CLINICAL LECTURE ON NÆVUS.

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GENTLEMEN,—I wish to call your attention to-day to a group of allied cases, some of which have been before us this winter, and which are very common in practice. I allude to a morbid or abnormal condition of the vessels connecting the terminal arteries and the commencement of the veins in different regions of the body. The simplest way to introduce the matter will be to get a little patient presenting a well marked example of one of these affections, and from the mother ascertain the history of the case, and, from its appearance, obtain a general knowledge of the outward character of the disease. The example we are about to study is a case of *nævus maternus*, the nature of which we shall proceed to investigate. The little child you now see is fourteen months old. When it was born, there was no mark on its face. Four weeks after birth, there appeared a little red spot on the right side of the face above the eyelid. That spot gradually spread down over the cheek and towards the ear till it invaded the whole of the right side of the cheek below the ear. It has spread forward towards the nose and upper lip, and has extended from the lower lip down along the neck as far as the sternum. At the spot where it first commenced, it appears that some caustic substance was applied, which produced suppuration at the part, the result of which is obvious at present in a cicatrix more or less pale on the site of the original spot. At different points over the surface are various cicatrised marks, the result of the application of this caustic substance; but in none of the places where suppuration has occurred is the colour entirely destroyed. The skin at the parts which are discoloured is elevated and puffy, and upon pressure becomes paler; but no amount of pressure restores the natural colour to the integument. Such is a short account, as obtained from the mother, of the history of the spread of *nævus*, and of what can be seen by the naked eye upon the examination of such a case.

It is well worth while for us to take up a short time in ascertaining the nature of this affection, and the different modes that can be adopted for its remedy; because it is one of those surgical affections that are exceedingly common, and one which almost every surgeon in active practice may at the outset undertake and probably cure, while there are many other examples of disease which it is out of the range of the ordinary practitioner to deal with.

In order to explain to you the nature of this and allied cases, it may be necessary for me to recall to your minds for a few minutes the normal connection between the extremities of the arteries and the extremities of the veins. In the diagram you see before you, this is made intelligible by the different colours of the vessels. You see on one side one series of vessels coloured red, which indicates the ultimate branches of the minute arteries; on the other part of the diagram, you will see a series of vessels coloured blue, which indicates the radicles of the veins. Now, the termination of the minute arteries in the human body occurs in two ways: first, by direct connection with other arteries; and, secondly, by communication with veins by intervening capillaries.

In the ordinary normal circulation of the body, the arteries may be very minute; but they communicate with the veins, rarely directly, but usually by means of minute vessels of a different character from either the arteries or veins to which the term capillary is applied. The capillaries vary in size, transmitting the blood by a stream which will admit on an average, of from four to five blood-globules. But, in certain parts of the body, there is a peculiar arrangement between these two classes of vessels, which will serve very well for the illustration of such a case as we have got here. In the tissues called erectile, as, for instance, the corpus cavernosum and corpus spongiosum penis, the communication between the arteries and veins is peculiar. Instead of the ordinary nearly equal-sized capillary plexus, there is a special arrangement of the termination of the arteries and veins which is worthy of attention. The minute arteries which carry the blood into the corpus cavernosum and corpus spongiosum are spiral or twisted, and, instead of communicating directly with the capillaries, enter into minute vessels, on which there are pouches or dilatations, into which the blood passes

as in a whirlpool, and from which pouches it escapes either by the aperture of entrance or by another aperture. They are like Florence flasks, into the mouth of which a minute spiral vessel enters, and through which the blood, having whirled, passes away; the principle of the circulation being that, in the passage of the blood from the arterial duct to the venous duct, instead of passing through the intricate network of capillaries, which in other parts of the body tend to equalise the current of the blood, in this peculiar pouched circulation the tendency rather is to confine and complicate the flow of blood, to make it whirl as in a whirlpool through the tissue and pass out. In ordinary circumstances, the arrangement of the mouths of these pouches is such as to permit of this circulation taking place without any great interruption; but, in peculiar circumstances of nervous excitement, something happens to accelerate the flow of blood through the arteries, and to retard the flow of blood to the veins, and in consequence an increased quantity of blood is thrown into the erectile tissues in question, and an interruption of the passage out of the blood takes place, the result of which is, that the blood is to a certain extent stagnated in the erectile tissue, whirled into these pouches, and, being partially arrested there, the tissue in which these pouches are becomes turgid, its whole substance becomes temporarily gorged with blood, and produces the phenomena of erection.

