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TUMORS OF THE BLADDER.

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TUMORS OF THE BLADDER.

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HISTORY.

The literature of the subject of tumors of the bladder is almost wholly modern. The ancients had a lively sense of the dangers of meddling interference with the bladder and although the operation of stone crushing has probably been known from the earliest times it is only since the day of Civiale and Leroy d'Etiolles that tumors of the bladder began to be commonly extirpated. According to Tuffier¹, Varner in 1750 removed a vesical polypus, but no details of the case are given. The silence on the subject is the more remarkable when we consider that instead of being infrequent among other affections of the bladder tumors are common. Sir Henry Thompson, than whom there has been no higher modern authority, relates that in November, 1880, he practiced exploratory incision in the urethra for a case which he was unable to diagnose by the methods then adopted; "most unexpectedly," he says, he found a polypoid tumor. Subsequently, in *thirty* out of *eighty* cases of digital exploration of the bladder, Sir Henry found tumor.

¹ Traite de Chirurgie, Duplay and Reclus.



ETIOLOGY AND PATHOLOGY.

The causes of vesical neoplasms are very obscure, but indeed the same general observation may be made regarding tumors elsewhere. The law of Müller that all tumors consist of some tissue-type previously existing in the body holds true here as elsewhere. The tumors commonly met with in the bladder, are of the two general characteristics, malignant and non-malignant.

The malignant tumors are:

Sarcomata.

Carcinomata.

To these may be fairly added *Tuberculosis*, if we could forget that Tuberculosis is a degeneration rather than a neoplasm. The nomenclature of the Royal College of Physicians and Surgeons still classes Tuberculosis among the tumors.

The non-malignant tumors are classed by Barling:

Papillomata, Fibro-Fimbriated.

Fibromata.

Fibro-Myxoma.

Myxoma.

Adenoma.

Angeioma.

Enchondroma.

Dermoid Cyst.

Hydatid.

Watson (Int. Clinic, Oct. 1891) notes a fact remotely bearing upon causation, that (1.) Males are affected more than twice as often as females; (2.) Excepting myxoma all forms of bladder tumor occur more frequently after thirty-five and carcinoma more frequently after fifty.

Concerning the site of these tumors, Tuffier quotes Guyon as stating that on examination he found that the tumor originated as follows:

At the orifice of the right ureter 45 times per 100.

At the orifice of the left ureter 26 times per 100.

In the interspace between the ureters 10 times per 100.

The remainder were variously dispersed.

This corresponds well with Gilbert Barling's statement after inquiry into 260 cases, that two-thirds of the bladder tumors are found springing from the base. Barling is of opinion that certain of the unusual tumors occurring in the bladder, such as the dermoid cysts, may originate in the adjacent tissues and gradually make their way into the bladder.² He asserts that fibromata usually spring from the neck of the bladder or orifice of the ureter. It is of course known to general pathologists that fibromata must come from the connective tissue; they could not spring from the mucous structure.

The site of the myxoma while usually at the base of the bladder is not so constant.

In seventy-four cases of papilloma Barling found eleven commenced near the right ureter, and two near the left. These statistics corroborate those of Fenwick made to the Pathological Society of London in 1889, where he also asserted that the male was affected three times as often as the female, as shown in a series of 634 cases. Sixty per cent. of the cases were simple; of the single, 43 per cent. sprang from the orifice of the right ureter, to 26 per cent. from the left. Eighty-six per cent. of these growths were at the inferior zone originating at the margins of the trigone, pedunculated wholly or partially in proportion two to one; nobody has as yet vouchsafed a conjecture as to the reason for this curious fact, but the nearly constant proportion of two to one springing from the orifice of the right ureter in preference to the left, shows that some law, not accident, determines this matter.

The external shape of bladder tumors is very var-

² Birmingham Med. Review, Aug., 1892, et sequitur.

iable, the benign tumors having generally broad bases, and fringed or are polypiform, while the malign tumors are generally spread out, and irregular on their surface. In early cases of tuberculosis of the bladder I have often found irregularity of the surface, even where the mucous lining was as yet unbroken. The volume of bladder tumors is rarely great, usually varying from the size of a filbert to that of a hen's egg. Tuffier mentions an unusually large tumor that had attained the size of the foetal head.

But the relations of the tumors to the bladder wall must always have the highest practical interest for the surgeon, as the nature of the operation to be subsequently performed must be entirely based upon the fact as determined, whether the tumor is pediculated, sessile, infiltrated or implanted. (Guyon.) Barling asserts that the fimbriated papillomata arise from the mucous surface by a narrow base which often forms a pedicle of some length, while the fibropapillomata arise either by a broad base or are quite sessile in their attachment and altogether more solid. True fibromata are usually pediculated.

Myomata as the name implies, are composed of muscle cells, and spring from the muscular wall of the bladder and have a wide base. The fibromyomata spring from the muscle fibrillæ. These tumors sometimes fill up the entire cavity of the bladder and give rise to serious symptoms of vesical disease.

A brief description of the physical appearances of the more common varieties of bladder tumors will be useful in this place.

