

**A case of intrathoracic aneurysm wired with Colt's apparatus / by Sir Anthony A. Bowlby and D'Arcy Power.**

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A CASE OF INTRATHORACIC ANEURYSM\* WIRED  
WITH COLT'S APPARATUS.

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MR. PRESIDENT AND GENTLEMEN,—We think the following case is worthy of record partly because the operation is rare, partly because the patient derived considerable benefit from it and was enabled to live for several weeks in much greater comfort than she had experienced for a long time, partly because her life was undoubtedly prolonged.

We are indebted to Dr. Seymour Gibbs for the history from 1907 to 1913, when she first came under our observation. In 1907 she was aged 46, married, and had divorced her husband. She came for advice on February 10th, 1907, complaining of pain in the chest, loss of appetite, flatulence, discomfort after meals, and constipation. The pain was referred to the lower half of the sternum, going through to the left scapula. It was worse after food, and sometimes prevented her from taking a deep breath. These symptoms were prominent throughout her illness, though they varied in intensity.

Nothing of importance was elicited about her family history, except that she had been married for nine years and had miscarried once at the third month three years after marriage. She was a handsome, well developed woman who had been a distinguished athlete, winning prizes for ski-ing, rowing, and 1 mile running races. She had lived for a time in Burmah, where she had been ill for two months with malaria. She said that she had always suffered from a weak digestion, and to cure this dyspepsia she was in the habit of taking long walks—preferably up hill—and of bicycling.

Her condition remained without material change during the years 1908 and 1909, during which time she took aspirin and bromides for the relief of the pain. It was not until August 10th, 1910, that any physical examination of her chest was made, and

\* The specimen is preserved in St. Bartholomew's Hospital Museum, No. 1551 (e).



it was then found that she had a soft systolic murmur over the aortic valves. She was complaining at this time of pain extending to the left shoulder and down the left arm.

On January 8th, 1911, pulsation was visible in the second left intercostal space near the sternum, and she had a cough, with expectoration of mucus, which was occasionally blood stained. The pain still continued, and was increased by the act of swallowing.

A skiagram of the chest taken by Dr. Walsham on July 6th, 1912, showed a sacculated aneurysm which contained a considerable quantity of blood clot. It sprang from the descending part of the arch of the aorta.

The patient was ordered to bed, was placed upon a low diet, and was given potassium iodide, but in spite of this the aneurysm had become more prominent by September 4th, 1912, and there was a faint systolic murmur over it. The pain was more severe, and was now felt in the left axilla. The expectoration was again blood stained, and the swelling itself was tender.

When the patient was examined on January 9th, 1913, the tumour had increased in size rapidly, owing to the erosion of the second, third, and fourth ribs with the corresponding costochondral articulations. This increase in size continued until March 23rd, 1913, the day on which she was admitted into the Florence Nightingale Home for Gentlewomen. Examination then showed a swelling with marked expansile pulsation situated on the front of the chest and occupying the position of the second, third, and fourth costal cartilages on the left side. These cartilages with the sternal ends of their ribs had undergone absorption.

There was no marked bruit to be heard over the swelling, and there was no tracheal tugging. The second sound of the heart was only faintly heard at the apex, whilst the aortic sounds were very faint, and the first sound was alone audible over the aneurysm itself. There was a free entry of air all over the chest.

The two radial pulses were equal in time, but the left was smaller in volume. The pupils were slightly dilated, the right being rather larger than the left. Both reacted sluggishly to light. The abdominal organs were normal. The feet and legs were healthy and free from swelling; the knee-jerks were normal. There was no difficulty in walking nor any change of gait; the bladder and rectum were unaffected. Wassermann's reaction was strongly positive.