I have introduced this description to you, because it to a certain extent enables us to understand the difference between the skin on the healthy side of the child's face and the skin or integument on the unhealthy part of it. *Nævus*, which is an example of one of the varieties of aneurism by anastomosis, exists principally in the integument, but it may occur in the subcutaneous tissue; hence we have cutaneous and subcutaneous *nævi*. In a large number of instances, these two kinds of *nævus* are combined in the same example, as in the case before us; but, when we have two distinct specimens, the one cutaneous, the other subcutaneous, the characteristics are a little different. Cutaneous *nævus* exists as a red patch—a red spot upon the skin—and, as it very often is found immediately after birth or at birth, it is popularly called mother's mark. In the form of a red spot upon the skin, it may have no tendency to spread; it may remain a permanent patch of the size it was when the child was born, or it may tend to spread over the surface of the skin, as we see in the example before us. Subcutaneous *nævus* exists as a tumour, swelling, or protrusion of the integument. It produces a bluish tinge of the surface, and is soft, puffy, elastic, capable of being compressed and reduced in size by the emptying of the vessels, but returning to its original size when the pressure is taken away. This subcutaneous *nævus* exists in the tissue between the skin and the adjacent structures; in other words, underneath the cutis in the adipose tissue; and it is soft, yielding, and elastic, and the tumour may rise to a considerable extent. Now, in the case before us, you have a very well marked specimen of the two kinds: *nævus maternus* proper, or patch upon the skin, combined with the subcutaneous projection or tumour caused by disease of the vessels of the subcutaneous tissues.

Let us for a moment or two attend to the first kind: the *nævus maternus*, or mother's mark. Very little explanation is necessary for it. It is simply an exaggeration of the capillary circulation; hence it is called capillary *nævus*. When circumscribed, as it very often is, within the circumference of the patch, the size of the capillary vessels is increased, and the consequence is that, instead of being pale pink, it becomes red in colour, slightly turgid, from the increased quantity of blood-corpuscles. It may, therefore, be described as a condition of the skin in which the capillary circulation is enormously exaggerated, and consequently the part becomes more swollen. Most commonly, it is congenital; but sometimes, as in the case we have just seen, it begins a few weeks after birth, and, when it begins after birth, its tendency to spread is greater than when the child is born with it.

If, therefore, you are called to see a child born with a *nævus* of small size, and if you notice that within the next few weeks there is no tendency to enlarge, you are not to be in any great hurry to deal with that spot. But, if the spot enlarge rapidly after birth, or if it make its appearance some time after birth and begin to enlarge, then is the time to attack the *nævus maternus*, if you wish to do it in an effectual way. A minute spot of *nævus maternus*, which is a very important thing, especially in the case of females, when it attacks, as it usually does, the head or face, can very often be satisfactorily treated at an early stage. There are a great number of ways of treating it.

If it be very small, a very useful way is by vaccination; by putting the vaccine vesicle upon it. The vaccine vesicle runs its course, and results in a cicatrix, which involves the whole tissue of the *nævus maternus*. The effect is, that what was a red mark becomes a pale cicatrix. If it be not larger than a finger-nail, then, by applying a number of points of vaccine lymph round the circumference,

and perhaps one or two in the centre, you include a large portion of it in the vaccine disease, and it frequently has the effect of obliterating the spot. Then the vaccine vesicle equally protects the child from small-pox, as if it were applied in other parts of the body, consequently you are, so to speak, killing two dogs with one stone. You will often fail, however. Conversing with general practitioners who undertake the treatment of this condition in the child, you will find almost every one of them say that, though they succeed in one or two cases by the adoption of this method, there are a great number of failures. And, in my own experience, I have been called on frequently to deal with cases of nævus which have been unsuccessfully vaccinated at an early stage; but I only bring this forward in order to prevent you being discouraged when you are unsuccessful with this mode of treatment. In a considerable proportion of cases, vaccination will serve the purpose of curing the disease; in others, it must be treated in another mode.

