LECTURES ON SOME IMPORTANT POINTS IN CON- NECTION WITH THE SURGERY OF THE URINARY ORGANS.

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LECTURE III.—TUMOURS OF THE BLADDER.

It is a fact which now begins to appear somewhat surprising, that, until a very recent period, the subject of tumours of the bladder has received a comparatively small share of attention, either from pathologists or from practical surgeons. The former have noticed these morbid products chiefly to remark on their rarity; the latter have alluded to them chiefly as, for the most part, beyond the power of art to remove. The literature relating to them is slender; and inasmuch as, with few exceptions, its earlier records treat the familiar outgrowths from the prostate, and the rarer neoplasms which arise from the bladder, without distinguishing between them, not much is available for our purpose.

[The lecturer gave a brief sketch of the history of operations for vesical tumour, from the case by Covillard of Lyons in 1639 to the present day, including the more recent cases in this country by Murray Humphry, Berkeley Hill, Davies-Colley, Bryant, and the series by Whitehead of Manchester, with their results, and proceeded:]

But there is another mode of studying the subject, which, indeed, it is only possible to pursue on an extensive and adequate scale in this country, since here only the requisite materials are to be found; I mean the study of the vesical tumours themselves, with their physical characters exposed to view, as found in the various museums of our metropolis, together with, in many instances, a few important facts relating to their history.

Of growths or tumours arising from the inner surface of the bladder, and pursuing an independent development within the cavity, there were in the metropolitan museums, prior to 1882, about fifty examples preserved in spirit. Forty-three of these were from adults of various ages; eight had occurred in young children. A large majority of the adult series had arisen in male patients; but as, in a few preparations, the sex is uncertain, no exact statement can be made. Of the eight children, six were female. In addition to these fifty cases, there are about an equal number of cancerous growths preserved in the same museums, and respecting which there is little more to be said. Returning to the non-cancerous growths, it may be stated that, in respect of physical conformation, a number of them consist of single growths from the walls of the bladder, more or less pedunculated; and they might obviously have been removed by operation without difficulty. Others are broad and sessile, and more rarely there are two or more independent growths in the same bladder. Some are delicate, soft, and fimbriated in structure; while others are firm and solid; much variety of density existing among them.

Next to the preserved examples may be considered the result of my own experience, derived from exploring the bladder, by means of which I have already encountered no fewer than twenty cases of vesical tumour. I have presented an account of them in a tabular form, which shows at a glance the age of the patient, the date of operation, the duration of symptoms up to that period, what was the earliest symptom observed, the result of examination of the urine before operation, the nature of the operation itself, the form and situation of the tumour, its structural elements after examination, and the after-results to the present time.

In some cases, I have removed the entire growth; and, when unable to do so, have taken away as much of it as possible; pruning, so to speak, the most salient portions, when the growth was inseparable from the walls of the bladder—a condition met with in several cases. In all instances, however, I have been careful to examine the growth minutely with the finger before operating, so as to offer a diagram of its size and form, representing a sketch made at the time. I

think, in general terms, it may be affirmed that a single tumour attached by a narrow pedicle to the wall of the bladder is not very common, and to say that it may occur once in six or seven cases of non-malignant tumour probably approaches a correct numerical estimate. On the other hand, sessile growths, of which the base is perhaps the widest part, are met with as frequently as the pedunculated form just described; and there are intermediate forms between the two; the preponderance in number, perhaps, being among the non-pedunculated class.

We now come to structural characters. Hitherto, most of the statements relative to vesical growths have been somewhat vague, since the materials for observation have not been attainable. Thus it has been customary to regard villous growths as a class; and these were at no very remote period termed "villous cancer." The existence of papilloma has been generally recognised; occasionally sarcomatous growths have been spoken of, although probably without intention to convey the meaning which modern pathology attaches to the term. After that, follow epithelioma and cancer. At present it is not possible to form a complete generalisation, but valuable indications have been attained from the twenty cases now brought before you, which indicate a sufficient number of important facts to commence with. Every one of the tumours with which I have dealt has been treated by a competent observer; at first by Mr. Stanley Boyd, with one or two by Mr. Eve, others by Mr. Shattock, while all the later ones (fourteen in number) have been laboriously investigated for me by Dr. Heneage Gibbs, from whom I have received in every instance a full written report on intimate structure, and several microscopic preparations, all of which are now before you.

After a survey of the museum-specimens on the one hand, and a consideration of the facts determined by histological analysis of my own cases on the other, with Dr. Heneage Gibbs, I have made the following attempt at classifying these products; and I think it will be regarded as warranted by the evidence.

