Case of aneurism of the superior mesenteric artery, which opened into the duodenum twenty-two months before death, causing repeated hæmatemesis / by W. T. Gairdner.

CASE OF ANEURISM

OF THE

SUPERIOR MESENTERIC ARTERY,

WHICH

OPENED INTO THE DUODENUM TWENTY-TWO MONTHS BEFORE DEATH, CAUSING REPEATED HÆMATEMESIS.

BY

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[FROM THE PROCEEDINGS OF THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH, DEC. 5, 1849, IN THE MONTHLY JOURNAL FOR JANUARY 1850.]

Dr W. T. Gairdner read the following communication on a case of aneurism of the superior mesenteric artery.

M. C., æt. 26, servant, was admitted into the Royal Infirmary, under Dr Douglas, January 4, 1848. During the twenty-four hours previous to her admission, she had brought up, by vomiting, large quantities of blood, on six different occasions. The vomited matter consisted of clotted blood, with a good deal of fluid, and might have amounted in all, according to her statement, to half a gallon. The vomiting had ceased on admission.

She dated her complaints from the summer of 1847, when she had jaundice, accompanied by some sickness and vomiting, and by pain across the chest and back. She was not confined to bed; but became afterwards sensible of diminished strength. About six weeks before admission, she had suffered from the prevailing influenza, during the progress of which she frequently had vomiting of a sour acrid fluid, sometimes to the extent of half a gallon at a time. The vomiting occurred usually in the evening, after dinner; never after breakfast. She also suffered from constant pains, extending from the back to the pit of the stomach, and from a feeling of tightness in the chest, especially when she had on stays, or heavy clothing. She had little or no cough at any period of the complaint.

She was admitted in a state bordering on syncope; the surface was very pale; the circulation hurried. The slightest exertion seemed to cause fainting, accompanied by the peculiar pain in the abdomen from which she had been suffering. When seen next day, she had vomited about half a pint of blood since admission; the blood was coagulated. She fainted at the time of the vomiting. She was free from sickness; but there was tenderness in the hepatic

region, with slight extension of the dull percussion. The breath fœtid ; the tongue with a slight grey fur ; circulation hurried. (Digitalis and ipecacuan.) She continued in the same state for twenty-four hours more, unable to rise without a feeling of vertigo. The pulse, on the 6th, was 108, soft and quick. From this time to the evening of the 7th she improved steadily. On the evening of the 7th (third day from admission), she had repeated vomitings of blood, preceded by headache and sickness. The quantity vomited was not exactly known. She was more anemic than before, and the epigastric tenderness was more considerable, but chiefly on the right side. A *slight pulsation of the abdominal aorta* is noted in the report, and an impairment of percussion on the right side of the epigastrium. From this period (four days after admission) she had no return of any bad symptom ; and, by rest and careful regimen, she became rapidly convalescent. She remained in the house till February 7th (one month), when she was dismissed cured. After this, I saw her several times in the surgical house. She had been admitted on account of a weak ulcer on the back of the left leg, which usually bled at the menstrual period, and was slow to heal. She was still pallid and languid, and suffered from dyspeptic symptoms, with amenorrhœa, but had no return of vomiting. She was sent out with her ulcer nearly healed. I heard nothing more of her till I learned that she had fallen down suddenly, in the street, and had been found by the officers of police in a fainting state. She died before she could be removed to the hospital, whither the body was immediately brought. This was on November 28, 1849 (twenty-two months from first occurrence of hæmatemesis).[1]

The dissection was performed next day (November 29th).

The body was pale, but not at all emaciated

On making the first incisions through the parietes, the cause of death was at once revealed in a large quantity of clotted blood, which was found in the peritoneal cavity. The coagulum, on being removed, weighed 2½lbs. ; so that I think considerably above 3 lbs. of blood must have been extravasated.

The thoracic organs were healthy; but the left side of the heart was small and firmly contracted; and the thoracic aorta was also small.

