

No.	Name of the Surgeon who operated on the case	Reference to where the case is mentioned or detailed
16	J. B. Walker, -	A Descriptive Catalogue of the Anatomical Museum of the Boston Society for Medical Improvement, 1847-8, p. 31, No. 141
17	A. Mayer, - -	Walther's and Ammon's Journal der Chirurgie, Bd. 38. 1848, s. 178. Abildung, Taf. 1, Fig. 1-5
18	G. C. Blackman,	Blackman's edit. of Velpeau's Surgery, Vol. II., p. 392; and J. C. Hutchison in Amer. Medical Times, 1861, July 13, p. 21
19	G. C. Blackman,	<i>Ibid</i>
20	G. M. Jones, -	Medical Times and Gazette, 1856, Vol II., p. 86
21	J. C. Hutchison,	Transactions of the New York State Medical Society, 1861; and Amer. Medic. Times, 1861, July 13, p. 19
22	Stephen Smith, -	Ch. Phelps in New York Journal of Medicine, Vol. VI., 1859, p. 87
23	Blair, - -	Ballingal's Military Surgery, 4th edit., 1852, p. 298; and Essays of Dr. Munro (Secundus)
24	Potter, - -	American Medical Times, January, 1863, p. 17. Case twice operated upon
25	Potter, - -	American Medical Times, January, 1863
26	Heine, - -	Velpeau's Surgery, 1st American edit.

ART. VII.—*Two Cases of Penetrating Wound of the Chest.*
By J. H. WHARTON, Surgeon to the Meath and Cork-street Hospitals.

HAVING, in the course of the last session, brought under the notice of the Pathological Society a brief account of a case of penetrating wound of the chest, and exhibited a specimen which displayed the cause of death, I am induced, through the kindness

of Mr. Hamilton, Surgeon to the Richmond Hospital, who furnished me with the details of the case following, to place it, as well as my own, on record. The fact that it occurred several years ago, when Mr. Hamilton filled the office of Resident Pupil at the Meath Hospital, does not, as I think, militate against its interest, but, perhaps, rather increases it.

“James Quin, aged thirty-five, of a strong habit of body, generally temperate, healthy, was admitted into the Meath Hospital on September 24th, 1832, at 8 o'clock, p.m., in the following state.—He had a wound about an inch in length between the cartilages of the fourth and fifth ribs, on the right side, transverse, and communicating with the cavity of the chest, and round the lips of which there was slight emphysema. During each expiration a strong current of air rushed through the wound. Surface of the body cold, particularly the lower extremities; countenance dejected and pale; pulse scarcely to be felt; respiration short and hurried, thirty-four in the minute; great inclination to doze, though very restless; constantly calling for water from the great thirst; lay as easily at one side as at the other; stated that at 7 o'clock that evening whilst endeavouring to protect a woman from her husband, he was stabbed by him with a case knife (he did not examine the knife afterwards), and that he lost a considerable quantity of blood. The lips of the wound were brought together by adhesive plaster; he was put to bed, given a warm drink, and warmth was applied to the feet. A few hours after admission a stethoscopic examination was made, when it was found that respiration was audible over the whole chest; sound on percussion was dull, only over the angle of the right scapula. 1 o'clock, a.m.—Lies with greater ease on affected side, in which he feels a very sharp pain; surface of the body becoming warm; and the pulse is evidently more full, but still quick. 3 o'clock.—The pain and difficulty of breathing being increased, the pulse though still low was yet somewhat fuller, it was thought advisable to take away some blood, which was accordingly done to the extent of six ounces, with great relief, and he shortly afterwards broke out into a profuse perspiration over his face and chest. 9 o'clock.—On percussion anteriorly the chest is quite clear as far as the sixth rib, below which there is dulness. From the axilla downwards laterally, and also at the postero-inferior portion, over the anterior face of the lung, and all round the wound, respiration audible, and only mixed with an occasional sonoro-sibilant râle. On the side and postero-inferior portion it is wanting. No

bronchial respiration nor broncophony; no emphysematous crackling about the wound to-day as was observed last night. Pulse 130, occasionally intermitting. Ordered five grains of calomel and a quarter of a grain of powdered opium in a pill every third hour, and to be bled to sixteen ounces. He was bled; but after a few ounces were drawn away he felt faint, so that the vein was instantly closed. Pulse 120. 3 o'clock.—Pulse 122, full and bounding; skin hot; tongue white; face anxious, flushed, and with a yellow tinge; great oppression; breathing laborious and abdominal. The posterior half of the chest sounds dull, and respiration inaudible; no cough or expectoration; unable to rise in bed. On consultation it was determined to bleed him and continue the pills, and a few leeches after venesection if necessary. Venesection to near thirty ounces was performed before the pulse became softer. The wound was then tied up, after which he felt faint. 8 o'clock, evening.—Much easier; pulse 120, soft; ordered forty leeches to the side, and to continue the pills.

