

acute and chronic, and cartilaginous and bony tumours are most common. In *early adult life*, syphilitic and venereal affections, traumatic and inflammatory swellings, together with fatty, mucous, and fibrous tumours prevail. And *in late adult life*, malignant tumours of all kinds, and other senile swellings, such as those of rheumatoid arthritis and hydrocele become common. Age is of most direct value at the two extremes, in aiding the diagnosis of congenital tumours and of malignant tumours.

XVI. **Sex** seems to have little or nothing to do directly with the etiology, and therefore the diagnosis of tumours, apart from the affections of the organs peculiar to the two sexes. Aneurisms, with the exception of those of the carotid artery, and cancer of the lips and tongue, are much more frequent in men than women, but this is probably not due primarily to sexual difference. A case in point, however, is afforded by the much greater prevalence of femoral hernia in women than in men.

XVII. **The previous history** of the patient may aid in the diagnosis of tumours. In diathetic diseases such as struma and syphilis, evidence may thus be obtained of the existence of those diatheses. In the infective diseases, such as sarcoma and carcinoma, light may be thrown upon the nature of a secondary tumour arising after the removal of the primary focus of disease; thus, where a cancerous tongue has been excised, a progressively enlarging gland in the neck will not be mistaken for a strumous gland or some other simple tumour.

CHAPTER XVI.

DIAGNOSIS OF GENERAL TUMOURS.

HAVING in other chapters treated of the diagnosis of fluctuating and pulsating swellings, of swellings connected with bone, and of swellings of special regions, it remains for us here to speak of those swellings which have not these particular features, and which occur more or less generally over the body. In investigating such tumours, the first point to be determined will be the *history* of the growth, especially whether *congenital* or *acquired*; if the latter, whether *traumatic* or *idiopathic*; and if idiopathic, whether accompanied by signs of *inflammation* or not; in any case, whether it is *stationary*, *continuously progressive*, or *receding*.

Then the surgeon should examine the swelling, and first of all notice *to what structures* it is *adherent* (skin, superficial fascia, muscle, gland) and its degree of adhesion to or mobility in these; whether it have a sharply marked *outline*—and if so, the character of its edge—or gradually fades off into the healthy parts around. Then observe its *consistence*, whether hard, firm, soft, or gelatinous, whether *compressible* or not, and if it fill out and become more tense on strong expiratory efforts, and particularly whether the surface be *smooth* or *lobulated* at any part; in some cases the colour of the swelling is characteristic. If the skin be ulcerated over the tumour, the characters of the ulcer will of course attract attention. Then the surgeon should feel the lymphatic glands connected with the swelled part, and notice whether

they are enlarged or not. Lastly, evidence of constitutional diathesis (syphilis, struma) should be carefully sought for. The bearing of many of these facts upon diagnosis has been already discussed, but we may here add something to what has been previously said.

(a) It must be borne in mind that congenital tumours may not be noticed until some time after birth: this is not infrequently the case in very small dermoid cysts. Similarly, it is not infrequent to find that some trivial injury has called attention to a swelling or a lump, which, from not being painful or conspicuous, had previously escaped notice, and which the patient may be inclined to consider as actually caused by the injury. Inflammation may be the exciting cause, or may accompany a swelling from its first commencement, but in other cases it comes on later, and as a secondary condition; this is particularly seen in such cases as sloughing gumma, cystic hygroma (where repeated attacks of superficial inflammation are very characteristic phenomena), and in large sebaceous cysts.

(b) Inflammatory growths, gummata, and malignant tumours tend to infiltration in their growth, and to involve rather than to displace surrounding tissues, while the benign tumours displace tissues, and are encapsuled. The degree of mobility of tumours varies much, and it is important to notice the direction of mobility, and also what may be called its character. As already pointed out, neuromata and some tumours connected with vessels, have free mobility in one direction only (across the nerve or vessel) and none in the other. By the character of mobility is meant whether it is a mobility of the entire part, or of the tumour in the tissues amid which it is growing; a cancerous tumour of the breast, for example, may be freely movable with the mamma over the chest, but careful examination will show it to be

quite immovable in the breast itself. Some fatty tumours show the greatest freedom of mobility, and the way in which the smooth rounded edge of these growths slips from under the finger is quite characteristic. The most noteworthy feature of the outline of tumours is the characteristic lobulation of fatty tumours; the lobules are ovoid or rounded, and somewhat loosely adherent one to another; this sign is pathognomonic of fatty tissue.