The great abdominal glands were all healthy, but very anemic. The liver and spleen were bound up to the diaphragm by rather loose but dense adhesions ; thus fully accounting for the tenderness during life in the left hypochondrium. In the angle between the lower part of the duodenum and the head of the pancreas, there was found a ragged lacerated opening through the serous membrane. The edges of this opening were not all thickened. The pancreas was normal in size and structure, but appeared to be displaced forwards and somewhat stretched over a small tumour, situate behind it, on the front of the vertebræ and great vessels. To ascertain the nature of this tumour, the biliary ducts (which passed very close to it at its right side, but had apparently no connection with it) were cut across, close to the liver. The aorta and vena cava were then divided below the diaphragm, and a considerable portion of these vessels, with the stomach, duodenum, and pancreas, were removed *en masse*.

Being strongly prepossessed with the idea that there had been some ulceration of the stomach, giving rise to the profuse vomitings both of blood and alimentary matters to which she had been subject, I slit open this organ, and examined every part of the mucous membrane with great care, but without discovering anything abnormal. I then continued the incision into the duodenum, and carefully looked at the mucous membrane, at first with a similarly negative result. The coats of the intestine, however, were at one point very

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[1] Since the above was written, I have learned that she was, for a few days, in another ward in the house, in July last, affected with deep jaundice; and also that she had led an irregular life, having, at a previous period, suffered under syphilitic ulceration of the ear.

thin, and slightly ecchymosed ; this part was found to be in the immediate neighbourhood of the before mentioned opening through the peritoneum, which had given rise to the fatal bleeding. On more minutely inspecting the mucous membrane, I found a very small ecchymosed spot, slightly elevated, and perforated in the centre by a minute opening, from which a very little bloody fluid could be squeezed by gentle pressure. A moderately fine probe could be passed a line or two into this opening, but was there arrested ; and no attempt was made with a finer instrument. This cicatrix was situate about two inches lower in the gut than the opening of the biliary vessels, and very close to the site of the external peritoneal opening.

On slitting up the aorta from behind, it was found to be, like the part of the vessel examined in the thorax, nearly, if not absolutely, free from disease or deposit. The opening of the superior mesenteric artery, however, was a little irregular in form; and, on passing a probe through it, a considerable dilatation was discovered in the line of the vessel, occupying the whole first portion of its trunk, and corresponding in situation with the tumour above described. A little further manipulation enabled me to push the probe downwards, through the ragged opening in the peritoneum.

The sac was now divided by an incision to the left of the mesial line, passing through the peritoneal opening. It was seen to be composed of a thick and strong fibrous cyst, slightly oval in form, and not larger than a hen's egg, somewhat flattened antero-posteriorly, and with its long diameter in the axis of the artery. This cyst had evidently ruptured at its lowest point, and the blood had made its way through the cellular tissue between the coats of the duodenum, breaking up the muscular coat into two layers, and finally perforating the serous coat by a ragged opening. The sac contained a number of irregular and half-decolorised coagula.

The condition of the coats of the mesenteric artery itself, at the point of origin of the aneurism, was not investigated, the parts being sent to the University for further dissection and for preservation. The continuation of the artery was also not examined. The cœliac axis was healthy, but perhaps rather larger than usual ; the other branches of the abdominal aorta appeared all normal. The splenic vein, which lay close upon the side of the tumour, but, as far as could be observed, without any communication with it, was somewhat dilated, and contained a very firm coagulum of decolorised fibrine.

It was now evident that the disease was an aneurism of the superior mesenteric artery, which had opened primarily into the duodenum, giving rise to very copious vomitings of blood, twenty-two months before death ; that this opening had become entirely or nearly closed, and that death finally took place from a second opening, not far from the first, into the peritoneal cavity.

In this view of the case, the whole of the collateral symptoms become of easy explanation. The occasional jaundice was evidently owing to the pressure exerted by the tumour, when at its extreme point of distension, on the biliary duct ; while the sickness and vomiting of sour matter, after a full meal, so evidently relieved after each hemorrhage, may have been owing to a similar pressure on the duct of the pancreas interfering with the duodenal digestion. The nearly constant pain produced by exertion, and the feeling of tightness and oppression caused by the use of stays, or any other article of dress which compressed the abdominal organs, may be obviously explained by the injurious pressure effected in this way on the tumour, and on the great blood-vessels which lay beneath it. The tenderness of the epigastrium and right hypochondrium were probably not directly connected with the deep-seated lesion, and rather seem to have resulted from the inflammation in the serous lining of the liver, which produced the adhesions found after death. The slightly increased size of the liver, as shown by the extended dull percussion in the hypochondrium, probably was caused by the obstruction of the vessels and ducts of the organ. The lassitude, diminished strength, anemia, and amenorrhœa, were evidently owing to the great and repeated loss of blood ; and obstinate continuance of

the anemic state during the long interval between the attacks of hemorrhage, may have been caused by the imperfection of the digestive process. The existence of pulsation in the epigastrium needs no explanation.

