expiration and contracting during inspiration, it is a consecutive prolapse of the lung, or a *pneumocele.* These tumours may appear rapidly and attain a large size; they may be more or less reducible, allowing the outline of the aperture through which the lung escapes to be felt.

CHAPTER XI.

THE DIAGNOSIS OF INJURIES OF THE ABDOMEN.

Injuries of the abdomen, as of the head and chest, derive their chief interest from the importance, and usually great danger, of any lesion of the viscera contained within the cavity. Hence, the question which above all presses for an answer is, whether any given injury has merely bruised or wounded the parietes, or whether there is a visceral lesion as well; and if the latter, which of the several viscera has been damaged. While visceral lesions are generally the result of the more severe forms of violence, the surgeon must always remember that even by apparently trivial blows fatal visceral ruptures may be caused, while recovery may take place after more severe contusions. In arriving at a diagnosis of a case of abdominal injury, it is well to consider that the patient is the subject of a visceral lesion until the contrary can be proved, and to employ the method of exclusion; and further, when examining the patient, the utmost gentleness of manipulation must be employed, lest the surgeon's fingers or the patient's movements should convert an incomplete into a complete rupture, or induce a renewal of hæmorrhage that Nature has arrested.

Abdominal injuries are to be divided into *con-*

tusions and wounds, of which the former are much the more common in civil practice, and form an exceedingly serious and highly fatal class of cases. The *sequelæ* of each group will be considered separately.

Exact diagnosis may be impossible when the patient is first seen. The absence of all acute symptoms, or of symptoms distinctly pointing to a visceral lesion, is not enough to justify the surgeon in proclaiming the injury unimportant; but he should wait to see whether any severe symptoms, especially inflammatory symptoms, set in. For example, there may be nothing to indicate soon after the injury even such a severe lesion as a rupture of the intestines, but in a few hours the onset of acute peritonitis will reveal the gravity of the case. The same holds good in the case of wounds. It is only if the patient *continue* to be free from severe symptoms that a diagnosis of a simple superficial lesion can be made.

A. **Contusions.**—There may be no indications whatever on the exterior of the severity of internal lesions; but no case, however trivial it may appear, is to be dismissed without a careful consideration of all the circumstances, and without waiting to see whether serious symptoms do or do not quickly ensue. Some assistance in diagnosis is to be obtained by a precise knowledge of the injury inflicted, whether a fall or blow or crush, and of the exact spot struck, and of the condition of the abdominal viscera at the time, especially whether the stomach or bladder was full. Attention is to be particularly directed to the general condition of the patient, to any evidence of shock or collapse, or of internal hæmorrhage, and to local signs, pain, tenderness, vomiting, emphysema and hæmaturia. *Pain* is, of course, a symptom of all injuries; but when it is intense, and increases spontaneously, *i.e.* without any movement on the part of the patient, or is fixed in one spot, and

from that gradually radiates over the belly, it becomes of very serious portent. Similarly, *shock* may be produced simply by contusion of the solar plexus and its branches; it is most intense immediately after the injury. When shock continues long, and especially when it gradually deepens, or when *collapse* only comes on at an interval after the injury, or when the patient has to some extent, if not entirely, recovered from the primary shock, the indication of a severe internal injury is very marked. *Vomiting* is another very frequent symptom. When a person receives a blow on the belly soon after a meal, vomiting simply to the extent of emptying the stomach is common, and has no serious significance; but when the act is often repeated, and becomes "persistent," and particularly when the ejecta contain blood or bile, it is an important sign of visceral lesion. The significance of *hæmaturia*, or of the passage of *blood by the bowel*, is too obvious to require comment; but it may be pointed out, that if bright-red blood be passed per anum as the result of an abdominal injury, it points to a lesion of the colon, while an altered condition of the blood (tarry stools) would show that it comes from some part of the alimentary canal farther removed from the anus. *Subcutaneous emphysema* is not often observed in connection with abdominal injury; when it is, care must be taken to determine whether it is thoracic or abdominal in origin. Of the former we have previously spoken (*see* page 127); the seat of the injury and the place where the swelling first appears are the signs by which this distinction is to be drawn. When abdominal in origin, it usually makes its appearance first in one or other loin or groin, and it indicates a rupture of the intestine; and when, as is usually the case, it is not combined with pneumo-peritoneum, or gas in the general peritoneal cavity, it points unmistakably to a rupture of some