Another way of treating nævus, when of small size, is by introducing red-hot needles. The needle of the galvanic cautery will coagulate the blood, produce inflammation, and cause the destruction of the tumour and the obliteration of the spot. The point of a needle dipped in nitric acid, or in a concentrated solution of perchloride of iron, sometimes has the effect, all of these aiming at the same thing: coagulation of the blood in the skin or nævus.

These are examples of methods of treatment of the simple form of nævus maternus; but, when it comes to be a case of the other kind, which is the case that is most frequently dealt with in hospital, such a method of treatment is altogether unsuitable. Subcutaneous nævus or nævoid tumour, to which I refer, consists of a dilatation of the vessels of the venous side of the tumour; hence it is often called venous nævus. To understand my observations, recollect that a tumour of the nature of aneurism by anastomosis is found of two varieties, according as the venous side of the circulation or the arterial side is affected. I am disappointed in being unable to show you a patient whose presence I expected, a good example of the arterial variety of the tumour; but I may state that, when a subcutaneous tumour results from dilatation or enlargement of the arterial side of the circulation, it is called cirroid aneurism. In that case, the tumour is semi-solid, pulsating, and presents many of the characteristics of aneurism. It most naturally occurs somewhere on the forehead or on the scalp in the insolation between the temporal and occipital arteries. In the instance referred to, the tumour consisted of dilated arteries, which, under the finger, felt serpentine, being compressible and soft, evidently from being thin in their coats. They have somewhat the character of veins, except that they are pulsating; hence the tumour into which they enter being full of tortuous dilated vessels like varicose veins is called cirroid.

I shall devote the rest of the time to the consideration of the nature of venous subcutaneous nævus. This exists in the form of tumour, elastic, compressible; and, when we take the fingers and compress it, we can diminish its size by the force which we apply to it. When a tumour of this kind can be removed from the body, it is found in its interior structure to have a close resemblance to the corpus cavernosum or corpus spongiosum penis. It consists of two tissues—a quantity of fibrous tissue, which forms, as it were, the envelope of the tumour and the blood-vessels contained in the interior. On a section of the tumour being made (such as I now make of the one removed three weeks ago), it is found to consist of a number of threads of fibrous tissue dividing the interior into a large number of spaces, which are not separate exactly one from another, but communicate with each other. Among these threads or trabeculae there pass a number of vessels connected with the arteries which enter the tumour on one side and the veins which leave the tumour on the opposite; and the vascular tissue in the interior is not composed of capillaries, but capillaries which have become enormously dilated, and in which gradually the walls of the dilatations have come to be adherent; and one very often finds that perforations have occurred between one of these dilated capillaries and the other; so that, instead of the blood passing from a series of vessels, it passes through a series of blood-spaces, which have resulted from the destruction of the walls of these dilated capillaries. Hence any injury to such a tumour containing blood lying in these blood-spaces must be a dangerous thing, and greatly to be feared.

Now, this nævus may occur in almost any part of the body; but I need scarcely say that the parts where it most naturally occurs are the most vascular; those parts where the communications between the vessels are most frequent; namely, the scalp, brow, and face, and generally the front part of the body, but not exclusively, for I have seen nævi upon the back, upon the thigh, and upon the buttock, and almost upon any part of the body you could name; but the vast majority of nævi occur upon the face and head, and consequently in places where the deformity is very great indeed. The tendency of these nævi fre-

quently is to spread and involve more of the adjoining tissue. In the example we have before us, the spot made its appearance at the side of the eye, and gradually has extended to the other side of the face and down upon the neck as far as the breast. Such cases frequently occur; but there are others that extend and grow outwards, and are more dangerous, though not having so great a circumference.