First, there is the simple mucous polypus, which I have at present only found in the bladder of children, and in their cases only among the museum-preparations; some of these are analogous in structure to the soft nasal polypus, a form of myxoma, while other specimens appear to contain also more of the deeper normal fibres of the structures from which the growth arises.

In regard to the cases of vesical tumour in which I have myself operated, they fall naturally, as do those of other regions, into two distinct categories, namely, those which consist only of elements identical with the normal tissues of the bladder, "homœoplastic," and those which consist, more or less, of other elements never found in the tissues of the healthy bladder, or "heteroplastic."

The first category offers at least three forms of growth, but passing insensibly from one to the other, being apparently diverse developments of the same structural change. Two of them may be spoken of as papilloma, which appears in two typical forms.

1. *Fimbriated Papilloma*.—I employ this term to designate that product formerly known as the "villous" growth, which name is objectionable on several grounds. The most obvious character of the growth is a structure in which the vesical mucous membrane is developed into fine papillæ, which consist of long fimbriated processes of extreme tenuity, and usually form a group arising from a small circumscribed base. Immersed in fluid, the long fimbriated growths float out like slender-leaved aquatic plants in deep water; and when removed to air, collapse and form a soft mass resembling a small strawberry.

2. *Ordinary Papilloma*.—In the growth thus designated, papillary processes, although present in more or less abundance, do not constitute the chief part of the structure, which is accordingly more solid, consisting of the constituents of the submucous tissues of the vesical coats. The papillæ are short, less developed than the "fimbriated" processes of the previous division.

It may be remarked here that the mere presence of papillæ, whether short or fimbriated, does not serve in any way to identify or characterise a growth, since such papillæ may be met with springing from the surface of heteroplastic growths, as epithelioma and cancer.

3. The third type above referred to, although related with the preceding, inasmuch as the basic structures are still homologous with those of the bladder, appears to be best indicated by using the term "transitional" to describe it, as perhaps occupying a place between papilloma and a formation of malignant type, sarcoma. Thus there is not only a peculiarity in the arrangement of the basic fibres, but the presence among them of certain cells foreign to the structure itself is observed—a fact of importance. [Numerous examples of all these forms were shown by drawings and under the microscope.]

The second category of growths, the characteristic of which is heteroplastic structure, is illustrated in the bladder by epithelioma,

and perhaps, but if so, certainly in rare instances, by the sarcomata; between which latter and the papillomata a relation has been suggested in the last noticed growth of the previous category, through the presence of certain cells above described. The existence of true sarcoma of the bladder has been affirmed, but not on the observation of fresh specimens. The presence of leucocytes, or of other cells, both round and spindle-shaped, liable to be found in abundance after inflammatory action in the growth, or as seen in the transitional form described, has perhaps led some observers to pronounce such structures to be sarcoma. Before long, it is not improbable that some unquestionable example will be met with and identified.

Scirrhus undoubtedly occurs as a deposit in the walls of the bladder, and usually affects the base and sides sufficiently to admit of identification by rectal examination. The hard, unyielding, irregular, knotty outline presented there to the finger is so characteristic as to make its presence easily recognised.

Cancer of an encephaloid type is sometimes met with, but it is difficult at present to say how often it affects the adult bladder; it is probably not common in that situation. One example of melanotic growth is referred to.

Finally, that rare product, dermoid tumour, is occasionally found in the bladder. The contents of dermoid cysts, it is well known, are sometimes expelled, probably from an ovarian source, through the urinary passages. But in one case, which occurred in the practice of my friend Mr. T. Bryant, and which I had the pleasure of seeing with him, the locality of a dermoid tumour was undoubtedly vesical. [The details of this very interesting case, in which Mr. Bryant discovered by exploration, and subsequently removed, a pedunculated tumour with complete success, were given.]

It may now be fairly inferred that the commonest species of tumour affecting the adult bladder are papilloma, occurring in two forms, besides that other product above described as an outgrowth of the ordinary submucous tissues forming the vesical coats, all homeoplastic in character.

About ten or eleven cases of my own series belong to this group. Collating the accounts given, and the phenomena manifested by these patients, the general symptoms may be described as follows.

The earliest symptom is almost invariably hæmorrhage. It is observed before unduly frequent micturition is complained of, and before it is painful. On the other hand, in most of the cases in which the tumour was of the malignant type or approached thereto, pain and frequency of passing urine generally preceded the appearance of blood, sometimes for a considerable period of time. In almost all cases, symptoms had been noted during at least three years before the patient applied to me; in some, as much as six or seven years. There appears to be nothing particularly characteristic in the nature of the hæmorrhage, excepting the one important circumstance always to be inquired for; namely, that in the act of micturition the stream may sometimes commence without any blood-stain, or with only a slight admixture, and end of a bright red colour from the presence of much fresh blood. With such an occurrence, and no recent urethral lesion having been made, the source of hæmorrhage must always be vesical.