At the same time it is to be observed, that the whole of the phenomena under observation at the time of the first attacks of hæmatemesis, were such as to lead directly to the supposition of a chronic ulcer of the stomach. The comparative frequency of this disease in young females, the whole progress of the case, and, finally, the apparent cure, by simple remedies and careful regimen, were calculated to confirm this diagnosis ; and even on now reviewing the recorded facts of the case, I do not think that any of the prominent symptoms can be considered as opposed in any way to this opinion. The following symptoms, at least, appear sufficiently equivocal in character :—

1st. The hæmatemesis. Profuse hemorrhage, as a consequence of chronic ulcer of the stomach, involving the coronary artery as one of its branches, has been repeatedly observed, as in the cases of Dr Craigie[1] and others.

2d. Sickness and vomiting after eating, with dyspeptic symptoms of various kinds, are nearly constant phenomena in chronic gastric ulceration.

3d. Dull pain, increased by exertion or repletion, with tightness and oppression at the epigastrium, are equally characteristic symptoms of the disease in question.

4th. Anæmia was the obvious consequence of the loss of blood ; the tendency to syncope, the lassitude, and the diminished strength, were equally so.

5th. Lastly, in the category of the equivocal symptoms, I must also place the slight epigastric pulsation which existed in this case, unaccompanied by any appreciable tumour, from which its true nature might have been inferred. The extremely frequent occurrence of such a pulsation, in connection with dyspepsia, would of itself have been, in the present instance, a sufficient reason for the absence of any suspicion ; but the probabilities in favour of its being what is so well known as "nervous pulsation" of the aorta, were greatly increased, when it is considered that the whole arterial system presented the vibratile pulsation, which so often follows profuse hemorrhage.

There remains, then, of the actually observed symptoms, only the jaundice. Now jaundice is, to say the least, far from being a characteristic symptom of aneurism of the abdominal vessels, while, in the present instance, the tenderness in the hepatic region and extension of the dull percussion, seemed to point to an accidental affection of the liver itself as its source.

But is there any symptom, or collection of symptoms, which, in another case similar to the present, might lead to the establishment of an unequivocal diagnosis ? On reviewing the whole case, it appears to me that the following points merit consideration :—

1st. The stethoscope might have revealed a bruit, single or double. If the sound had been double, the nature of the case would have been no longer doubtful ; but if a single sound only had been heard, as is commonly the case, it would have been open to question, whether it was produced by an aneurism, or by some other deep-seated tumour pressing on the aorta. Nay, in the pulsation which is independent of organic disease, I have occasionally heard a distinct bruit, on applying moderate pressure with the stethoscope over the vessel.

But, farther, there might have been no aneurismal bruit. This peculiar phenomenon depends, in great part, upon the dilatation of the aneurismal sac at each impulse of the heart ; and there is reason to think that an aneurism, so closely bound down as the present, would be accompanied by but little murmur. In fact, in a case related by Dr Hope, where an aneurism, considerably larger than this one, sprang from the right side of the aorta, half-an-inch below the cœliac artery, there was no aneurismal bruit, only a superficial whiff, which proceeded from the superior mesenteric artery, stretched over the front

[1] Edinburgh Medical and Surgical Journal, vol. iv., p. 262.

of the tumour. This is the only case I can find bearing on the question. In the present instance, I do not remember that a stethoscopic examination was made; but if so, the results must have been negative.

2d. The pain and vomiting, after taking food, might have presented a peculiar character, had inquiry been made. If these symptoms proceeded, as is most probable, from impediment to the duodenal digestion, they would occur an hour or two after food had been taken; whereas, in the case of ulceration of the stomach itself, the pain would rapidly follow the meal.