*Operation.*—On March 25th, 1913, a semilunar flap was turned up over the most prominent part of the swelling. The sac was exposed and was found to be covered with œdematous connective tissue. It was thin in parts and did not seem to be filled with any uniform layer of clot. A wisp of wire,  $3\frac{1}{2}$  inches long, and containing 105 inches of dull gilt wire, presenting a surface of  $2\frac{1}{2}$  square inches, was introduced into the sac by means of Colt's apparatus. Blood spurted from the cannula in a full stream as soon as the trocar was withdrawn, but not more than an ounce was lost. The puncture in the wall of the aneurysm was closed by a single point suture of No. 1 silk introduced by a round-bodied, straight needle with a Hagedorn point. There was no subsequent escape of blood, and a collodion dressing was applied as soon as the incision in the skin had been closed with interrupted sutures of silkworm gut. Great care was taken at the time of the operation to see that the wires composing the wisp were not crossed before or during its insertion into the cannula of Colt's apparatus. The trocar and cannula were introduced at right angles to the surface of the sac, and were pushed on for a distance of 3 inches so that the wisp might be delivered into the cavity of the aneurysm where it could expand in the fluid blood, as experience in previous cases had shown that it was easy to leave the wisp in a mass of laminated clot where it could not spread. In this case, however, the wall of the sac seemed to be so thin that it could not have been lined by much clot, whilst the spurt of blood which followed the withdrawal of the trocar proved that its distal end was fairly in the blood stream, whilst the depth to which it had been driven made it probable that the wisp would be correctly placed.

The pulse, taken when the patient was under the anæsthetic and before the operation commenced, was 70; it rose to 88 beats a minute when the suturing of the wound had been completed. The patient speedily regained consciousness and suffered so little pain that it was unnecessary to give any opiate. The wound healed by first intention, the stitches were taken out on the seventh day and the patient left the hospital on April 19th, 25 days after the operation. At this time the pulsation in the aneurysm was almost imperceptible and the pain was greatly diminished.

On leaving the hospital the patient took a small flat of two floors with a garden. Her bedroom was on the upper floor and she



decided that she would no longer remain in bed. Throughout the spring, therefore, she went up and down a steep flight of stairs