(c) In regard to the lymphatic glands it is to be remembered that they may be enlarged from causes other than the tumour; but excluding these, the glands may be enlarged by inflammatory swelling, or by a secondary growth of the actual tumour tissue; in the early stage it is quite impossible to distinguish between them; but progressive and then infiltrating growth indicates secondary infection of the glands.

The surgeon should first notice whether the swelling be reducible or yield under compression, and then fill out again when the force is removed; excluding fluctuating and pulsating tumours giving this sign, we have *nevus* and *hernia*. The signs of hernia are fully discussed in chapter xxxv., and we need not repeat them here.

Nævus is a congenital formation, or appears soon after birth; it may be stationary, or grow with various degrees of rapidity, or undergo spontaneous recession and cure; very commonly the diagnosis is rendered very easy by the nævoid condition of the skin, at other times the blue colour of the tumour is visible through the thin skin. Although these swellings are largely fluid, they do not fluctuate, and as they are connected with veins they do not pulsate. They may be met with in any region of the body. Under compression they yield gradually (not suddenly) and without any gurgle or slip, as is common in hernia, and they at once fill out again when the

force is removed, and become especially full and tense under any effort or strong expiration.

Then the surgeon should ask himself whether the swelling is connected with any of the special structures of the part, *veins, nerves, or lymphatic glands*, and for this he must look to its position, connections, and outline.

1. If the swelling be elongated, cylindrical in shape, and in the course and position of a vein, it is a *thrombus*. If the swelling have recently appeared, and is painful and tender, it is a *recent thrombus*. While if to these signs there be added an ill-defined outline of the swelling, obscuring its original form, and pyrexia, there is also *phlebitis* and *periphlebitis*, which may run on to *suppuration*; if the swelling be chronic, painless and of stony hardness, it may be recognised as a *phlebolith*. In the acute conditions there is generally more or less œdema of the parts returning their blood through the occluded vein, but this largely depends upon the site of the obstruction. In the case of superficial veins the diagnosis will rest upon the character of the swelling; in thrombosis of deep veins it rests rather upon the occurrence of local œdema, with pain and tenderness along a vein; for often the actual swelling of the vessel and its outline cannot be made out, and owing to the danger of detaching a portion of the clot, only the gentlest manipulation is warranted.

2. If the tumour be situated in the course of a nerve, is firm, clearly outlined, globular, or ovoid in form, with its long axis parallel to the axis of the limb, movable transversely, but immovable vertically; and, further, if there be pain of a neuralgic character along the terminal branches of the nerve in question, sometimes coming on in violent paroxysms, or excited by pressure upon the swelling, it may be recognised as a *neuroma*. These tumours vary much in size and

consistence, and they are often multiple, affecting one or several nerves. They may be met with on the ends of nerves in stumps or scars.

3. If the swelling occur in the site of lymphatic glands, and have the ovoid or globular outline of these bodies, and especially if it be multiple, and movable under the skin and over the neighbouring deeper parts, and there be some obvious exciting cause, it may be diagnosed as *lymphatic glandular*. It is only in quite a few regions that there is any difficulty in arriving at a correct diagnosis, and these cases are discussed in other chapters. Having determined that the swelling is glandular, the surgeon must next proceed to determine its cause, or the variety of glandular enlargement he has before him.

(a) If the swelling be acute, following an injury or an inflammation of some part pouring its lymph into the affected gland, and the gland be painful, tender, more or less fixed in the surrounding tissue, and especially if the skin over it be red and œdematous, it is *inflammatory*.

(b) If the enlargement be chronic, slowly progressing from gland to gland, forming firm, painless, rounded swellings, which exhibit a tendency to slow disintegration, and especially if it occur in the neck, and there are scars of old abscesses in the neighbourhood, or thin unhealthy scars of ulcers, or other signs of the strumous cachexia, such as disease of the bones or joints, ulcer of the cornea, strumous lip, etc., and the dull complexion and pallid anæmic state so common in these cases, the condition is to be regarded as *strumous*.