26th.—Countenance looks well; breathing much easier; passed a good night; has taken six pills; bowels confined; tongue white; pulse 120; no cough; less pain in side; on percussing the right side posteriorly and inferiorly it sounds dull; respiration scarcely audible anteriorly, and inferiorly dull; but respiration more audible, though feeble. Ordered thirty leeches to the side, to continue the pills, and to have an enema at bedtime if necessary.

27th.—Going on well; breathing easier; the mouth is now affected by the mercury; the pulse full, but less frequent, 105; tongue covered thickly with white fur; some cough. On examining the chest anteriorly, which alone was done, there is still dulness of the right side, below right nipple, with very feeble respiration and distressing sibilant râles round the wound, which is now open and discharging a bloody spuma. In consequence of this, fresh adhesive straps with lint were applied; much pain in the abdomen, and frequent purging affected him during the night. Last night forty more leeches were applied, the pills stopped, and a draught ordered, containing castor oil, one ounce, and tincture of the acetate of opium, twenty-five drops. 2 o'clock.—Purging and griping continued all day, and are still present; pulse full; lint wet with blood.

28th.—Still some purging, but slighter; has oppression of the affected side, with a sense of weight, and a feeling sometimes of heat, at others of cold; no pain, except a sting in the wound in

turning in the bed; respiration interrupted; and wheezing; no cough; lies most easily on the back; if he tries to lie on either side he feels for a few minutes pain in the wound; the lint is wet with blood, and some oozing from the sides; the chest, anteriorly, looks fuller than the opposite side; tongue loaded; pulse 105, full and strong; feels weak; dulness extends higher up, particularly along the side; posteriorly, respiration more feeble; the affected side is one inch larger than the other by measurement. 3 o'clock.—On consultation it was deemed advisable to enlarge the wound, with a view of giving exit to supposed fluid in the cavity of the chest; no blood or fluid escaped through the wound, nor was any obtained by the use of a syringe or introduction of a bougie far into the wound, or by position. During this operation the patient experienced inconceivable distress; his countenance became anxious and pale; much palpitation; respiration 44; pulse weak. This distress was much abated by the closure of the wound.

29th.—An hour after the operation felt weak, and complained of pain in the lower and back part of the chest, which he had not done before; suffered greatly from anxiety; passed a bad night; at present complains of pains in the side and tenderness; respiration still laborious, and not so evident at the affected side, which appears fuller; dulness on percussion, and feebleness of respiration, if anything, increased anteriorly; not examined posteriorly; respiration in opposite side puerile; some sibilant râles; pulse 126, soft. Last night at 8 o'clock, thirty leeches and the cupping glasses were applied to the lower part of the affected side. Ordered to take two grains of calomel and half a grain of opium three times before morning, provided no diarrhea supervened; in which case they were to be discontinued, and an enema of starch and opium administered.

30th.—Passed a very restless night, constantly changing his position, and getting no relief in any; felt great pain in lower and posterior part of right side; constantly covered with perspiration; respiration short, hurried, difficult, and loud, forty in a minute; pulse 114, and weak; manifestly losing strength, and greatly dejected. On consultation at half-past eleven o'clock, it was determined to make an opening in the lower and posterior part of the chest, which was accordingly done; and when the cavity was penetrated an inordinate quantity of bloody fluid rushed through the wound. This was as dark as venous blood, and did not coagulate on rest; it was forced out during expiration; the fluid not coming