part of the gut where it is uncovered by peritoneum, such as the back of the second and third parts of the duodenum, of the cæcum, or of the colon. The same symptom is occasionally observed in injuries of the rectum.

In the absence of severe shock, or of increasing collapse, of severe pain, of vomiting, of emphysema, or of hæmaturia, the probability is that there is *no visceral lesion;* but such a conclusion is then conjectural, and it becomes absolute only when time has failed to elicit other signs, especially peritonitis and the formation of a tumour.

When with pain which is neither very intense, nor increases spontaneously, but is exaggerated when the patient contracts the abdominal muscles in respiratory or general movements, there is swelling of the abdominal walls and the well-known discoloration of a bruise, it must be recognised as a *bruise of the abdominal wall;* and when to this is superadded the presence of a gap or depression in the course of a muscle (and this especially happens in the case of the rectus abdominis muscle), it indicates a *rupture of a muscle.* It may happen that the gap in the muscle is not recognised until after the absorption of the effused blood.

If a patient have received an injury upon the right hypochondrium, and complain of fixed and severe pain in that region, and if the shock be marked or, especially, collapse increase after the injury, with signs of internal hæmorrhage (blanching, sweating, syncope, quick feeble pulse), *rupture of the liver* must be suspected. If now there be persistent vomiting, and the vomited matters contain bile, but not blood; if there be an increase of the normal liver dulness, and especially if there be subsequent ascites, jaundice, and the passage of pale clayey stools, the suspicion is converted into a certainty. In a large

majority of the cases of this injury, as of others to the abdominal viscera, death quickly ensues. Cases of recovery are by no means unknown, and the author quite recently had the opportunity of watching two in which the above-mentioned symptoms left no doubt as to the nature of the injury sustained. Sugar may be found in the urine after injuries to the liver.

If an injury to the epigastrium or left hypochondrium of a patient who has recently taken a meal be immediately followed by intense pain in the injured part, which quickly radiates over the whole belly, by extreme shock from which the patient does not rally, and by repeated painful vomiting with hæmatemesis, the diagnosis of *rupture of the stomach* may be arrived at. This injury, fortunately, is rare; it only occurs when the viscus is more or less distended, and it appears to be invariably fatal. The suffering it occasions during the short time the patient survives is intense, and is shown by the extreme anxiety depicted on the countenance.

When, following a blow upon the belly, especially about the umbilical and hypogastric regions, the patient is immediately seized with severe pain in the part struck, which then radiates over the belly, and on laying the hand on the belly wall the muscles are found rigidly contracted and immovable, and the patient complains of tenderness, and there is vomiting, constipation, and collapse, *rupture of the intestine* is to be diagnosed. The collapse is usually severe; but it may be slight, and the general symptoms only become severe when the peritonitis excited by the fæcal extravasation sets in. Should there be subcutaneous emphysema, or the passage of blood per anum (the history of the case and examination alike excluding any injury to the rectum) the diagnosis of intestinal rupture becomes still more positive. The signs of this injury may be quite absent when the patient is first seen.

The author well remembers the case of a lad who was struck in the belly with a piece of wood, who, when seen shortly afterwards, was not suffering from collapse, severe pain, vomiting, or any symptom pointing to a grave visceral lesion; but peritonitis quickly set in and proved fatal, and at the autopsy a complete rupture of the ileum was found.