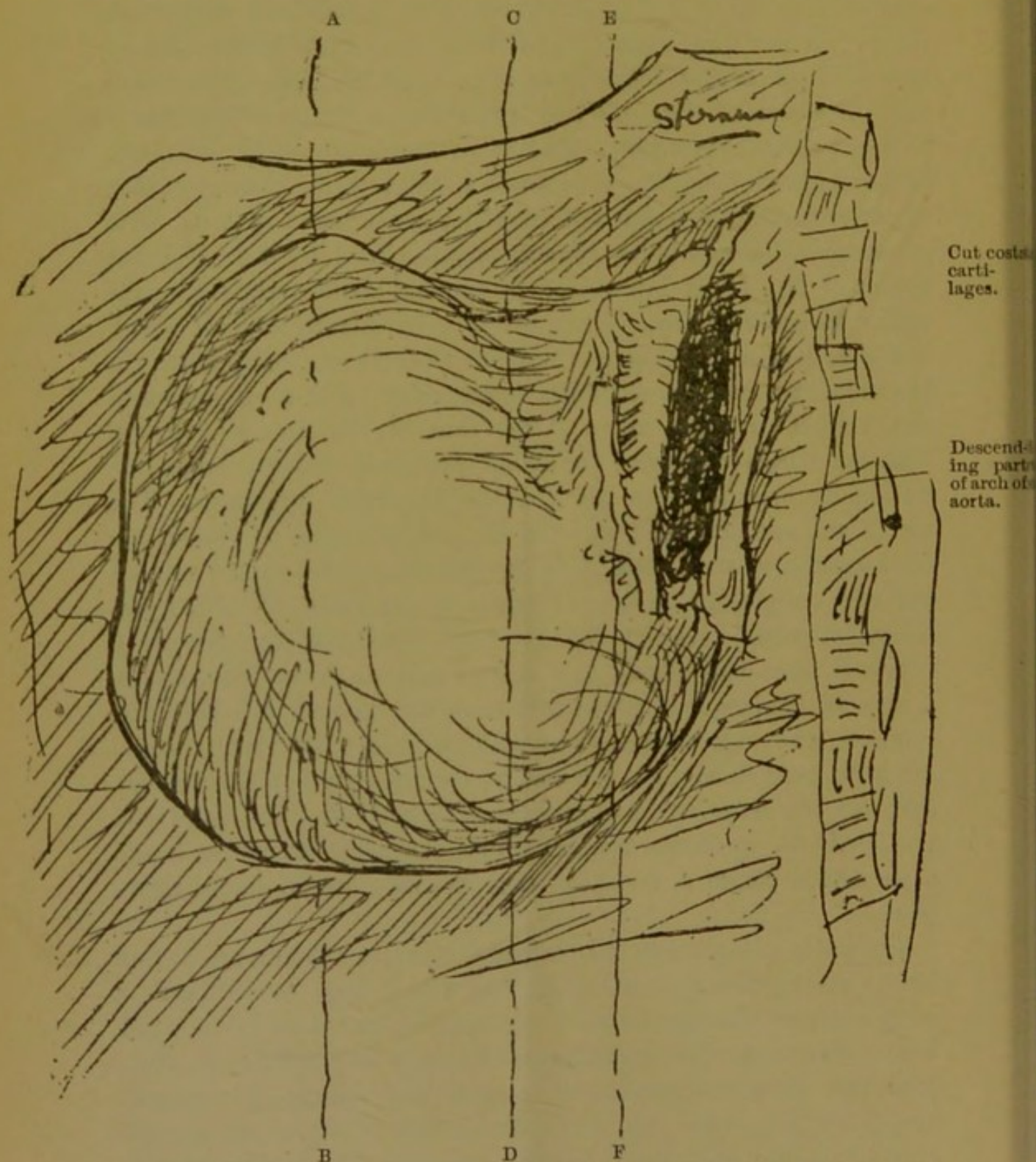


FIG. 1.—Posterior aspect of sternum and left side of anterior chest-wall, showing the aneurysm from within. Sections were made at the levels A—B (Fig. 4), C—D (Fig. 2), E—F (Fig. 3).

several times a day, and sat out in the garden from April 19th until June 19th. We visited her repeatedly during the whole of