(c) If the affected glands are multiple, firm, freely movable in the connective tissue around, not painful or tender, and if the glandular swelling be accompanied by other signs of constitutional syphilis, they are to be regarded as *syphilitic*. In the groin or

in other regions where they are associated with a sore which may be a hard chancre, it is the fact that there are many glands enlarged (in both groins), that they are hard and shotty, not blended together into one ill-defined mass, that they do not exhibit a tendency to suppurate, that they are accompanied or followed by the usual manifestations of secondary syphilis, and that they yield to antisyphilitic treatment, which renders the diagnosis certain. But they occur in syphilis quite apart from primary sore, especially in the posterior triangle of the neck and above the internal condyle of the humerus, and the swellings there have the same general characters which, with the accompanying signs of syphilis (rash, sore throat), make the diagnosis clear.

(d) If the glandular swelling progressively increase, spread from gland to gland, infiltrate the neighbouring tissues, involving the skin, muscle, etc., and if there be or have been a malignant tumour in the neighbouring parts, it is *malignant* in its nature; these infective malignant growths are most often carcinomatous, but they may be sarcomatous, and in all cases they are of the same nature as the primary tumour.

(e) If the glandular swelling be a primary and chronic growth, affecting many glands and many groups of glands, forming large, rounded, lobulated masses, inconvenient only by their size, steadily and persistently growing, but not showing any tendency to soften or suppurate, and if with that there be progressive debility and anæmia, and especially if the spleen be at the same time enlarged, the disease is *lymphadenoma*. The blood should be examined, and if there be a great increase of white corpuscles, the disease is *leucocythæmia*, while if there be no notable increase in these cells, it is *pseudo-leucocythæmia* or *Hodgkin's disease*. The cervical glands are those most

often and first affected, and the disease may remain limited to them for some time, and then suddenly spread to other groups of glands, causing rapid enlargement. When removed the glands are not found to have undergone fatty or caseous degeneration.

4. Some of the remaining tumours may be at once separated as **congenital**, and if the tumour be irregular in outline, very soft and loose, but incompressible, with parts that fluctuate and others that are solid, and especially if there have been repeated attacks of inflammation of the skin over it, it is a *cystic hygroma*. These tumours are most common in the neck, axilla, and groin, are often multiple, and may attain a large size.

5. But if the tumour be wholly solid, soft, and incompressible, and its surface or edge be felt to be lobulated, it may be diagnosed as a *lipoma*. The congenital fatty tumours may be placed deeply under muscles, and may be attached to or involve muscles, or even be attached to bone; and hence they are not so freely movable as the acquired tumours in the subcutaneous tissue. Their lobulation, however, is just as characteristic. If the tumour be soft, it may yield a sensation so like fluctuation that puncture may be required to show whether it is solid or fluid.

6. Of the **acquired tumours** there are certain forms that may be easily recognised by certain well-marked characters.

(a) If the tumour be an outgrowth from the skin, entirely raised above its surface, and therefore clearly marked off at its attached base; firm, dry, and hard (unless in a situation where it is kept moist by secretion), granular or branched on the surface, it is a *wart* or *papilloma*. These vary much in appearance, according to whether the branching processes of which they are composed are more or less blended together, and according to the density of their tissue.

(b) If the tumour be fixed to and infiltrate the skin, and spread both laterally and deeply, be firm, ulcerated on the surface, the ulcer having thick everted edges and an irregular granular base, a serous discharge, and if the lymphatic glands of the part be enlarged, hard, and progressively increasing in size, it is an *epithelioma*. A scraping from the ulcer will show under the microscope large and irregular epithelial cells with large clear nuclei, and possibly also parts of epithelial "nests." (For diagnosis between epithelioma and chancre see page 336.)

(c) If the tumour be a small nodule raised above the surface, globular or ovoid in shape, of a glistening white colour like white wax, umbilicated in the centre, firm and fixed in the skin, it is *molluscum contagiosum*. These tumours may be single or multiple, and they are most common on exposed parts of the body.

(d) If the tumour take the form of a pedunculated pendulous outgrowth of the skin, soft, elastic, and smooth, it is called *molluscum fibrosum*. When of large size, or exposed to friction, these growths may ulcerate on the surface.