If a blow upon the left hypochondrium be followed by deepening collapse, blanching of the surface, syncope, and the other general signs of internal hæmorrhage, and if pressure under the left margin of the chest elicit tenderness, and especially if the splenic dulness to percussion be increased downwards and forwards, a *rupture of the spleen* is to be diagnosed. When the rupture is extensive the hæmorrhage is profuse, and if not fatal, is followed by peritonitis; the position of the blow and of the dulness caused by the accumulating blood are then the only signs to be relied upon for diagnosis. Should the position of the blow be unknown, or the injury more diffuse, and the local dulness masked, or not made out, it would be impossible to distinguish this injury from any other source of internal hæmorrhage.

When an injury to the loin is followed by hæmaturia, the blood being intimately mixed with the urine, sometimes forming long slender "casts" of the ureter, a *rupture of the kidney* of the same side is to be diagnosed. Should the loin be found bruised, painful and tender, and if there be pain in or retraction of the testicle, or pain or numbness down the front of the thigh, the diagnosis will be confirmed. Where the patient has received a very severe crushing injury of the loin, and there is much bruising of the part, deep swelling, pain, and tenderness on trying to feel the kidney, especially when, combined with these signs, there is marked collapse, even in the absence of hæmaturia. a rupture of the kidney may be

suspected to have been produced, the ureter being obstructed.

For the diagnosis of *rupture of the bladder*, *see* page 166.

If, after a blow on the belly, which may or may not be attended with more or less shock, the patient become increasingly collapsed, with a rapid, feeble, fluttering pulse, shallow and sighing respiration, blanching of the skin and of the mucous surfaces, and restlessness, *internal hæmorrhage* is going on. In some cases there is marked abdominal distension, due to the effused blood. In the absence of symptoms indicating the rupture of one of the large solid viscera, it is impossible to determine the source of the bleeding ; it may be the mesenteric vessels, or the vena cava, or any other of the large vessels of the belly. The restlessness of the patient may be a very marked symptom, and is in strong contrast to the dread of movement, especially of abdominal movement, in cases of rupture of the intestine. If vomiting occur at all, it is not the persistent emesis so distressing in rupture of the stomach, of the liver, or of the intestine.

When, after a sudden strain or severe injury, the patient complains of a sharp pain in the left side of the chest, and of dyspnœa, and is found unable to take a full inspiration and to "fix" the diaphragm, a careful examination of the left chest should be made. If now the heart's apex be found displaced to the right, and the normal area of pulmonary resonance encroached upon from below either by the tympanitic note of the stomach or colon, or by dulness, and the respiratory sounds are absent over the same area, but of normal character above, and if, further, the patient complains of severe thirst, and is repeatedly sick, *rupture of the diaphragm with hernia* may be recognised. This accident always occurs on the left side, and it may be but a part of a very severe and quickly fatal lesion, and

escape recognition. When resulting from a sudden spasm of the muscle, the sharp pain followed by the inability to fix the diaphragm, the thirst and the special physical signs clearly point to the nature of the lesion. Diaphragmatic hernia may be a congenital affection, and, therefore, it is only when the symptoms associated with it come on acutely after a strain or injury that the traumatic lesion must be diagnosed.

If a pregnant woman receive a blow upon the belly, and complain of pain shooting down to the vulva, perineum, and thighs, and if the outline of the uterus be preserved unaltered, and there be neither hæmorrhage from its cavity, nor severe shock, it is a *contusion of the uterus ;* abortion will probably result.

If, under similar circumstances, the woman be found collapsed, with signs of loss of blood, and blood be found flowing from the uterus into the vagina, *rupture of the uterus* has taken place ; and if the outline of the uterus be lost, and, in place of it, the head and limbs of the fœtus can be plainly traced through the belly wall, the fœtus has escaped through the rent into the peritoneal cavity.