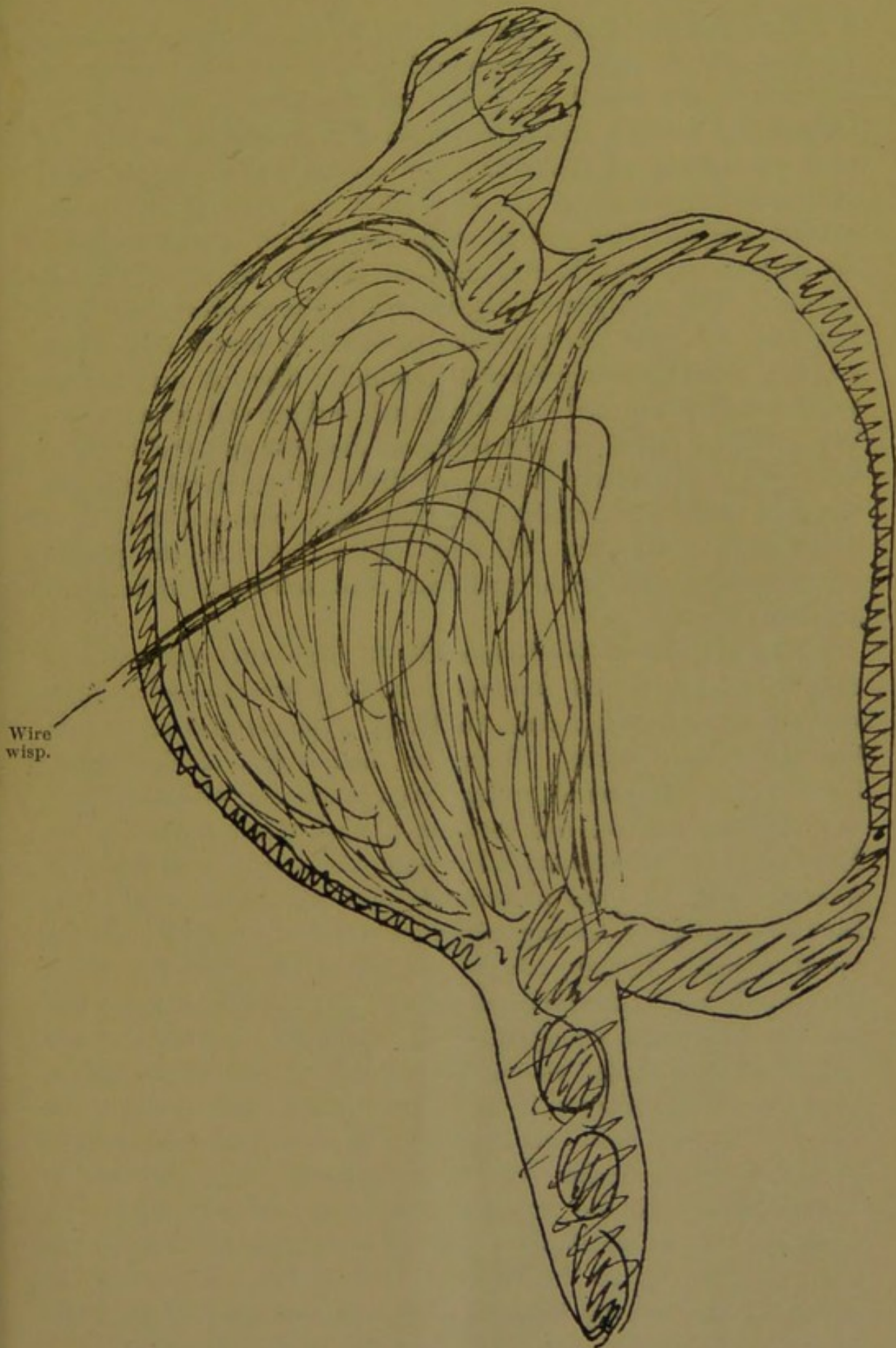


FIG. 2.—Sagittal section of chest-wall at the level c—d (Fig. 1), showing the sac of the aneurysm filled with laminated blood-clot in which are entangled the wires of the wisp. Some of the wires lay in the cavity, which was filled with fluid blood. The ribs are represented in section.

(7643)

b 2



this time and found that the pulsation in the aneurysm remained imperceptible, though she continued to have occasional attacks of pain which were bearable. It was observed that as the pulsation became less marked the patient suffered from stridor, which was more perceptible when she had seen several visitors or had been talking for some time. On June 19th the skin of the breast beneath the scar was noticed to be very faintly discoloured, but the patient was kept in bed and the effusion of blood did not increase. The aneurysm nearly doubled in size between June 30th and July 6th, this increase being attended by severe pain which was only relieved by injections of morphia. The left arm became swollen and useless, and there was much swelling and œdema in the left axilla. Serious leaking began on July 6th and the whole of the left side of the body became swollen and discoloured as low as the crest of the ilium, whilst the severe pain continued in spite of every effort to relieve it. On July 16th, at 6.20 P.M., the patient suddenly sat up in bed and fell back dead, seemingly without any accession of pain.

An examination of the body made 18 hours after death showed that the aneurysm had ruptured posteriorly into the mediastinum, which contained about a pound of blood. The pericardium and the left pleura were intact. There was half a pint of clear serous fluid in the left pleural cavity. The aneurysm with the heart, the left lung and the ribs covering it were taken at once to the Museum of St. Bartholomew's Hospital, where they were placed in formalin, but, by some unfortunate mistake, the heart and lung have been cut away, leaving only a portion of the aorta attached to the aneurysm. Enough, however, is left to show that the wall of the aorta is highly atheromatous without any calcareous plates, and that the rupture is a long slit. The aneurysm was saccular, and originated from the left side of the descending part of the arch of the aorta. The aneurysm in its hardened state was 5 inches across where it opened into the aorta. The cut surface measured  $4\frac{1}{2}$  inches by  $5\frac{1}{4}$  inches, the long diameter being vertical. It opened freely into the lumen of the aorta, and was filled with laminated clot, in which were interstices through which blood had been trickling up to the time of death. The thickness of the laminated clot was  $2\frac{3}{4}$  inches, and it was traversed in its whole length by the wisp of wire, which had expanded fully, except for a short distance near the wall of the sac. The amount and distribution