3d. The jaundice, if its intermission and recurrence had been the subject of frequent and continued observation, might probably have been attributed to pressure or obstruction of the ducts, rather than to a disorder of the liver itself; and this circumstance would probably have led to a closer examination of other symptoms and signs.

The most practical conclusions to be drawn from this remarkable, and so far as I know, unique case, appear to be the following: That the combination of jaundice, with symptoms indicating imperfect pancreatic digestion (cardialgia, pain and vomiting some time after taking food), should, in all cases, lead to the strong suspicion of a tumour pressing on the ducts of the liver and pancreas, near their duodenal termination;—that the co-existence of these symptoms with fixed pain or oppression in the epigastrium, pulsation in the same region, and hæmatemesis, would very probably indicate aneurismal tumour, even in the absence of more unequivocal signs; and that this diagnosis would not be invalidated by the arrest of the hæmatemesis (even after repeated recurrence), or by the apparent cure of the affection; while, on the other hand, it would be rather confirmed if the remission of the pain and other rational symptoms immediately after each bleeding, were as marked as in the present instance.

I think, however, it may also be said, with truth, that none of these symptoms or phenomena, would suffice absolutely to point out the true state of the case, unless unequivocal signs of an aneurism were presented on stethoscopic examination.

Appendix.

Aneurism of the superior mesenteric artery is exceedingly rare in man. Since the above case was read to the Society, however, my attention has been called to four cases of it.

In the "Lancet" for 1835 an instance of this affection is described, in a patient who died of scarlatina, under Dr Elliotson. It was as large as a human heart, and had formed during life a pulsating tumour above the umbilicus. It was attended by severe pain in the lumbar, epigastric, and umbilical regions, and also with occasional nausea and vomiting after taking food. The sac remained entire up to the period of death.

Two interesting cases of superior mesenteric aneurism are related by Dr J. A. Wilson, in the "Medico-Chirurgical Transactions," vol. xxiv., p. 221; and it is very remarkable that one of these cases ended by jaundice, while the other was accompanied by vomiting of large quantities of blood. The blood, however, in this latter case, does not appear to have come from the aneurism, but from the lung, the patient being affected with profuse hæmoptysis, from phthisis. No symptom of digestive derangement is recorded in this case, except obstinate constipation. The aneurism was large, easily felt in the epigastrium, and attended with pain.

In the other case the jaundice was very marked while the patient was under observation. There was also pain between the shoulders, and in the line of the dorsal vertebræ, as well as occasionally in the epigastrium and hypochondrium; exhaustion, loss of muscular power, depression of mind, and loss of appetite, but no tumour or pulsation, although frequent examination was made. Neither vomiting nor sickness are mentioned. The aneurism was also large, and in the trunk of the artery, about an inch from its origin; it was closely in contact with the *ductus communis*, which, however, was pervious.

In the "Medical Gazette" for 1842 (Feb. 25), Mr James Douglas relates a

case of thoracic aneurism, complicated with small aneurisms of the cœliac and mesenteric arteries. These latter presented no symptom during life, except vomiting, which occurred when exertion was made after taking food.

Aneurisms of the cœliac axis and its branches are somewhat more common than those of the superior mesenteric. In one case alluded to by Mr South (Translation of Otto's Pathological Anatomy, vol. i. p. 320), in the Museum of St Thomas's Hospital, the aneurism "by its motions against the stomach, produced vomiting whenever food was taken, and the patient died of consequent starvation." The museum of the College of Surgeons of Edinburgh contains a preparation (Catalogue, No. 1152) of aneurism of the hepatic artery, in which the superior mesenteric is also considerably thickened and dilated; but no particulars of the case are given. In the same museum (No. 1146) is an aneurism of the abdominal aorta involving the cœliac axis; the superior mesenteric artery issues from the lower border of the sac, but is very slightly involved in the disease. In this case the sac burst into the cellular tissue, and the extravasated blood became encysted, forming a secondary sac, the rupture of which caused death. The existence of the aneurism was not suspected during life, and the patient was treated for hepatitis. We may, therefore, presume, that jaundice was probably present in this case.