I should first say that very little positive evidence is obtained by rectal and vesical examinations in relation to any other growths than the hard cancerous deposits, which are usually easy enough to identify. The sound does not offer much information in examining the bladder, mostly meeting with slight obstruction to its free movement on either side, and with less defined a limit than is usually presented by healthy vesical walls; but nothing very definite.

The examination of the urine, however, is often highly significant. Its object is to obtain disintegrated portions of the tumour if present, and to identify their structure under the microscope. It may be necessary to examine several specimens in order to obtain indubitable evidence on this point. An excellent way of obtaining them is to wash out the bladder freely with warm water. It rarely happens that this fails to detach materials sufficient for our purpose; but when it does so I have succeeded by using an evacuating catheter of small size, connected with the aspirator employed in lithotripsy, and have thus obtained specimens which were complete evidence of the presence of a growth.

There is still another method which, when a fibrous growth is present, will secure a specimen, and may sometimes identify the presence of a salient tumour. It consists in carefully exploring the bladder with a small flat-bladed lithotrite. I discovered my first tumour thus; it was coated with phosphates, and I thought it might be a partially sacculated calculus, as I could seize but could not move it.

Supposing that some fragments have been obtained, they should be placed under a quarter-inch object-glass, when a portion of a villus, sufficiently complete for identification, may be met with; the arrange-

ment of columnar epithelium, at right angles to the central axis, and radiating round the terminal point, presenting unquestionable proof of the existence of such a growth in the bladder.

Further, the appearance of small semitranslucent fragments is very significant. Under the power named, these mostly appear to be made up of spindle-shaped nucleated cells, some comparatively short and broad, others elongated, and some nearly acquiring the character of a short fibre. These fragments have been present in several cases in which tumour has been subsequently found.

We may now suppose that exploration in a suspected case has been made by external urethrotomy, and that the steps of the proceeding have been followed, as described in the preceding lecture; and, further, that the operator, on introducing his left index-finger, at once encountered a growth of some kind. He should first deliberately spend some two, three, or four minutes, if necessary, in ascertaining its size, situation, and general outline.

Pressing the abdomen firmly with his right hand into the pelvic basin, he soon ascertains whether the tumour be attached to the wall of the bladder by a narrowish pedicle, or whether it is rather an outgrowth which springs from a considerable area of the coats, and is inseparable from them. He traces the surface, which may be broadly mammillated, one or many lobed, or simply polypoid, firm in contour, or soft and fleecy. He learns whether it belongs more to the side or to the floor of the bladder, or whether it springs from the opposite surface farthest from the meatus, or from the upper aspect of the cavity. The mind soon forms a distinct image of the body to be dealt with, and simultaneously arrives at a judgment as to whether it be possible to remove it entirely or partially; and, if the latter, whether a sufficient portion can be safely taken away to warrant further surgical interference. If the tumour be polypoid in form, with a distinct pedicle, narrow, or even wide, there can be no doubt as to the propriety of operating. But if the growth admit of considerable portions being removed without injuring the vesical coats, which should be approached with great caution, then, also, my opinion is that such portions should be attacked, under the conditions hereafter to be named. When, on the other hand, the substance is hard, and exhibits no marked prominence of contour, characters usually found to be associated, no such attempt should be made; a small portion may be easily removed for microscopic examination, and that should be done.

But now comes an important consideration, which should be disposed of before any interference with the tumour takes place from the perineal opening.

The survey of the vesical cavity being complete, the operator has to determine the following question. Am I capable of completing my design of removing the tumour before me wholly or partially, as the case may be, through the incision made, or should I do so more efficiently through a suprapubic opening? For, it is granted that a case may occur in which the latter course may be preferable, and, if so, there is no reason whatever for not selecting it. The perineal incision made will not add to the risks of the case, and it has afforded that most important element, the means of obtaining an exact diagnosis.