If a woman known to have an ovarian tumour fall on the belly, or receive a blow there, and then become faint, and complain of pain, and the outline of the tumour be altered or quite lost, and there be dulness in each flank, which disappears on turning the patient on to the opposite side, and a fluctuation wave can be felt across the belly, *rupture of an ovarian cyst* is to be diagnosed. Even without the knowledge of the prior existence of an ovarian tumour, the detection of free fluid in the peritoneal cavity immediately after an injury to the belly of a woman, the presence of shock, and the history of a "snap," or "bursting," being experienced at the time, especially in the absence of jaundice, or disease of the heart or lungs, would

render the diagnosis of rupture of an ovarian cyst very probable.

B. Sequelæ of contusions of the belly.

Peritonitis.
Abscess.
Urinary cyst.

The most frequent and the most fatal sequela of an abdominal contusion is peritonitis. It may follow upon the infliction of a very moderate amount of violence, and hence no contusion of the belly is to be regarded as of trivial importance. Severe internal lesions, unless fatal from shock or hæmorrhage, quickly induce peritoneal inflammation. Peritonitis very generally arises within a few hours of the accident; it may come on later. Abscess is a less frequent, but by no means rare, sequel of an abdominal injury. It may form in the belly wall from a bruise in that part, or in the subperitoneal tissue, probably from a bruise or minute rupture of the bowel where uncovered by peritoneum, with a limited escape of fæces, or from a rupture of the peritoneal surface of the bowel if, happily, the effused lymph glue the adjacent coils of intestine together, and prevent general extravasation of fæces; it is also met with between the liver and the diaphragm, probably as the result of a bruise or small laceration of the upper surface of the liver. The early diagnosis of these abscesses is important; for, while their treatment is successful, if neglected they may burst into the general peritoneal cavity and cause fatal peritonitis; the subdiaphragmatic abscess may burst into the pleura or the lung.

When, a few hours or more after an accident, the patient complains of diffused pain over the abdomen, and is found lying upon his back with his knees drawn up, with pinched features clearly expressing distress, and on examining the belly it is seen

to be immovable during respiration, which is wholly upper costal, and the least pressure with the hand upon the abdominal wall is resented on account of the pain it produces, and especially if there is increasing flatulent distension, vomiting, and constipation, *acute peritonitis* is to be diagnosed. The signs of this affection vary within wide limits. Severe pain in the back is sometimes complained of, rather than pain in the belly; there may be little or no tenderness; the distension may be enormous, or, on the other hand, but slightly marked, the belly being retracted, and the muscular contraction making the wall firm and resistent. The pulse is quickened by the onset of the inflammation, and may be small and incompressible, or "wiry." The temperature may be considerably elevated, or but little above the normal. In the absence of all evidence of visceral lesion, the occurrence of peritonitis may be taken as pointing to laceration of the peritoneum, or of the mesentery; but no certain diagnosis of these lesions can be made.

When a contusion of the abdomen is followed by the formation of a localised swelling and general febrile disturbance, an *abscess* must be suspected. Such swelling may follow an obvious bruise of the belly wall, in which case the onset and progress of inflammation are marked by increasing swelling, bright redness, greater pain, acute tenderness and fever. Or there may have been no external evidence of bruising, and febrile illness, local pain, and then the gradual occurrence of a more or less well-defined swelling may be the only symptoms. Examine carefully for fluctuation and for surrounding œdema, and these signs, when obtained, or the occurrence of shivers, or of remittent temperature, will render the diagnosis of abscess more certain. Wherever doubt as to the nature of such a swelling is entertained, an exploring needle or syringe should at once be passed,