The case of aneurism of the hepatic artery, by Dr Stokes, adverted to by Mr Goodsir (p. 7), is in the Dublin Journal, vol. v., p. 401. The tumour was bound down by the capsule of Glisson, and therefore in close connection with the ducts, which were singularly dilated throughout the liver, forming projections on its peritoneal surface. In this remarkable case, the first symptom was copious hæmatemesis; and, from this fact, together with the singular dilatation of the biliary ducts, I connot help suspecting, that the aneurism had opened into them,—a circumstance which might easily have been overlooked. In a letter to Dr Stokes, cited in this paper, Dr Harrison incidentally notices having seen an aneurism of the mesenteric artery. He also observes, that haematemesis frequently accompanies abdominal aneurism; and that in one case, where examination after death took place, the aneurismal sac had no communication with the stomach.

The museum of the College of Surgeons of Ireland contains two instances of aneurism of the abdominal aorta bursting into the duodenum (Dr Houston's Catalogue, B. c. 268, 269). The history of the cases is not given, nor are the anatomical relations of the aneurisms stated.

In the museum of St Bartholomew's Hospital (thirteenth series, 68), there is an aneurism of the abdominal aorta, extending from the superior mesenteric artery to the bifurcation, which ruptured into the duodenum *four days before the death of the patient.* I am indebted to Mr Paget for some particulars of this interesting case, copied from the books of the hospital. The man had been sensible for two years of a pulsation just below the scrobiculus cordis, which he perceived for the first time after a fall from a scaffold. In the two days before death, he had repeated discharges of blood *per anum*, preceded by severe pain, which was relieved by the discharge. The opening into the duodenum was found, after death, to be regular and smooth-edged.

In this, and most of the other cases of abdominal tumour I have referred to, the coats of the vessels were diseased. In the case I have narrated, however, the nearly healthy state of the aorta seems to render it probable that the aneurism was the result in some way or other of violence applied to the artery. The sac was very strong and dense, but its relation to the coats of the vessel could not be distinctly made out without destroying the preparation.

Mr Syme considered Dr Gairdner's communication highly interesting, as confirmatory of the observations which have now been frequently made, that the bursting of an aneurism of a large vessel was not always fatal. The hemorrhage might cease when the aperture became plugged up, and the patient, restored to apparent health, might, after the lapse of months, die of some dis-

ease unconnected with his original complaint In illustration, he read a very interesting communication from Mr Ramsay, surgeon at Broughty Ferry :—

" On the subject of the rupture, and subsequent temporary cure of aneurism, allow me to add a very interesting case which occurred in Cupar Fife, in the summer of 1834, in the person of Alexander Grant, æt. 50 to 55, short and muscular, of rather intemperate habits, a porter to an iron merchant. I saw him frequently during the summer above mentioned ; the tumour was situated on the upper and left side of the chest. During my visit to Cupar, in the Christmas recess, I called for Grant and found him confined to bed, very weak from the loss of a large quantity of blood, that had taken place a few days previously, and from a rupture opposite the cartilage of the third rib, whence a stream of blood, somewhat larger than a quill, immediately issued. Grant, nothing alarmed, got hold of a bowl, held it at arm's-length to receive the *red arch* which he supposed was the contents of a " bloody boil," pressing the tumour with his chin to effect a more speedy clearance ; after about a quart of blood had gushed out, Grant fainted, and the bleeding stopped and dried over the opening ; the vascular action being so much reduced by this extraordinary depletion, allowed the integuments in some measure to collapse and cicatrise under the dried film of blood. As I expected to be absent from Cupar during the remainder of the winter session, and greater part of summer, I requested my master, Mr Adam Wisemann, to remove the parts and preserve them. In November 1835, I was informed that Grant had lived four months without any new rupture ; he did not die from the aneurism, but from typhus fever. I had the satisfaction of examining the parts, which had been carefully dissected. The aneurism involved the arch and innominata ; absorption of the second, third, and fourth ribs, parts of the clavicle and sternum ; the cicatrix well defined. I believe the preparation is still in Edinburgh."

Dr Gairdner, sen., had, many years before, presented to the Society a case of aneurism which had burst into the left bronchus, and had recorded it in the forty-third volume of the " Edinburgh Medical and Surgical Journal." After expectorating a considerable quantity of blood, the patient continued in tolerable health for ten days, when he suddenly expired in the act of dictating to a clerk, a profuse discharge of blood having taken place from the mouth. On dissection, two communications were traced between an aortic aneurism and the left bronchus ; the upper one was plugged up by coagulum, the lower one had been more recently formed, and given vent to the fatal hemorrhage.