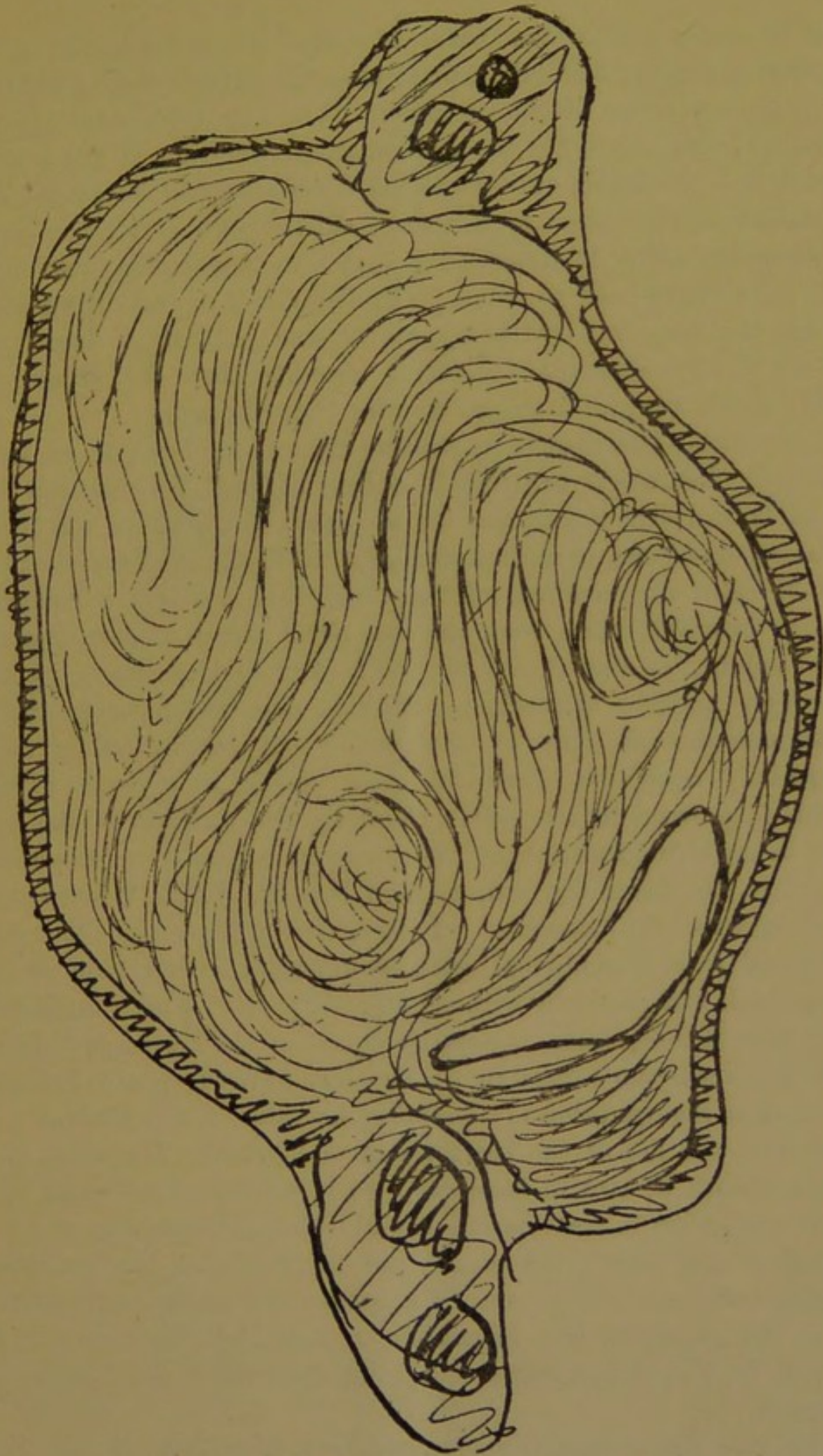


FIG. 3.—Sagittal section through the chest-wall at the level E—F (Fig. 1). It shows the sac of the aneurysm almost completely filled with laminated clot.