as it is important that these abscesses should be evacuated as early as possible. The surgeon will endeavour to make out the seat of the abscess. When the redness and swelling appear early and fluctuation is quickly and readily perceived, and particularly if the swelling be found to be movable with the belly walls, it is to be diagnosed as a superficial abscess. In other cases the swelling and the area of fluctuation may be limited to one of the compartments of the sheath of the rectus muscle. But where the pus is deep it is always difficult, and it may be impossible, to tell its exact position. In the lumbar region the abscesses occur in the fat on either side of the fascia transversalis; in the iliac fossa suppuration is apt to arise in the pericæcal fat; pus may form in the subperitoneal fat of the belly wall, and in the peritoneal cavity, being limited by adhesions of the omentum and coils of intestines to one another and to the belly-wall. When the abscess is opened exploration with the finger may be able to determine its exact situation. The character of the pus that is contained in the abscess must be noticed; when comparatively superficial, it will be laudable pus, or a mixture of pus and blood; where the abscess is around intestine, especially cæcum and colon, it will be discoloured brown, and of a very fœtid or feculent odour; and should fæcal matter or flatus be mixed with it, or follow the escape of pus, it proves that the intestine is perforated, and a *fæcal fistula* will result.

Suppuration may occur between the liver and the diaphragm, and from its deep position its detection may be very difficult. These abscesses are sometimes the result of the perforation of a gastric or duodenal ulcer, but they may arise from injury. As the pus accumulates it pushes up the diaphragm and depresses the liver, and it may point, and burst externally, or into the peritoneal cavity; not uncommonly it perforates

the diaphragm and the base of the lung, and the pus is expectorated through the bronchi. When, therefore, after an injury to the right hypochondrium the patient continues febrile, particularly if there are one or more rigors, the injured region should be carefully explored, and if the lower edge of the liver be found depressed below the normal, while its area of dulness reaches up to or is above the normal level, and if there be local pain, or any fulness of the intercostal spaces, *subphrenic abscess* is to be suspected. Should the abscess have pointed externally and give fluctuation the diagnosis becomes easier. But in all such cases an exploring syringe should be introduced to determine the presence of pus. But the question will even then arise whether the pus is above or below the diaphragm. To decide this, observe whether the onset of the disease was characterised by the signs of pleurisy or not; whether there was sharp pricking or stabbing pain on taking a deep breath, cough and dyspnœa; and whether at any time pleural friction was to be detected. The absence of these signs would indicate that the inflammation was below the diaphragm, but their presence would not prove the contrary. Further, examine the chest, to learn whether on taking a full inspiration the level of pulmonary resonance descends, and if the respiratory sounds are normal; the former of these two signs is a significant indication that the purulent collection is not in the pleural cavity.

When a swelling forms slowly and gradually in one of the lumbar regions after an injury in that situation, unattended with fever, acute pain, or tenderness, and this swelling be found to fluctuate, a *rupture of the ureter*, with the formation of an *urinary cyst*, is to be diagnosed; and if, on tapping, the swelling watery fluid containing urea * be drawn off, this diagnosis is confirmed. Observation of a diminution

* *See* footnote, page 161.

of the quantity of urine or of urea excreted daily since the injury would render the diagnosis more easy and certain.

C. **Wounds.**—In examining a wound of the belly the surgeon must endeavour to determine whether it is limited to the parietes, or whether it penetrates the peritoneal cavity; if the former, whether it is superficial, or extends through one or more of the muscular and deep aponeurotic layers; if the latter, whether there is protrusion or wound of any of the viscera; and, in all cases, whether any foreign body is lodged in the wound. Punctured wounds are those which generally present both the greatest difficulties in diagnosis, and the greatest dangers, for their small external size renders their exploration often unsatisfactory, and they are frequently penetrating and complicated with wounds of viscera; bullet-wounds partake of the same characters. Enquiry should always be made as to the manner in which the wound was inflicted, and the instrument used should be examined, to discover, when possible, how deeply it has penetrated, and whether it is entire, or whether any part of it has been recently broken off.