Dr Bennett remarked, that when an aneurism opened upon a mucous surface, the aperture was usually small ; it was not unusual to find several small perforations which might easily become obstructed for a time by coagula, as in the cases just related to the Society. When, however, aneurism opened into a serous sac, the aperture was for the most part so large as to cause sudden death, by extensive hemorrhage.

Dr Douglas explained the grounds upon which he had treated the patient, twenty-two months before her death, when she first vomited blood, rather as the subject of chronic ulcer of the stomach than of aneurism. The patient was but twenty-six years of age, a period of life at which the chronic ulcer is often met with in females, and at which aneurism is comparatively rare. Hæmatemesis is likewise not uncommon at this age, and the abdominal pulsation is not a trust-worthy sign of aneurism in such patients. Possibly a more correct diagnosis might have been arrived at, had he considered that the patient's general health was not so much disturbed as is usual in cases of chronic ulcer of the stomach. In particular, the digestion was not seriously depraved, nor was there complaint of constipation. Even had the existence of aneurism at this early period been suspected, it would, in all probability, have eluded detection on physical examination.

Mr Goodsir called Dr Gairdner's attention to a case recorded by Dr Stokes, of Dublin, in which an aneurism of the hepatic artery caused jaun-

dice, by compressing the hepatic ducts. He also alluded to some curious cases of the same description, referred to by Otto, in his Pathological Anatomy, by Dr Donald Munro, in the "Medical Essays," and by Sir John Pringle. In some of the lower animals, aneurism of the superior mesenteric artery was not unfrequent. Thus, it had been often observed in the horse, and still more frequently in the ass. Rudolphi had pointed out that entozoa (*Strongylus Armatus*) were often met with in great numbers in the aneurisms of the superior mesenteric of the horse and ass. These worms lay within the aneurismal sac, their tails being entangled in the fibrous clots, while their heads were free and exposed to the current of blood. But they were found in other situations within the abdomen; thus Morgagni had described them as occurring in tubercular masses outside the vessels. About three hundred years ago, Tyson, an old English anatomist, on dissecting a peccari, found the abdominal aorta to be uniformly dilated; and Daubenton having long afterwards made a similar observation, the aneurismal condition of the aorta was for a time believed to be the normal structure of the peccari. Cuvier had pointed out the fallacy of this idea, by showing, that, in the young animal, the aorta was not dilated. Rudolphi had ingeniously speculated upon the possible connection between the aneurisms affecting the human subject, and the existence of entozoa in the blood; some old writers had gone a step farther, and believed that the erosion of the aneurismal sac was effected by the ravages of an animal parasite. The strongyli had been found in different parts of the circulating system, and their presence was not necessarily associated with the existence of aneurism. In answer to a question from the President, Mr Goodsir stated, that a species of strongylus had been observed in the heart of the porpoise, and in the bronchial tubes of the same animal. He repeated that the "habitat" of these worms was not always within the arteries.

Professor Dick, of the Veterinary College, had, in the course of his dissections of the lower animals, been long familar with aneurisms of the mesenteric artery, and with the presence of worms in their interior. The worms were found both in the horse and the ass, more frequently, however, in the latter animal. They were found of all sizes, and in the most different textures. Thus he had seen them on the mucous surfaces, enclosed in a small nucleus or cyst, in the arteries, in the brain, even in the spermatic cord. He exhibited to the Society specimens of the strongyli. Aneurisms were not very often met with in the horse; he, however, produced examples of the disease, both from the aorta and from the internal carotid. In the latter instance, the animal had died from hemorrhage consequent upon rupture of the sac into the nostril. So common, however, were the dilatations of the mesenteric artery in the ass, that Mr Dick had ceased to look for them, having satisfied himself that they existed in almost every ass that was examined. Their presence gave no inconvenience, and did not cause the death of the animal; neither could they be detected during life. Mr Dick showed a specimen of mesenteric aneurism taken that day from the body of an ass in his dissecting room, and other examples of the worms alluded to, which had been obtained from the bronchia of the calf.

