm distinct; none to be felt in axilla. The artery traversing the neck and tumour remarkably distinct, and pulsation in it almost as forcible as in the tumour. Patient is now very desirous to go home, and is about to leave town. Since February 1st he has been kept chiefly in bed, and he has promised to abstain from all active occupation for some time to come.

8th.—Dr. Taylor writes from Huddersfield that he has seen Mr. L—, who had not suffered in any way from his journey. He states that “one is liable to some error in comparing from memory the size, &c., of the tumour now and in February. What I am sure of, however, is this, that the tumour is smaller, pulsates less strongly, expands less, and feels more solid than before L— saw you.”

On the 28th of March Dr. Taylor reports that the tumour is “distinctly smaller, and pulsating less; that there is little difference between the radial arteries at the two wrists; still no pulsation higher than the middle of the arm, and that the patient’s appearance is improving.”

April 8th.—Dr. Taylor reports that “the tumour is about the same in bulk, but no pulsation is visible except it be scrutinised from different points of view, and then it is barely visible. It is readily felt, however, but it is much more feeble, and there is very little expansion. It also feels firmer.”

About this time Dr. Taylor was unable, from the state of his health, to see his patients; and Mr. Clark, surgeon, of Huddersfield, who had taken great interest in the case, and had frequently seen it, writes, on the 29th of May,—“I have this day called on Mr. L—, not having examined him for upwards of a month. I see a decided improvement; the tumour is less, and feels firmer to the touch; there is still *bruit*, but less distinct than formerly. He almost daily experiences those creeping sensations round the shoulder something like worms. There is pulsation of the artery in the axilla, compression of which stops the pulse at the wrist; but it is exceedingly small and feeble, and I cannot trace it from the tumour. With regard to the size, it is now much less than it was when he saw you first, and he feels confirmed in this from the prominence of the clavicle, which, when he now places his hand on the part, is first felt, but before was concealed from the touch by the tumour.”

A few days after this I had a note from the patient himself, wishing leave to use his arm more freely than he had been permitted since his arrival in London.

On the 19th of September Dr. Taylor wrote as follows : " I am sorry to tell you that Mr. L— is very ill. Everything went on favorably until a fortnight ago, the tumour remaining much about the same in size, but the impulse felt decidedly less. At that time he was attacked with what he called rheumatism in the shoulder, attended with general feverishness. Three or four days afterwards he sent for me, when I found him with a dirty tongue, urine scanty and high coloured ; and complaining of pain coming on in irregular paroxysms, extending along the neck, chest, and scapula, but fixing as a centre in the shoulder-joint, and most dreadful in its character, sometimes gnawing and burning, at other times lancinating. It was not increased on pressure, or on movement of the joint ; but rising from his warm place in bed would bring it on. Pressure on the tumour produced no effect upon it. Since I first saw him he has continued much the same, excepting that the paroxysms of pain are more severe, and great suffering has much reduced his strength and caused loss of flesh, giving to the tumour apparently increased size, but I believe it is only apparently so."

In a few days more, death took place, seemingly from exhaustion caused by the great pain, which all Dr. Taylor's skill could not allay. A post-mortem examination was permitted, when it was found that the aneurism had partially given way at its lower and back part, whereby the axillary plexus of nerves seemed to have become a portion of the sac. The contents were solid fibrin of old date, and recently coagulated blood. The axillary artery was filled with a firm plug of fibrin. The mass, including nerves and surrounding cellular tissue, was about the size of a hen's egg.

Notwithstanding the fatal event in the above case, the history had impressed me strongly with the idea that all the physiological data for a cure had been present, and that it was only from the unfortunate giving way of the tumour that my anticipations had not been realised.

Another year elapsed ere I had a similar opportunity of testing my views again.