With regard to the treatment of subcutaneous nævus, various methods may be adopted. It is to be remembered that in them the circulation is sluggish, as you would naturally suppose from the description I have given you of the condition of the vessels; but, when the tumour is injured, dangerous hæmorrhage may ensue, and hence various plans have been proposed and put in execution for their removal, most of which I shall mention. The first plan has for its object to coagulate the blood in the tumour, and in consequence produce contraction and obliteration. There are many modes by which the blood existing in the tumour may be coagulated, the result of which would be consolidation and contraction of the tumour, and gradual absorption of the condensed tissues produced. One of the most common modes is by inflammation produced in the tumour by the introduction of a seton. The needle is threaded with cotton thread. The thread may be dipped in some acrid substance, and the tumour may be transfixed in several places and the string left in the interior. As I mentioned to you, the circulation is not very active, and it is some encouragement to you that the hæmorrhage in such an operation is rarely worthy of notice. The thread left in the tumour produces a certain amount of inflammation, and that inflammation coagulation round the thread; and, if two or three threads are passed through, there will be two or three lines of coagulation, and so it spreads till the whole tumour is consolidated. If you do not succeed in the first instance, another series of threads may be passed through, and, in the end, the tumour will be consolidated. That method only applies to tumours of a comparatively limited extent. Another plan of dealing with nævus is by the application of caustic substances, especially when it is a combination of the two kinds of the disease, and when the tumour is of comparatively small size, and is upon the edge of the lip, the tip of the nose, the brow, or the cheek. The application of strong nitric acid on a piece of wood held against the spot for a considerable time has the effect of producing an eschar or slough. That slough may separate with a certain amount of inflammation; that inflammation coagulates the blood, and gradually obliterates the tumour as before. The third plan is to produce coagulation in the interior by the introduction of the galvanic cautery, or a red-hot iron, if you like—the actual cautery. But the galvanic cautery is best, because it gives you a continually red-hot needle. It produces coagulation in the neighbourhood of the needle; the coagulation extends till the tumour is consolidated and obliteration takes place. Another plan is to introduce, by means of a very fine syringe and hollow needle, a drop or two of perchloride of iron. Perchloride of iron is, of all salts of which we are aware, the one which most rapidly coagulates the blood; hence, when we have hæmorrhage from a wound in which we cannot get the blood-vessels tied, we take a small bit of perchloride of iron, or take a piece of lint and dip it in a solution of perchloride of iron, and it will coagulate the blood at once. A few drops of this fluid introduced in subcutaneous nævus will coagulate the blood, and produce consolidation and obliteration as before. Take care, however, that you never employ this form of treatment of nævus in the neighbourhood of a large vein, such as a nævus situated at the lower part of the neck, which is a rare thing, or a nævus near the circumference of the orbit, because a portion of the blood coagulated by the introduction of this fluid may become detached, and may form what is called embolus, or a floating clot, and may get into the circulation of the blood and float away nobody knows where; and may continue floating on until it produces a plug, which may interrupt the circulation in the vessels and produce serious consequences. I knew a case in which a few drops of perchloride of iron were introduced into a subcutaneous nævus on the eyelid of a young child. I was not present, but the description of the result was to me appalling. The child was brought alive, and looking well on its mother's knee. A drop of perchloride of iron was introduced, and in two minutes it was dead, just as if shot through the head with a pistol. A particle or portion of the coagulated blood had entered into the ophthalmic vein, and had gone back and got plugged in some part of the venous circulation at the base of the brain, or orbit. Congestion or stagnation of the blood had taken place, and the result was fatal. Such are the principal plans that may be adopted to produce consolidation.