(e) But when the swelling is in the form of pendulous folds of firm thickened skin and subcutaneous tissue hanging from the buttock, back, shoulders, and thighs, while sometimes called by the same name as the pedunculated variety described above, it is better known as *diffuse fibroma*. Both forms are very chronic in their course, and do not recur upon complete removal.

(f) If the tumour be ovoid or rounded in shape, lobulated on the surface, with a shallow rounded edge, and be freely movable in the subcutaneous tissue, but slightly connected with the skin as shown by its dimpling over it when the tumour is compressed, it is a *lipoma*. These growths are most common on the posterior part of the body, and about the shoulders and

waist. They are not unfrequently multiple, and may be very numerous; they vary in size within very wide limits, and are usually painless, and often remain stationary for years. They have been known to change their position, moving downwards. If the swelling be soft, granular, or lobulated, adherent to the skin, but without a distinct edge, movable over the deeper parts, but not movable in the subcutaneous fascia, it is a *diffuse lipoma*, which is most common as "double-chin," or at the back of the neck, or in the belly-wall. The feature by which fatty tumours are to be recognised with most confidence is the soft lobulation of their surface, which is eminently characteristic.

(g) If the tumour be of chronic course, of very slow growth, or perhaps have remained stationary for some time, rounded in outline, smooth or lobulated, firm, adherent to the tissue from which it grows—whether skin or fascia, but freely movable over the surrounding parts—it may be recognised as a *fibroma*. Many neuromata are of this nature, and are distinguished from similar growths unconnected with nerves, by their peculiar kind of mobility and by the character of the pain associated with them.

(h) If the tumour be of recent growth, of ill-defined outline, immovable in the tissue in which it is placed, and having a tendency to infiltrate neighbouring tissues, involving, perhaps, skin, fascia, and muscle, and especially if the growth slough, or soften at one or more places, leaving a sloughy sinus or ulcer, it is a *gumma*. Evidence of other syphilitic affections past or present, and the disappearance of the tumour under antisyphilitic treatment, will materially support and confirm the diagnosis. The absence of a sharply-defined outline, the thin, flattened, or ovoid, and not globular shape, and the evidently infiltrating mode of growth, together with a somewhat rapid formation

compared with other chronic tumours, will usually lead to a correct diagnosis.

(i) Similar swellings affecting the skin alone, or the skin and subcutaneous tissue, occurring in children and young people, and quickly breaking down into fluctuating collections of thin pus, are *scrofulides*. They are usually, but not always, multiple, and the various swellings may show their different stages. The patient may or may not show other distinct signs of the scrofulous diathesis.

(j) If a tumour have grown steadily and rapidly, and be found immovable in the part from which it has grown, and still more, if it have spread to and infiltrated neighbouring parts, such as skin and muscles, and if there be progressive enlargement of the neighbouring lymphatic glands, or secondary growths can be detected in the lungs, liver, or other organs; or if after apparently complete removal the tumour have recurred in or close to the cicatrix, it may be recognised as a *malignant tumour*. These tumours vary much in their characters and in their degree of "malignancy." In some it is only after removal and microscopical examination that their true nature is known, while in others their "malignancy" is unmistakable. They sometimes show other signs more or less characteristic, such as ulceration and fungating growth, softening and cyst formation. While met with at all ages, they are decidedly more common after thirty-five years of age. In some cases the influence of heredity seems to be very marked; but in no case should it be relied upon to any extent for purposes of diagnosis, while no weight whatever is to be attached to the absence of such a history. The much-spoken-of "cancerous cachexia" is purely the result of the pain and exhaustion caused by the tumour, or of its direct or mechanical interference with nutrition, and is therefore of no value for diagnosis.

The signs upon which reliance is to be placed are: (α) the infiltrating mode of growth; (β) the persistent enlargement of the tumour in spite of any palliative treatment (there are a few exceptions to this in some instances of "withering" scirrhus); (γ) the spread to neighbouring tissues; (δ) the formation of secondary growths in the lymph glands or other parts; and (ε) the local recurrence after removal. In some cases there are certain special signs, such as the retraction of the nipple in a mammary scirrhus, and pulsation in sarcoma of bone.

To distinguish between *sarcoma* and *carcinoma*, the recognition of the tissue in which the neoplasm started will be of great value, as it is generally held that sarcomata originate only in tissues of the connective-tissue type, and that carcinomata spring only from tissues of the epithelial type. Where these tissues are intimately blended together, as in the breast, this test cannot be applied, and we have to rely upon other signs, but in such cases as the skin, muscle and fascia, it is a test of extreme importance and value.