Dr Simpson made some observations upon the frequency of hæmatemesis in young women from obstructed catamenia, and totally unconnected with serious organic disease.

Dr Bennett mentioned that on opening the body of a young female, who died under Dr Craigie's care, in the Royal Infirmary, he found the stomach quite full of blood; but not a trace of aneurism or other organic disease could be detected.

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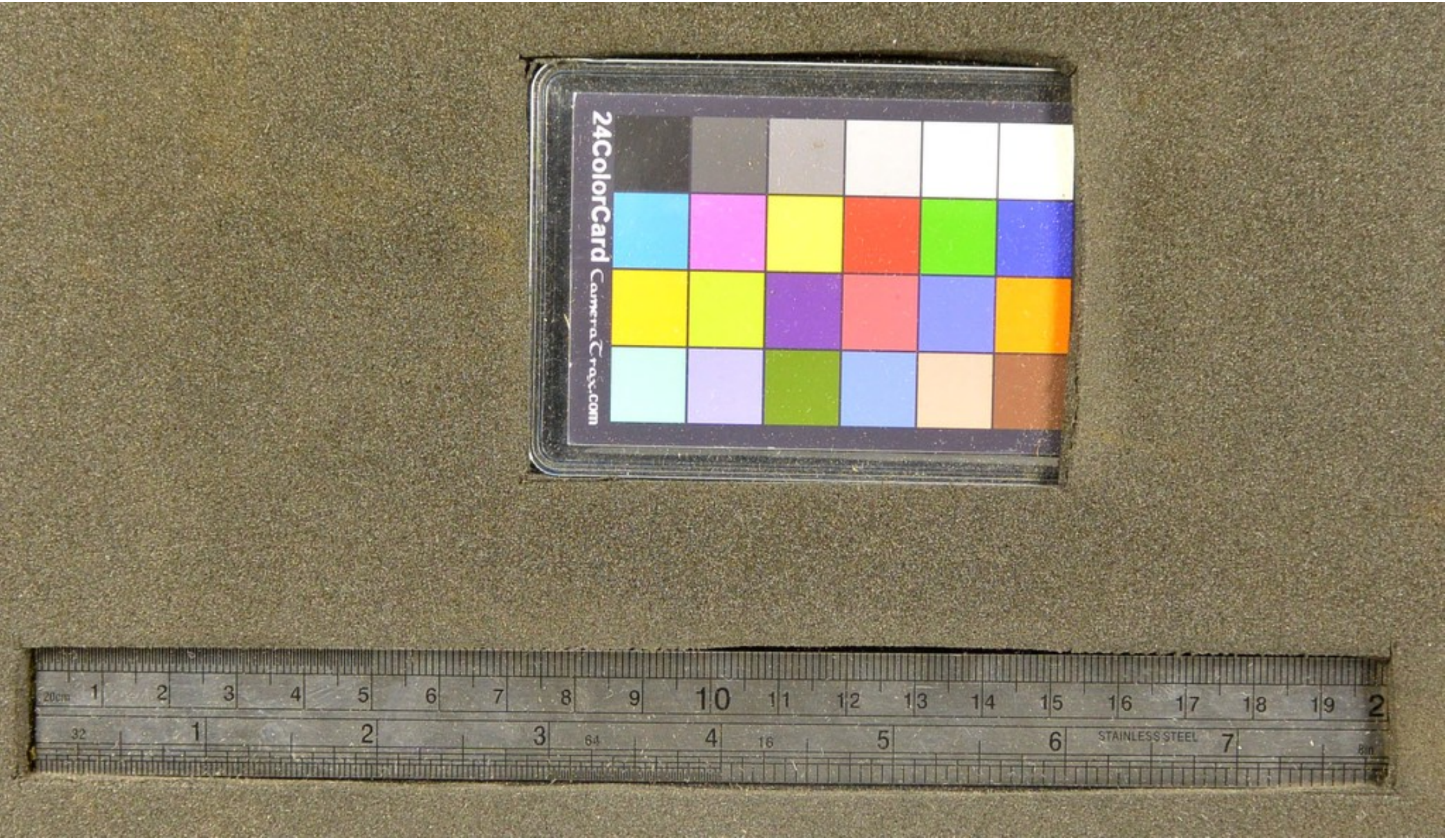
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