When the tumour is too large, or when it has resisted all these plans—and you will frequently find examples where these plans are not capable of being performed, or, where having been tried, they have proved ineffectual—there are other two methods by which a tumour

may be removed. There is, first, by ligature. Ligature is applicable to nævus when it is circumscribed; when you can, without difficulty, pass a needle under the base of the tumour. The needle is armed with a piece of string, then the string is passed beyond the edge of the tumour, brought underneath its base, and made to emerge beyond its base on the opposite side. The tumour is again transfixed at right angles to the former direction, and a double ligature is brought through underneath the tumour. We have thus two ligatures passing underneath the tumour in one direction, and two passing through in the opposite direction. Next, the ligatures are tied together, and then the whole is constricted and tied together by the free ends. Thus the whole of the base of the tumour is circumscribed, and strangulation takes place by the string passing round the base of the tumour. If the surgeon be not satisfied with the result of the strangulation, he can put another ligature round the base on the outside. If the skin be affected, the tumour is transfixed without any previous operation; but, if it be subcutaneous, and the skin comparatively unaffected, it may be saved by dissecting back four flaps, and the tumour may be transfixed as before. That, up till very recent times, has been the general plan of treatment, and it is often effective; but it always involves a certain amount of doubt as to the surgeon having got to the bottom of the tumour, and it also involves a long and troublesome process of sloughing and separation; consequently, of late years, we have begun to adopt—and I have seen very few cases in which it cannot be adopted—the method of excision; and it seems to me that we are coming to use this method of dealing with vascular tumours a great deal more freely than formerly. When I was a student, I used to be much afraid of a great number of things we do now with the utmost confidence. When I was a student, nobody would have ventured to have put a ligature on a vein, for fear of the vein becoming inflamed. Nowadays, we never allow a patient to leave the operating-table after amputation when any tendency to bleeding exists, without securing the veins, so that hæmorrhage may be completely arrested. Nævus was for a long time treated by ligature or consolidation, in consequence of the fear entertained of adopting incision upon these tumours; but I need not do more than refer you to the case brought before you the other day, in which I performed an operation, which I told you at the time looked almost appalling, but which, in consequence of the arrangement of which I am going to speak, was performed with comparatively little difficulty and very little hæmorrhage. These nævi, when circumscribed, are more or less encapsulated. This capsule consists of the very tissue which permeates throughout the interior. While there is no well defined capsule in which it lies during the progress of its growth, the tissue gradually becomes so condensed, that it forms itself into a capsule; hence, if you adopt the plan suggested by John Bell, which is the principle that must guide us in dealing with these tumours—namely, never to cut into it, but to cut it out—you can deal with almost any tumour. Apply the knife in such a way as to cut the tissue exterior to the tumour, and by your incision take out the tumour entire. Do not spare it; do not leave a single bit of it; cut on the exterior of it, and lift it out with its capsule, as you saw this one, which was removed about a week ago from the child I am going to show you, and you will be perfectly certain that you have got beyond the tumour, with no danger of bleeding. You thus remove the whole of the tumour, and the only thing you have got to do is to deal with the vessels entering into it from the outside; and the number of vessels entering into one of these tumours is not so great as you would expect; consequently, when you saw the tumour removed the other day, we had only to deal with the mouth of the facial vein and that of the facial artery and one or two small ones that exist in any child's face. As in the operation by ligature, it is of vast importance, for the sake of the appearance of the child afterwards, to save the skin. For this purpose, you must make the incision upon the surface of the tumour in such a way as to enable you to dissect off any portion of the unaffected skin. If the surface of the skin be entirely healthy—I mean if the integument over the subcutaneous tumour be altogether healthy—you may apply your cuts in such a way as is most suitable to the situation; but, in the case I had to deal with, and the result of which I shall show you, a portion of the skin was affected as well as the subcutaneous tissue. You must have been surprised to see the irregularity of the incision made over the surface of the tumour to save the pieces of the sound skin. And, when the operation was completed and the parts readjusted, it was matter of surprise to myself how the pieces of skin dissected back served the purpose of covering the wound upon the child's face after the enormous excision was made. When you save as much of the unaffected skin as possible, leave it comparatively loose, and, after granulation of the surface, the skin will gradually flap back into its place and unite in a way that will be perfectly surprising.