so readily after a little, the tube of a stomach pump was introduced, and a quantity of fluid drawn off by the aid of an exhausting syringe; the patient experienced a good deal of anxiety and distress during the operation; but, though extremely weak, expressed himself relieved and breathed more freely; respiration feeble over the anterior surface of the thorax, accompanied with a moist crepitus superiorly, and an occasional sibilant râle; at the inferior fifth anteriorly, the respiration feeble, and accompanied with a rather dry crepitus, seemingly distant from the surface; percussion elicited a clearer sound; in the upper part of the axilla respiration was loud; inferiorly a sonorous râle, with a sound of two rough surfaces rubbing together, were heard; corresponding to this region the integuments were particularly tender. Half-past 9 o'clock, p.m.—Patient is asleep, breathing quick and short, without so much difficulty as before mentioned, and, without noise; is lying on affected side; appearance much improved; forehead and face covered with a tolerably warm perspiration. 10 o'clock.—He awoke from sleep; says he is much refreshed and easier. Ordered twenty-five drops of the acetum opii; to have a small proportion of wine and water during the night; no oozing from the wound.

October 1st.—Slept little during the night from a teasing cough; he perspired much; his thirst quenched; there was immense discharge from the posterior incision, so as to wet several double sheets. This discharge seemed to be serum slightly tinged with blood; he feels much easier, and has no pain, but is weak; pulse 120; very feeble respiration. 3 o'clock.—Tongue furred, dry; respiration is heard over the anterior part of chest with clear sound on percussion; posteriorly the large half of chest sounds dull. Ordered at night calomel, hippo, and opium, and an ordinary cough mixture.

2nd.—Spent both yesterday and last night very uneasily.

3rd.—The symptoms he had last night increased; he became very restless; his pulse very quick, small, irregular, and intermitting; surface of the body covered with a cold clammy sweat; face pallid; lips blue; a dark circle round the eyes, which were suffused, and looked prominent; at 12 o'clock commenced raving, and died at 7 o'clock this morning.

Post mortem examination.—A handle of a scalpel could be passed through the wound; found to be situated between the fourth and fifth ribs, into the cavity of the right side of the chest. The mammary artery was discovered to have been divided, and a small

coagulum filling up both divided extremities. There was a considerable effusion of lymph round the wound, external to the pleura, and the inferior surface of the lung was covered with lymph. The diaphragm was pierced, and the point of the knife had apparently grazed the liver—a spot having been seen corresponding to the wound ecchymosed and lymph. The lung was not wounded—the knife having passed between the middle and lower lobes. The diaphragmatic pleura was covered with effused lymph, and glued to the lung. There was also considerable interlobular effusion gluing the lobes together. A coagulum was found in the cavity of the pleura, and much serous fluid of a reddish colour. The lungs showed that bronchitis existed, but no parenchymatous inflammation.

The above details are so full, and the symptoms, progress, and termination of the case so similar to that of John Hart, which came under my own observation, that it is only necessary to note and compare their principal features, which I shall most readily effect by means of the following arrangement, and thus save the reader's time.

CASE OF JAMES QUINN.

Patient's age, 35 ; habits *generally* temperate ; wound 1 inch in length, between the cartilages of the fourth and fifth ribs, on the right side ; transverse in direction ; *unmistakably known* to communicate with the chest ; emphysema present ; on expiration, current of air through wound ; temperature of the body cold ; countenance dejected, pale ; pulse scarcely to be felt ; respiration short, hurried ; thirst constant ; decubitus at either side. Local treatment :—Lips of wound were brought together by adhesive plaster ; stethoscopic examination, made anteriorly and posteriorly ; respiration audible over the whole chest ; sound, on percussion, over the angle of the right scapula, dull ; sharp pain in affected side ; venesection and extensive leeching practised.

Patient placed under the use of mercury in a few hours after admission to hospital.

CASE OF JOHN HART.

Patient's age 22 ; habits *dissolute*, and habitually intemperate ; wound one inch in length, between fifth and sixth ribs, on the left side, the external margin in a line with the nipple, transverse in direction, not *unmistakably known* to communicate with the chest ; no emphysema ; no current of air through wound on expiration ; temperature, appearance of the countenance, state of the pulse, respiration, thirst—similar ; decubitus on the back. Local treatment similar—a compress and bandage having been used in addition so as to throw out of action the intercostal muscles ; no stethoscopic examination made, except anteriorly, over and above the bandage. In the latter situation, a very clear tympanitic sound was discovered on percussion, as if produced by pneumothorax ; respiration, audible over the whole chest anteriorly ; sharp pain in cardiac region ; no venesection practised, and a single application of a few, six, leeches made use of ; no mercury used until the fifth day after admission and receipt of the injury, and then, in consequence of the occurrence of a friction sound over the left

Bleeding from the wound externally on the third day after admission.