(1) **Is the wound penetrating?**—In some cases a wound is obviously non-penetrating, and in others, especially when punctured, it may be impossible to decide. The edges of an incision may be gently drawn aside, and its surfaces explored; when it extends only through the skin and superficial fatty tissue it is to be called a *superficial parietal wound;* when, however, it severs a muscle, or the muscular aponeurosis, and opens up the intermuscular planes or the sheath of the rectus muscle, or even still deeper fasciæ, the danger of diffuse inflammation and suppuration renders it necessary to distinguish it from the former as a *deep parietal wound.* Should there be any visceral protrusion, or the escape of the contents

of any of the viscera (food, bile, fæces, urine) or a flow of clear serous fluid, or of dark blood from the depth of the wound, which flows faster and with more force when the patient coughs or makes any effort, or should there be severe shock or the signs of internal hæmorrhage, hæmaturia, or hæmatemesis, or the passage of blood per anum, it may be diagnosed as a *penetrating wound.* When a doubt is entertained, probing or any like exploration of the wound must not be made, but the treatment must be adapted for the severer injury.

(2) **Is there protrusion of viscera?**—This fact can be ascertained quite easily in the majority of cases; the omentum and small intestine are the viscera most commonly protruded; but the liver, stomach, spleen, and bladder may be. Where the protrusion is large there can be no difficulty whatever in recognising it, although the possibility of a loop of intestine lying behind a fold of omentum must not be forgotten, and pains must be taken not to overlook a small protrusion of omentum between the lips of a wound. All deep wounds must be carefully examined with this view, and if anything like a protrusion, anything lying between the lips of the wound, is observed, it must be noted whether it has the characteristic granular appearance of omentum, or whether it differs in colour from the fat on the surface of the wound, whether it is congested, whether any large vessels appear on it, then it should be seized and gently drawn upon, and if a distinct pedicle on its deep surface be found, or, especially, if further prolapse takes place, the diagnosis is certain. With ordinary care, the smooth glistening surface of the intestine, stomach, and liver would be at once detected in a wound. It must be remembered that the urinary bladder when full may be protruded from a wound in the hypogastrium, even when the peritoneal cavity is not opened; when this lesion is

suspected, a catheter should be passed and all the urine drawn off, when the protrusion will be emptied, and will collapse; should a silver catheter be used, its extremity may be made to enter, and be felt in, the protrusion. Any visceral protrusion must be carefully examined for a wound in the protruded part, or the presence of dirt and foreign matters, and to note congestion.

(3) **Is there a wound of a viscus?**

(*a*) **Where there is protrusion of viscera.**—All protruded viscera should be carefully examined to see whether there is any rupture or wound, as well as to remove any foreign bodies that may be adherent to or entangled in them. In the case of omentum and mesentery note especially whether there is any hæmorrhage from a wounded artery or vein. The collapse of prolapsed intestine and stomach, and the escape of their contents, gaseous or semi-solid, may indicate at once a wound; but the whole surface should be explored to see whether the peritoneum is torn at any part, or whether there is at any spot a little projection of soft, red mucous membrane, indicating a puncture of the gut; a larger wound of the intestine can hardly escape observation.

(*b*) **Where there is no protrusion** the surgeon may be left in doubt on this point. But if undigested or partially digested food, unstained by bile, escape from the wound, or if the patient vomit blood, a *wound of the stomach* is to be diagnosed; this lesion will be attended by severe shock, and be followed by acute peritonitis. When fæcal matter escapes from the wound, or when blood is passed per anum, a *wound of the intestine* is also clearly evidenced. Where a wound is followed by the escape of urine, or by the occurrence of hæmaturia, a wound of the urinary apparatus has been made, and the position of the wound, and the patient's power over his bladder, will determine

whether it is a *wound of the kidney or urinary bladder.** Similarly, where bile escapes from a wound in the region of the liver, a *wound of the gall bladder or bile duct* may be diagnosed. When a wound is followed by syncope and deepening collapse, and blanching of the mucous surfaces, and especially if dark blood escape from the wound, or if the belly be distended at any part, or there be dulness in the flanks, which may be noticed to increase, *internal hæmorrhage* is occurring. The position and direction of the wound will enable the surgeon to surmise the source of the bleeding; it may be the liver, the spleen, the vena cava, vena portæ, or some other large abdominal vessel. Lastly, where, without such positive evidence, a penetrating or a punctured wound of the belly is quickly followed by acute peritonitis, a visceral wound is to be suspected as the cause of the intense inflammation.