of the clot round the wires of the wisp showed that much effective clotting had taken place since its introduction, and apparently as a result of the operation. The aneurysm was in a fair way of being cured, but the atheromatous condition of the arterial wall had continued until it ended disastrously in rupture. The remains of the lumen of the aorta existed as a cavity filled with *post-mortem* clot. It measured 3 inches in longitudinal section by  $1\frac{1}{2}$  inches from back to front. The distal ends of one or two wires from the wisp lay free in its cavity, and portions of blood clot were firmly adherent to them, showing that the process of thrombosis was still in progress at the time of death.

*Remarks.*—The case is interesting from several points of view. Socially, because it occurred in a lady of good position, and it is well known that aneurysms are very rare in women of the better classes, or, indeed, in women at all, for, in Professor Eshner's series of 38 cases of aneurysm of the aorta, only one was a woman.\* Here, however, there were the two usual causes of aneurysm:—(i) syphilis, as was shown by the history and confirmed by the strongly positive Wassermann reaction and the character of the atheromatous changes in the aorta; (ii) strain, falling more especially upon the heart and great vessels, as a result of the athletic prowess of the lady. Clinically, the interest of the case lay in the slow formation of the aneurysm without its recognition until it had become a well marked tumour. This is accounted for because the diagnosis of indigestion prevented thorough physical examination, and because extensive destruction of the chest wall had occurred without any very great pain. Surgically the case is interesting, because it is one of the few cases of intrathoracic aneurysm treated by wiring which have survived sufficiently long after the operation to determine the value of the method. In this case the life of the patient was undoubtedly prolonged, and for a month or two in comfort. We think that if she could have been persuaded to treat herself as an invalid, and had been of a less sanguine disposition, the respite she enjoyed after the operation might have been still greater. The *post-mortem* examination showed that the aneurysm was in process of cure, but the arteritis, of which it was a symptom, had progressed to a fatal issue by rupture.

The case has a singularly complete history, so that we have had

\* 'Amer. Journ. Med. Sci.,' 1910, vol. cxi, p. 496.

no hesitation in bringing it under your notice this evening. It is by no means unique, for Dr. de Havilland Hall, in his interesting



FIG. 4.—Sagittal section through the chest wall at the level A—B (Fig. 1). It shows the erosion of the chest-wall, the sac of the aneurysm filled with laminated clot, and the space which was filled with fluid blood during life.

and valuable Lumleian Lectures, points out that many cases of intrathoracic aneurysm have been treated by the introduction of



wire or filipuncture; Professor A. A. Eshner has collected the records of 38 cases of aortic aneurysm treated by the introduction of wire into the sac and the passage of a galvanic current through the wire.\* In 19 of these cases death followed within a month of the wiring, the best result being obtained by Dr. Julius Rosenstirn,† whose patient lived 11 years and 8 months after the operation. One of Professor Eshner's patients lived four weeks, the other  $7\frac{1}{4}$  months. Similar records have been published by Prof. H. A. Hare,‡ by Dr. William C. Lusk,§ and by Dr. John M. T. Finney.||

\* *Op. cit.*

† 'Amer. Journ. Med. Sci.,' 1891, vol. ci, p. 55.

‡ 'Journal of the American Medical Association,' 1912, vol. i, p. 1088.

§ 'Annals of Surgery,' 1912, vol. lv, p. 789.

|| 'Annals of Surgery,' 1912, vol. lv, p. 661.