The infection of lymph glands is another important sign, for while this does occur in sarcomata, it is much more common in carcinomata, although Mr. Butlin has shown that the site of the malignant growth plays a large part in determining the infection of the lymphatics. Age is another factor which may be of value, for while carcinomata are essentially tumours of middle and later life, sarcomata are met with at all ages, although becoming more common in later life.

To distinguish between the varieties of sarcoma may be quite impossible without the aid of the microscope; but the firmer and slower the growth of a tumour, the more likely is it to be formed in part of fibrous tissue and of *spindle cells*, while the *round*

cell sarcomata are softer and of more rapid growth. A black colour of the growth will of course indicate a *melanotic sarcoma*. In some very soft and very vascular sarcomata hæmorrhage into the growth may occur, and either before or during operation the surgeon may mistake them for *blood cysts*; an examination of the wall of the supposed cyst, and noticing the fact that the swelling does not collapse when tapped, will guard against this error.

The great hardness of some forms of carcinoma, together with signs of contraction of the growth, will enable the surgeon to recognise *scirrhus*; while in softness of tissue, rapid growth, and globular outline, he will see evidence of *encephaloid*. When the cancer attacks an epithelial surface and rapidly ulcerates, it is an *epithelioma*.

CHAPTER XVII.

THE DIAGNOSIS OF FLUID OR FLUCTUATING SWELLINGS.

THE detection of fluctuation in a swelling merely indicates its fluid nature, it tells us nothing with regard to the character of the fluid contents, but nevertheless the sign forms a very useful and practical starting-point for the diagnosis of a large class of swellings, which we will now consider. The fluids met with in such swellings are blood, inflammatory effusions (serous, synovial, or purulent), cystic fluids of all kinds, dropsical effusion, and more rarely urine and bile.

The first step in the diagnosis is to distinguish between the swellings which have arisen acutely and those which are chronic in their nature,

A. Acute fluctuating swellings.

Hæmatoma.	Acute abscess.
Serous or synovial effusion.	Distended bladder.

Notice whether the swelling arose spontaneously, or as the result of an injury; whether it formed suddenly, or more gradually and progressively; whether accompanied by any signs of bruising or ecchymosis; whether attended with signs of inflammation, and, if so, whether these preceded the marked swelling, or *vice versa*; the precise outline of the swelling, whether it corresponds with that of a serous or synovial cavity or the urinary bladder; whether it is in the position of a lymphatic gland.

If the swelling have arisen suddenly, and have immediately followed a blow, or strain, especially if there be any bruising of the surface, and there be an absence of all evidence of inflammation, or, if present, the inflammation have followed upon the swelling, the diagnosis of *hæmatoma* is to be made. (See page 27.)

If the swelling correspond in position and outline to a serous or synovial sac, and have formed with signs of inflammation (pain, tenderness, heat, perhaps redness, and pyrexia), it is *serous or synovial effusion*. And if the swelling progressively increase with deepening redness of the skin, superficial œdema, increased pain, tenderness and local heat, and especially if the fever rise to a high point, or rigors with sweats occur, the fluid may be considered to have become purulent, or the case to be one of a *serous or synovial abscess*.

If the fluctuation be detected in a swelling which is attended with redness, local heat, pain, tenderness, and pyrexia, and especially if it be known that these signs of inflammation preceded the existence of fluctuation, the diagnosis of an *acute abscess* is to be made. Local œdema is a valuable aid in some cases, as it

greatly strengthens the evidence in favour of the presence of pus.

If the swelling be situated immediately above the pubes, and correspond in outline with the urinary bladder; especially if it be also detected bulging down against the rectum, with fluctuation between the two parts of it, and there be a history of the patient not having passed urine for many hours, the diagnosis of a *distended urinary bladder* is to be made, and this will be completely established if on passing a catheter and drawing off the urine the swelling disappear.

B. Chronic fluctuating swellings.

Hæmatoma.	Aneurism.
Serous effusion.	Varix.
Chronic abscess.	Distended urinary or gall-bladder.
Cyst.	