D. **Sequelæ of wounds of the belly.**

Diffuse suppuration in belly walls.	Fistula.
Peritonitis.	Artificial anus.
	Hernia.

When a wound of the belly wall is followed by considerable diffuse swelling of the tissues, with redness and œdema of the skin, pain, and tenderness, and the body temperature is raised, with all the general symptoms of pyrexia, *diffuse inflammation* of the abdominal wall is proceeding, which, if not quickly subsiding, runs on to *suppuration.*

Should the patient be attacked with pain spreading over the whole belly, and the part be found extremely tender, even the light pressure of the hand being

* To determine whether a fluid is, or contains, urine, acidulate a portion of it with acetic acid, boil and filter it; then take some of the filtrate, add a few drops of nitric acid, and evaporate it, when shining rhombic plates of nitrate of urea will separate, and may be recognised under the microscope.

resented, and the respiration be entirely thoracic, while abdominal distension increases, and may become extreme with vomiting and constipation, and the temperature is raised, *acute peritonitis* is to be diagnosed.

Should the patient recover so far as the general results of the wound are concerned, but the wound through the belly wall remain open as a fistulous track, and through this the contents of any one of the abdominal viscera continue to escape, there is a *fistula*. If the discharge be unstained with bile, acid in reaction, and contain food unaltered, or but partly digested, it is a *gastric fistula*, or possibly a fistula in the upper part of the duodenum, above the entrance of the bile duct. Should the discharge consist of the contents of the intestine, it is a *fæcal or intestinal fistula*. When the matter escaping is soft, pultaceous, odourless, or nearly so, and of a light colour, the communication is with the small intestine; and when the discharge is distinctly fæculent, dark in colour, with a strong fæcal odour, and mixed with much gas, the communication is with the large intestine. Should the discharge be bile unmixed with chyme, or a watery fluid containing urea, it would be respectively a *biliary or urinary fistula*. If, as the result of an operation, or of the natural separation of a slough of prolapsed intestine, the mucous membrane of the gut is immediately continuous with the skin, the intestine opening directly on the surface, it is an *artificial anus*. Should there be from such an aperture a soft, bright-red, corrugated projection, moistened with mucus, it is a *prolapse* of the mucous membrane of the artificial anus. But should there be from the aperture a smooth, rounded projection, covered by the same red mucous membrane, but emptying on gentle compression, leaving the mucous covering collapsed, it is a *hernia* of the artificial anus.

If a cicatrix in the belly wall be found to yield before the pressure of the abdominal contents, and a projection be formed at the spot, smooth, rounded, soft, with an expansile impulse on coughing, and tympanitic on percussion, it is a *hernia*. It may be reducible or irreducible; the coils of intestine are often visible through the thinned cicatrix, or these and masses of omentum may be plainly felt through. There is no distinct neck to the sac of such a hernia.

CHAPTER XII.

THE DIAGNOSIS OF INJURIES OF THE PELVIS.

Contusions of the pelvis are generally the result of heavy blows or kicks, falls from a height, or severe crushing violence. They naturally group themselves into three categories: injuries of the soft parts covering the bones, injuries of the bones, and injuries of the contained viscera. The examination should be conducted with a view to determine under which of these categories the injury falls; the visceral injuries are, of course, very much the most fatal, and occasion the most severe symptoms.

Bruising of the soft parts will be at once recognised by the characteristic discoloration, the dull aching pain, and the swelling, which varies in amount within very wide limits. If the blood be effused from vessels at some depth, the staining of the skin may not appear for a day or two. Sometimes the ecchymotic discoloration extends over a very wide area, and then it is important to learn where it was first noted, as that fact will throw some light upon the seat of the lesion. Whenever the bruising implicates the perineum, scrotum, or penis, careful inquiry should