Now I may here say, that my proposal to remove vesical tumours by perineal urethrotomy has met with a direct challenge in Paris from my friend Professor Guyon and his school, who say that the suprapubic operation should be invariably employed for the purpose, and the perineal operation never. There can, I suppose, be no hesitation in anyone's mind that the high operation is a much more formidable and hazardous proceeding than the *boutonnaire*. Why, then, should the former be practised in any case until absolute certainty is attained, not only that tumour is present, but also that it is removable by operation? Now it is only in a moderate proportion of suspected cases, say, perhaps, in two-thirds of them, that the presence of tumour can be regarded as strongly probable; in very few, indeed, can it be stated with certainty until the finger has entered the bladder. In no single case can the surgeon ascertain whether or not the tumour in question is separable from the bladder until the cavity has been opened and the interior examined. Well, all these facts—first, the fact of the presence of tumour; secondly, its form and size; thirdly, the nature of its connections with the vesical structures—all the data necessary for determining the question of operation, can be attained by a slight urethral incision which involves no risk. What imprudence, then, can be greater than that of performing the high operation, with all its admitted risks, while the operator does not know for certain that a tumour is present; and while he knows that, if he do find one, the numerical chances are that the tumour, although thus completely approached and laid bare, cannot be entirely removed without inflicting fatal injury on the patient; since in one half the cases the tumours are not completely removable?

Further, I declare that, while the *boutonnière* enables the surgeon to ascertain all the facts which it is necessary to obtain before operating, it also enables him to remove the tumour without difficulty, when it is polypoid in form, and therefore capable of being removed with a fair amount of ease and safety. If, however, he believe—and he is then in a position to determine the question—that he can attain a better result in any particular case by the high operation, there is nothing whatever to prevent his performing it. In one, or at most two, of my early cases, I might perhaps have so operated with advantage. I should probably do so now on again encountering similar conditions; but in all the remaining cases the risk to the patient would have been greatly increased by performing the high operation, and I should have acquired no facility for removing his tumour beyond that which external urethrotomy afforded me.

We shall now consider the means which it is desirable to employ in order to remove the tumour, when, having examined it fully, we have decided to make an attempt through the perineal opening. First, if we have the good fortune to encounter a single growth, with a pedicle of no great width, it is only necessary to introduce a pair of forceps into the bladder, and employ them there without aid from the operator's finger. The forceps should have serrated margins, so as to crush, but without power to cut, the tissues seized. When the blades are free in the cavity, they have merely to be opened easily and widely, and, on closing them, it is almost certain that they will grasp the polypus more or less completely. But let it be observed that no suprapubic pressure should be made during this act; nothing should be done to interfere with the natural contour of the bladder. The operator, by light and easy movements of the forceps in varied directions, ascertains that he has the growth within their grasp. My advice is that, above all things, he is not now to pull forcibly, but that he is to press firmly the blades together, biting or chewing a little, if I may use the terms, without changing the original situation of the bite or grasp. Then a little twisting movement may help to disengage the mass, and if this be accomplished, the forceps may be withdrawn with their contents; after which the finger enters to feel what remains, and what more must be done in order to complete the removal. But, supposing that the tumour has not been separated by the moderate amount of forceps-action described, the operator should remove them; when, on introducing the finger, he will probably find the part so nearly severed that the actual division may be completed with the finger-nail; or with one of the little serrated instruments which I have designed for the purpose, and for the employment of which there is ample room through the urethral wound, by the side of the index-finger. There is no difficulty or risk, with ordinary care, in removing a growth of pedunculated form, sufficiently close to the walls of the bladder to render the operation a permanently successful one. I suppose that the ultimate result of dividing the pedicle of a tumour in the manner described is such a cicatrization of the wound as to prevent the recurrence of outgrowth from that spot hereafter.

But other means may be used, according to the judgment of the surgeon. A very small *écraseur*, with violin-string ligature, may be manipulated by the side of the index-finger, and used in polypoid forms of tumour. In the cases of women, such a tumour may sometimes be slowly and carefully brought into view by traction on the forceps, and then the pedicle may be ligatured. I have succeeded in doing this in one case; so has Mr. Bryant. In another, I drew a polypoid mass within view, and found it was a completely encysted calculus; I then opened the mass, when the calculus escaped.

But when the growth takes a more complex form, and several rounded lobes spring from a wider base, the forceps must be depended upon for removing them by repetitions of the same process which is employed for the single growth. When the base is wider still, and the growth is less prominent, it is doubtful if complete extirpation is possible by any proceeding, whether through a perineal or through a suprapubic opening. The wide base involves such intimate continuity of tissue between the coats of the bladder and the structures of the growth, that I believe separation to be mostly impossible, and that ablation of the prominent portions of the growth, when feasible, should be undertaken only with the view of retarding its progress, but with no prospect of effecting complete separation of the disease from the body.