As an *hæmatoma* may last for some time, even for months, unchanged, it must be included among chronic as well as acute swellings. In investigating these chronic fluctuating tumours, the surgeon should first inquire into their history, and especially with the view of eliciting a history of injury or of inflammation; he should then carefully notice whether there be at the time of examination any evidence of inflammation in the swelling, or in any of the neighbouring parts, especially the bones and joints; whether the swelling correspond in position and outline to a serous or synovial cavity, or the sheath of a muscle; whether it be adherent to a vessel or a gland, or occupy the site of a vessel or a gland; whether it be influenced by the surrounding fascia or not; its outline, whether globular or more flattened; whether adherent to the parts around, and if so in what directions it is movable; whether the swelling fluctuate throughout; or whether part be solid, and if separate fluctuating areas can be detected in it.

In some cases puncture of the swelling, or special signs, such as retention of urine, and the effects of catheterism may be necessary to clear up the diagnosis.

If the swelling immediately followed upon an injury or strain, particularly if it were attended with superficial bruising, but not with the signs of inflammation, and is more or less globular in outline, it may be diagnosed as an *hæmatoma*. (For *Cephalhæmatoma* see page 77; for *Hæmatocele* see page 509.) The softening of the tissues around an inflammatory effusion is not met with in *hæmatoma* and cysts, and this accounts for the more globular outline of *hæmatomata* and cysts as compared with abscesses.

If the fluid tumour be in the position and of the shape of a serous or synovial membrane, bursa, or sheath of a tendon, or a hernial sac, it is to be recognised as a *serous* or *synovial effusion*. As examples of this may be cited housemaid's knee, miner's elbow, palmar ganglion, dropsy of the knee, and vaginal hydrocele.

If there are no signs of inflammation of the part (heat, pain, redness, tenderness), and no history of such, and if the neighbouring parts, as the bones and joints, are free from disease, and if the tumour be of a globular shape, with distinct outline, movable over surrounding parts, and especially if it be tense, projecting from the surface, and not affected in its direction of growth by the muscles or fascia, it is to be diagnosed as a *cyst*. Where such cysts are met with in connection with glands, they may be *retention cysts*, as ranula, some cysts of the mamma, and the common sebaceous cysts of the skin. When occurring in the planes of cellular tissue unconnected with glands, and especially if they are found lax, with thin walls, and (if the test can be applied) translucent, they are what are known as *serous* or *lymphatic cysts*, and are sometimes

spoken of as *hydroceles*. These cysts are congenital. (See page 285.)

When they are found over joints or synovial sheaths, when they are tense, firm, and fixed to the deeper structures, from which they cannot be entirely separated, they are to be recognised as *synovial cysts*, e.g. the common ganglion of the back of the wrist. Similar cysts are met with in connection with the larger joints, as the knee and the elbow, and they may be quite superficial, and have a long and very narrow pedicle leading down to the articulation; but the surgeon must be on his guard to recognise their true nature, or he may be led to open an articulation unawares. The peculiar tenseness of these cysts, their mobility under the skin but their fixity on their deep aspect, are the points on which a diagnosis may be made to rest. The author recently met with one of these cysts some inches below the knee.

Where there is a history of congenital origin, or where the tumours are noticed in early childhood and such an origin is therefore probable, especially when occurring under the occipito-frontalis or orbicularis palpebrarum, they may be diagnosed as *dermoid cysts*. These cysts are met with in every part of the body, but especially on the head and face, and in connection with the ovary. When opened, the peculiar nature of their contents (hair, teeth, pieces of bone, etc.) and the structure of their walls establishes the diagnosis.

Where a swelling is found to be in some places solid, and in other places fluctuating, or where two or more distinct fluctuating areas are found in the same tumour, the disease must be recognised as a *cystic tumour* or *compound cyst*.