On the 4th of August, 1853, R. R—, æt. 44, a strong, healthy-looking sailor, came under my care at King's College Hospital. He arrived at the hour of visit, and I saw him almost as soon as he came to the hospital. Being afraid that he would be too late, he had run for half a mile to be in time, and was heated when I examined him. There was a tumour in the course of the right subclavian, similar to that in the case above described; and, after all the ordinary style of examination, I manipulated the swelling exactly as I had done in the previous case. Many of the pupils of the hospital were present at the time, and I had referred to the similarity of the two cases. My first view of the patient and the manipulation had all been so hurried, comparatively, that but little of his history had been obtained, and I had taken little notice of particulars either immediately before or after our first interview. Having further duties in the hospital I went on, giving instructions for the admission of the patient. Within half an hour a message was brought to me that this man was very unwell, and when I went to see him I perceived that he had become paralysed on the left side,—face, arm, and leg being involved. His mouth was twitched conspicuously to the right side, and he could not, without much effort, raise or move either left arm or leg. He retained his consciousness, but felt giddy and confused. Shortly after I had left him he had stooped to pick up his hat, which he could not hold, and he staggered in such a way as to induce the nurse to assist him to a bed. During the ensuing night he had made a partial recovery, and next day the following history was procured from his own dictation. Nine months ago he first perceived an occasional numbness in his right forearm, especially after using it. This gradually increased, and was accompanied by a dull gnawing pain at the inner and back part of the forearm, attended with a tingling sensation at the tip of the fingers. About five months ago he per-

ceived that he had no pulse at the wrist. He became aware of the presence of an aneurismal tumour only a few days ago, when he was examined at the Dreadnought Hospital Ship. Thinks that it has increased in size slightly since then. In the last four months has not had much vigour in his right arm. Within the last two months has occasionally felt in the left arm as he had done in the right, but remembered that there had been no stoppage in the pulse at the left wrist.

Up to the 20th of August there was little material change, excepting that the paralysis of the left side had diminished, and that pulse could be detected at the right wrist.

The main features remained much the same until the 6th of October. There had in the interval been peculiar sensations in the course of the collateral circulation, and for the last sixteen days the pulsation at the right wrist had ceased again. This day the tumour was again squeezed with the thumb as on a former occasion; but with no perceptible effect, except that for several days the patient complained of slight pain about the shoulder. On the 20th this pain had ceased, and as he had now regained to a great extent the use of his left side, he was sent into the country.

On the 15th of June, 1854, he was again admitted into King's College Hospital. Since he had left the institution he had for some time followed his occupation as a seaman. He now seemed in excellent health, but did not feel so vigorous as before his first illness. The tumour appeared much as when he left the hospital, and a slight throb could be perceived in the radial artery.

On the 20th of June an attempt was made to keep continued pressure on the tumour; but it proved so unsatisfactory that it was given up. The patient again departed from the hospital on the 26th of August.

He was again admitted in October of the same year; but for six weeks there seemed no perceptible change, and he was again discharged.

In August, 1855, he came to the hospital, and now the tumour had completely disappeared. There was not a trace of it to be perceived; a slight pulse could be felt at the wrist. The arm seemed much the same as its fellow, and on the left side the paralysis had gone off. The man seemed in all respects free from disease, and in excellent health.

Heretofore I have hesitated about bringing these views and cases before this Society, because I felt anxious to possess further illustrations and practical evidence; but, however imperfect the data are, I think it better for many reasons that they should now have greater publicity than heretofore.

To an attentive observer it must appear that many of the particulars of these two cases coincide, in most respects, with our preconceived physiological opinion, whilst certain peculiarities and phenomena cannot be accounted for by any knowledge which we already possess regarding the spontaneous or artificial cure of aneurism.

Any reasoning of mine on the subjects now before the Society may in some respect be deemed partial and prejudiced, and therefore I shall be as brief in this way as I possibly can. I trust, however, that I may be pardoned if I offer a brief commentary on the preceding part of this paper.

First, I shall presume that my premises as to the supposed natural cure of aneurism, the views entertained of the various methods of cure, and the occasional accidental cure of this disease, are generally admitted. The latter condition is that which most appropriately calls attention in the present question. It is a method of spontaneous cure which has been but rarely adverted to, and in so far as I am aware the idea suggested in this paper has never been entertained by any one, nor put to the practical test prior to the dates referred to, but by myself.