On the fourth day evidences of internal hemorrhage were so manifest, particularly from enlargement of the affected side, that the wound in the chest was incised for the purpose of giving exit to the contained fluid. As this operation was not successful an opening was made on the succeeding day into the chest, on the affected side, at its postero-inferior portion, when an inordinate quantity of bloody fluid was removed. Its colour was that of venous, and it had not the property of coagulating; temporary relief ensued; the patient survived the operation till the third day after its performance, and lived nine days after the accident.

anterior portion of the chest, in doses of one grain of calomel and half a grain of opium, at regular intervals; subsequently antispasmodics in cough mixtures were exhibited. Prior to this date Battley's liquor of opium was freely administered, and continued for four days; ice was largely and constantly prescribed, and iced beef-tea and iced brandy and water for diet. No bleeding from the wound externally till the sixth day after admission, as shown by the dressings remaining free from blood stains. No evidence of internal hemorrhage till seventh day after admission, when, in consequence of a violent attack of delirium, similar to delirium tremens, the patient rushed out of bed; respiration, which was up to this time comparatively tranquil, became hurried, and the dressings were freely stained with blood; dulness by degrees replaced the clearness which had previously existed along the left axillary region, and anteriorly, rendering it but too evident that that side of the chest was becoming more and more occupied by the presence of a fluid, by means of which the heart was gradually displaced towards the right side. All medical aid having proved abortive, it was determined to perform the operation of paracentesis; forty-eight ounces of fluid, precisely similar to that removed in Quinn's case, were drawn off, but without relief. The patient survived the operation three and a-half hours, and the accident fourteen days.

Post mortem Examination.

CASE OF JAMES QUINN.

Direct communication of external wound with the internal; the right mammary artery was divided.

Coagulum found in the divided extremities of the vessel.

Considerable effusion of lymph round the wound external to the pleura, and on the inferior surface of the lung. The lung

CASE OF JOHN HART.

Indirect communication; the trajet of the wound passing in a direction downwards and inwards, anterior to the cartilages of the sixth and seventh ribs, which were divided near their junction with the sternum; the mammary vessels of the right side being necessarily severed; no trace of coagulum in the vessels, which were empty and flaccid; no lymph round the wound or elsewhere, except on the postero-inferior surface of the sternum, and this deposit was soft, in small quantity,

was not wounded, but much serous fluid of a reddish colour was found in the cavity of the chest, and also a coagulum.

and presented the appearance of a semi-solid pus. The lung was soft, engorged, and collapsed, and neither it nor the pericardium was wounded; a considerable amount of fluid of the same character as that mentioned above, and a small clot, of a dark colour and soft consistence, was found at the bottom of the fluid.

The difficulties attendant upon the management of penetrating wounds of the chest, with accompanying hemorrhage, are so well known to surgeons, that even were sufficient space at my disposal, it would be unnecessary to refer to them, at least upon the present occasion, I shall, therefore, content myself by alluding, and that with the utmost brevity, to two points, which are, I think, worthy of more consideration than they have generally received.

First.—That sufficient importance is not paid to the necessity of maintaining the blood in such a condition as to favour its coagulating property. If this view be at all correct, it will follow that great caution should be exercised in the use of such means as will be likely to diminish to any appreciable extent its healthy proportion of fibrin. Hence I regret that in the management of this case I had recourse to the exhibition of mercury even to a limited extent. Secondly.—That the same remark holds good with reference to the nervous, circulating, and respiratory systems, the *due* control of which constitutes in itself a not unimportant means of checking hemorrhage, and of controlling the tendency to inflammatory action. Accordingly, in the case of John Hart, opium was so administered as to produce a continuously seminarcotic state for four days, during which period the patient was wonderfully free from any symptoms of an untoward nature. I was induced to have recourse to this drug, and to place my chief reliance upon it, from the marked benefit which followed from its exhibition in a case of accidental rupture of the lung, with pneumothorax and hemoptysis, which terminated favourably; and from a consideration of its well known efficiency in certain lesions of the viscera, where the object of the surgeon is to obtain rest of the organ implicated.