(Child brought in.) This child had an enormous nævus, extending from the edge of the eyelid down to the angle of the mouth, and protruding to a great extent. In the centre of the tumour, there was a cutaneous nævus about the size of a crown; and, at the inside next the nose, there was another cutaneous nævus about the size of a shilling. An incision was made, as you saw, in such a way as to save the skin covering the eyelid, and another so as to save the lower half of it. These flaps were turned back, and the whole cheek was exposed. This tumour (on the table), with the enclosed nævi, now blanched by being preserved in spirit, was cut out of the cheek, leaving those small flaps on the face. This was done three weeks ago, and we now find that, although there is a considerable amount of cedema, there is sufficient skin left to cover the surface. Within three weeks of an operation, of course it is impossible to speak as to the ultimate result; but, in the meantime, the child has recovered from the effects of the operation in a way that is very gratifying.

The whole front of the face between the eye and the mouth, which was exposed, is now healing up; cicatrisation has taken place at a certain point, and is rapidly proceeding at others. In the meantime, it appears to you swollen. That depends upon the cedema upon the eyelid, near the nose, which will very much diminish. I believe that the child will recover, and that the tumour will altogether disappear, with an amount of disfigurement in the face exceptionally small.

The operation must have appeared to you a very painful proceeding, and it was one which I undertook with a very great deal of anxiety, in consequence of the great extent of the incision to be made, and the amount of tissue to be removed; yet I did it with very great confidence, in consequence of an operation which I performed two or three years ago. I expected to have had the child here, but I have been disappointed, its parents having left the city for Fife. That tumour was greatly larger than the one now before you, and it was much more troublesome, as it involved not only the skin and the subcutaneous tissues, but the mucous membrane of the mouth. It extended from the angle of the eye down to the nostril and into the mouth; in fact, involving the whole of one side of the cheek, from the integument into the mucous membrane, and presenting a case almost intractable. The child was in great danger; otherwise it was a healthy child, and, on account of the disfigurement, it was impossible to deal with the case in any other way. I performed the operation accordingly, and removed the whole of the cheek by introducing the *écraseur* at the superior angle, and by putting pins through the cheek beyond the limits of the tumour on both sides, the whole cheek involving the affected tissue was removed by a sort of A-shaped section made by the *écraseur*, which I used instead of the knife, on account of the amount of hæmorrhage which I feared would take place. When the operation was completed, the gap was something frightful to look at; but, with a little stretching, we succeeded in bringing the two sides together. The operation being performed by the *écraseur*, it produced a rough edge rather than a clear incision. But the patient being a growing child, in which the circulation is active, adhesion took place, and it was dismissed from the infirmary when the edges of the wound united, although I must say its appearance was far from attractive. Last year, I had occasion to perform an operation upon a man in one of the suburbs of Glasgow, and, after it was completed, a person in the house said, "Do you know that child?" (pointing to a child about four years of age.) I said "No". I was then asked to look at it a little better. I did so, and said, "Some operation has been performed upon it; has it had a bad hare-lip?" The mother said, "No; that is the child from which you cut the tumour two years ago." From the growth of the child, the parts had become adapted to one another, and, every trace of the nævus being removed, the parts had accommodated themselves in such a way, that the deformity was almost entirely removed. There was little more mark upon the child's face than results from an extreme form of hare-lip. As this child you have just seen is only nine months old, if it recover, as it likely will, and be spared for two or three years, the probability is that, if you saw it again, you would find that the parts were nearly restored, and you would hardly be able to recognise it as the child on whom the fearful operation was performed.

A SANITARY IMPROVEMENT UNPOPULAR.—Some time ago, choleraic diarrhoea raged severely in Buckhaven, and proved fatal in a large number of cases. Since then, fever has been particularly rife in the village. With a view to sanitary improvement, public water-closets are being erected; but, as yet, the workmen have been only able to get one completed. They were attacked by a mob and pelted with stones, dirty water, etc., and have not in consequence been able to erect the number intended.