These portions are to be seized and destroyed on the plan described, partly by crushing, and thus inducing sphacelus in the growth. I am sure that the resulting cicatrization powerfully checks reproduction in some circumstances. The question arises in such cases, of applying some chemical astringent, as a solution of the perchloride of iron, which may check the hæmorrhage, which is mostly free, and may partially destroy the portion which remains after the forceps have done their work.

There is one circumstance important to be noted, especially in deal-

ing with the less prominent growths; and that is, the effect of strong suprapubic pressure made by an assistant, in relation to their mode of presentation to the finger of the operator engaged in exploring the bladder, and in estimating their size and form. If that pressure be considerable, it forces the upper wall of the bladder into its own cavity, and thus makes them apparently salient to a greater extent than they really are. Thus an eager or inexperienced operator, unaware of the effect of suprapubic pressure, might be led to seize the mass thus offered to the forceps through the influence of this pressure, and, under the belief that it was a large growth, he might inflict a fatal wound by crushing a double fold of the coats of the bladder, and so making an opening in the peritoneum. To avoid such a catastrophe, it is only necessary, first, to decline the attempt to destroy any growth which is clearly not sufficiently salient to allow complete, or nearly complete, removal; and, secondly, never to employ the forceps while forcible suprapubic pressure is made; at least, to make no more pressure than is desirable just to steady and support the bladder and the parts adjacent.

We have now, finally, to consider what are the results which have been attained by the perineal operation in relation to vesical tumours.

Of the twenty cases of tumour, two were in women. One of these died in three days of total suppression of urine; necropsy showing advanced disease of the kidneys (one contained a large calculus), and that no injury was inflicted upon the bladder. The other is now in excellent health, having entirely lost her painful symptoms; observing a few drops of blood, occasionally, after more exercise than usual; more than two years have elapsed since the operation.

Of the eighteen male cases, five died within three weeks after the operation; three others died at periods of some months afterwards, two of them from malignant disease developed elsewhere. The other nine are living; on one of these, from whom I removed a tumour in the autumn of 1882, I operated again, removing a larger growth than the original one last February, and he has again recovered. In four cases, no attempt was made to remove the tumour, it being manifestly impossible to do so, but only to diminish it as far as practicable with safety; all these recovered well, and two of them are better than before. Of the remaining four, one has had no return whatever, four years having elapsed since the operation; a second has slight signs of a return, one year and a quarter since operation, but works hard for his living at 64 years of age; a third, who, like the last, was at death's door from loss of blood when I operated, has greatly improved, and is actively employed, but has recently shown some disposition to bleed after exercise, nearly a year since operation. The fourth was greatly improved, and returned to the active life for which he was before disqualified. The others have too recently been operated on to furnish any material fact to be reported.

To sum up. For every one of these cases of tumour, in the natural order of events, one result only was possible. Left without surgical aid, death inevitably awaited each; a fate not merely certain, but necessarily involving protracted suffering. Whatever surgery can accomplish in the way of saving life in many of these cases, is therefore so much clear gain. I am thus satisfied with the result of the first twenty cases. I could have heartily desired greater success; and I have reason to expect that it will be greater in the next twenty cases, as I have acquired experience valuable to myself, and which I have thus attempted, so far as in me lay, to make useful also to others.

DEATH OF DR. BISHOP.—The death of Dr. Thomas Bishop, a leading member of the English community in Paris, is announced. He was an M.D. of Aberdeen, F.R.C.P. London, and M.R.C.S. Eng. He had been for several years in failing health, suffering from emphysema and valvular disease of the heart; but he died more suddenly than might have been expected on June 23rd, when reading a newspaper. He was a great benefactor to all charitable associations for aid to poor British subjects in Paris. Dr. Bishop was brother-in-law to Sir Stafford Northcote. His remains will be buried at Torquay, where he possessed a house, in which he dwelt during his summer holidays.

DONATIONS AND BEQUESTS.—Mr. John D. Allcroft has given £1,500 towards the new wing of St. Mary's Hospital, out of a fund left at his disposal by the late Mr. W. Yarworth Jones.—Miss Milligan, the founder of the Isle of Wight Convalescent Home, Ryde, has given £1,000 further (making altogether £4,500) to the endowment fund.—The Earl of Sandwich has bequeathed £1,000 to the Huntingdonshire County Hospital, and £1,000 to the Dorset County Hospital.—Mrs. Bacon, of Boroughbridge, has bequeathed £500 and one-fifth of the "residue" of her estate to the York Lunatic Asylum.—The Worcester Infirmary has become entitled to £500, under the will of Miss Mary Treherne, of Dublin.