If there have previously been, or are at the time the patient is examined, any signs of inflammation of the part, especially pain, tenderness, or redness of the skin, or if there are any signs of inflammation of neigh-

bouring or connected parts, particularly bones and joints, a chronic fluctuating swelling may be recognised as a *chronic abscess*. Examples of such are constantly met with in abscesses round diseased joints, psoas abscess, and many cases of strumous cervical abscess. If from the position and outline of the swelling it be evident that the fluid is contained within the sheath of a muscle, or has travelled along a plane of cellular tissue, and has been governed in its direction of growth by the surrounding muscles and fasciæ, even in the absence of the above signs, the same diagnosis may be made. A third sign by which chronic abscesses may be recognised is their origin in solid swellings which undergo softening. For instance, when a strumous child presents two or more small firm swellings of the skin and subcutaneous tissue, if the surgeon find one of the smallest of the swellings firm and solid, and the larger and older ones fluctuating, he may be certain that he has to deal with chronic abscess, the common *scrofulide*. As a rule, chronic abscesses are less tense than cysts, though exceptions are met with, and their outline is not so characteristically globular; they are always adherent to the tissue immediately surrounding them. In this particular, the distinction between a sebaceous cyst adherent to the skin in the centre only and a scrofulide adherent to and involving the skin over its whole surface, is very marked.

When the fluctuating swelling occurs over and adherent to a main artery, and exhibits an expansile pulsation, etc., it is an *aneurism*. (See Pulsating Tumours, page 296 *et seq.*)

If the swelling be met with in the course of a vein, and is elongated in the direction of a vein, cylindrical in shape, compressible, and completely emptied by raising the part or by pressure, and especially if a blue colour be seen through the skin, or other superficial veins are seen coursing towards it, the diagnosis of *varix* is to be made.

It is only rarely that the nature of this affection is not at once apparent. The case in which any difficulty of diagnosis is met with is that of a saccular pouching of the saphena vein close to the saphenous opening. (See page 530.)

The signs of a *distended urinary bladder* are the same, whether acute or chronic, except that the pain and tenderness are much more marked in the former case. (See page 292.)

If the swelling be found occupying the right hypochondrium, reaching up under the ribs, rounded in outline, not adherent to the abdominal-wall, and if there be a history of gall-stones or of attacks of pain with jaundice, the diagnosis of a *dilated gall-bladder* may be made.

CHAPTER XVIII.

THE DIAGNOSIS OF PULSATING SWELLINGS.

THERE is no problem of greater importance to the surgeon than the correct diagnosis of a pulsating tumour; in most instances its solution is easy if only care be taken, but from time to time cases present themselves which test to the utmost diagnostic skill and knowledge, if indeed a diagnosis be possible at all. The point upon which it is necessary to insist, first of all, is the necessity of not relying upon any single symptom, but of making a careful and complete examination of the case, and of weighing all the signs. The tumours which pulsate may be thus enumerated:

Fusiform aneurism.
Sacculated aneurism.
Varicose aneurism.
Cirsoid aneurism.
Aneurismal varix.
"Pulsating tumour."
Encephalocele.

Tumours over arteries, including abscess, cyst, and solid tumours.
Ruptured artery or ruptured aneurism.
Tumours situated over aneurisms, especially abscess.

The most important point to be determined in every such case is whether there be an aneurism present or not; and then if an aneurism be present, whether the entire tumour be aneurismal. We will first refer to the examination that should be made, pointing out the bearing upon the diagnosis of each fact elicited, and then, putting these together, will mention the distinguishing features of each of the pulsating swellings.

1. **Notice the position** of the swelling; whether it corresponds to the known course of an artery of large or medium size, or whether far removed from such. Fusiform and sacculated aneurisms, and tumours with communicated pulsation are only found over arteries of some size. Cirsoid aneurism and "pulsating tumours" may occur in these situations, but also quite removed from main arteries, *e.g.* a pulsating swelling in the ham may be an aneurism, a "pulsating tumour," or a tumour with communicated pulsation; a similar swelling on the outer side of the lower end of the femur can only be a "pulsating tumour," or a cirsoid aneurism.

2. **Feel the pulsation** and determine (*a*) whether the tumour is filled out at each beat of the heart, and is expanded in all its diameters, or whether it is simply thrust forwards. For this purpose, place a finger of each hand on opposite sides of the swelling, and notice whether they are thrust apart by the impulse or are simply raised; or the same thing may sometimes be plainly demonstrated by fixing a piece of strapping with a slit in its middle over the swelling, when, if the impulse be expansile, the slit will open out with each beat of the heart. An *expansile impulse* is caused by the forcing of more blood into the swelling, and is therefore a sign common to aneurisms of all kinds, aneurismal varix and "pulsating tumours" which are so vascular that the change of tension of their numerous vessels affects