Notwithstanding the unfortunate issue, it seems to me that the first of these two cases carries out the physiological

data more clearly than the other. The fact of the obstruction of the circulation by the means described can scarcely be doubted. The gradual subsidence of the tumour, and the clear evidence as to the enlargement of the collateral circulation, seems to me as distinctly proved as many of the admitted facts regarding the Hunterian operation. The sudden cessation of pulsation in all the main arteries beyond the tumour, the gradual restoration of the pulse about the same date as after ligation of the subclavian, the distinct and gradual increase in size of one of the main collateral arteries at the root of the neck, and the feeling as of worms creeping about the shoulder, are features of imposing interest in this history. The sudden giddiness after manipulation of the tumour might be looked upon also as a specific feature; but on this point I have my doubts. If the view that I take, as to the sudden obstruction in the distal side of the tumour, be correct, it might be thought that the sudden gush of blood to the head, through the carotid and vertebral arteries, might readily account for the phenomena observed; yet it must be observed, that sudden deligation of the subclavian artery does not produce the effects in question; but on this subject I must request attention to some remarks a little further on. The persistence of the tumour, notwithstanding its gradual diminution, is also another feature which cannot, in my opinion, be readily accounted for. Possibly the deep cervical artery, or the first intercostal, may have arisen from the part of the artery involved; but supposing such to have been the case, I confess myself unable to give any explanation why throbbing should have continued so long; for my impression is, that a gradual deposition of lymph, and possibly coagulation of blood, should have at an earlier period completely obstructed these vessels.

The sudden giving way of one side of the tumour, which in my opinion led to the fatal result, may, I presume, be accounted for by the patient having inadvertently made more use of the arm than he should have done; for it will

be observed that the evil symptoms arose shortly after his own special request was made that he should be permitted to use the limb more freely than at any time since the manipulation.

The second case is of a more mixed character. Although the grand object of treatment may be supposed to have been fulfilled, the physiological data are scarcely so clear as in the preceding instance. Here it may be observed that the pulse at the wrist could not be detected at the time he came under treatment, and the remarkable fact noticed in the other case, of the sudden cessation of pulsation at all points beyond the disease immediately after manipulation, was absent. Yet that some strange effect had been produced by the manipulation can scarcely be doubted. The sudden hemiplegia of the opposite side of the body seems to me an exaggerated resemblance of the giddiness and disposition to fall forward which the other patient had experienced, and that the change was the effect of the manipulation I have no doubt, particularly on comparing the one case with the other in these features. If this sudden attack were irrespective of my interference, it was certainly a strange coincidence. Supposing it really to have been the effect of manipulation, it may be admitted as an alarming result; yet it is probable that the circumstance gives corroboration to my views, for it is possible that in the manipulation some of the broken-down fibrin may have been squeezed towards the mouth of the vertebral or carotid arteries, and so, being carried up to the brain, produced hemiplegia in the manner suggested by Dr. Kirkes in a paper read to this Society in May, 1852, wherein he supposes the probability of fibrin from the valves of the aorta being carried along mechanically in the blood having had this effect.

The gradual diminution in the size of the tumour in this case keeps up a resemblance to the other, and the ultimate disappearance accorded, in most respects, with my most sanguine anticipations. Here, however, as in the other instance, I must admit my inability to explain why the tumour should

have remained so long after the supposed immediate effects of the manipulations.

Whether these cases illustrate practically and satisfactorily the views which I have broached in the early part of this paper, I must leave others to judge. My own opinion is, that in many important respects they do. At any rate, no such data have, in as far as I know, been hitherto laid before the profession.

It may be said, in both instances, the remedy, granting it to have had its effect, was likely to have proved as bad as, if not worse, than the disease; but it will be observed that in one case the giddiness soon ceased, and that in the other the hemiplegia produced no evil results afterwards, having left no permanent mischief. Besides, supposing the practice to be tried in other vessels than those of the neck, no such evil need be apprehended; and admitting the worst view of this remarkable effect, it must be borne in mind that these two aneurisms were of a kind never yet cured by the Hunterian operation, and which, sooner or later, inevitably runs to a fatal end.