Papilloma.—Under the name of villous tumor, Rokitansky described a form of carcinomata springing from the mucous surface of the bladder growing like a cauliflower, which he called epithelial fungous. This, without doubt, is the same as those cases wherein recent observers speak of the epithelioma-

tous transformation; but following a less flexible nomenclature we discard the term villous, and speak of papillomata as vegetations growing as papillary prolongations from previously existing papillæ of the vesical mucous membrane. Should at any time epithelial proliferation take place the epithelial cells by infiltration crowd the other cells, and eventually supersede them; the innocent papilloma has then become a true carcinoma, and the future history of the growth is that of epithelioma, in which, owing to its poverty in connective or fibrous tissue the blood vessels are loosely supported, and hemorrhage becomes the most prominent symptom.

Unchanged and without interference, the papilloma spreads out into arborescent vegetations, gives rise to no pain, but bleeds profusely, and when the size has become sufficiently large causes spasm of the bladder after micturition. The papilloma grows slowly but without ceasing and sometimes long hair like vegetations are broken off and carried out with the urinary current. Sometimes these tumors become the seat of incrustations of the urinary salts, and the sound gives the sensation as of a stone.

Myxoma.—This tumor is composed of mucous tissue cells, is generally pediculated, and resembles the mucous polypi elsewhere; it grows rapidly and is most frequently seen in very young patients; in female patients these polypi may protrude at the meatus.

Myoma.—The myomata exist in two forms, the pure myoma composed of muscle cells and springing from the muscular coat of the bladder, and the myofibroma which more commonly takes its origin from the prostate. These tumors are capable of attaining a very large size.

Sarcoma.—This tumor is much more rare than the benign tumors or the carcinomata; its growth is extremely rapid, there is usually great hemorrhage, and

considerable pain. Sarcomata of the bladder, as elsewhere is more frequent before fifty years of age than subsequently. A case of sarcoma fell under my observation at the Presbyterian hospital in Chicago, which occurred in a patient over fifty, in whom the tumor recurred to its original size within three weeks after removal. The patient is still under observation, but is comparatively comfortable. He has supra-pubic drainage.

Carcinomata.—While many varieties of carcinoma such as scirrhous and medullary are rare, epithelioma on the contrary, is extremely common. Tuffier asserts that in fifteen necropsies seen by him there were eleven cases of general carcinomatous infection. In seventy-four cases of carcinoma of the bladder, Barling found forty-seven were epithelioma, and twenty-seven cases were other varieties of cancer.

All the other growths named may be said to be rare, as they are only now and then met with. Andral, Rokitansky, Klebs and Limbeck have seen cysts in the mucous wall of the bladder. Before proceeding to the general consideration of symptomatology, let me emphasize the statement that if we might include tuberculosis we should find by far the greater number of cases malignant, and even excluding tuberculosis the proportion while not so greatly in excess, is still on the side of malignancy.

SYMPTOMS AND DIAGNOSIS.

We will now consider the symptoms and diagnosis of these tumors, for, as in many other cases, an early diagnosis alone makes successful treatment possible.

There are no doubt many cases of bladder tumor that remain in abeyance or "latent" for a long period without giving rise to many pronounced symptoms. In such cases the neoplasm is not actively growing.

When the tumor commences to proliferate actively the sign of hematuria is present with more or less constancy. In a vast majority of cases the first symptom which will cause the patient to consult the surgeon is hematuria, and the manner of its appearance often gives the surgeon an important clue. When the hematuria is only noticed after micturition, it may be fairly ascribed to local causes within the bladder, for hemorrhage from the kidney is usually continuous. One exception to this statement must be noted, that is when from traumatic causes there is a very considerable hemorrhage from the kidney; there is then clot formed in the ureter. This clot becomes a nearly perfect cast of the ureter, and is sometimes voided whole, or as round clots in pieces of varying length. Such clots positively prove the origin of the hemorrhage. Moreover, tenesmus of the bladder does not materially increase the hematuria in cases of kidney hemorrhage, nor is it increased by catheterism. In case of bladder tumor on the contrary, either tenesmus or catheterism will usually produce the flow. To return a moment to the coagulæ. Bladder coagulæ are always in irregular masses, and sometimes contain the debris of villous tumors, the fimbriæ of the papillomata. After a free hemorrhage from a bladder tumor there is usually a cessation of the hematuria for some time. This period is of greater or less duration according to the size of the tumor. Barling found hematuria in 162 out of 201 cases of bladder tumors, and as the first symptom in 129. Papillomata were accompanied by hematuria in seventy-three out of seventy-nine cases and as the first symptom in sixty-three. Tuffier as well as Barling notes the varying character of the hematuria from day to day and hour to hour. In the morning highly bloody, in the evening the urine scarcely tinted. These cessations and these variations in quality gradually disappear with the growth

of the tumor and finally there is but little daily variation, as well said by Watson, (*International Clinic*) "the hemorrhage is intermittent and progressively increases."

The source of this hemorrhage may be either from loosely supported vessel walls in the vegetations, or in rare cases by ulceration and rupture, the latter occurring chiefly in malignant tumors.

Fragments of the tumor may be frequently found in the urine, especially if there has been much hematuria. To collect them I have directed that the urine should be filtered through gauze, which may then be examined with a low power. It is exceptional, however, that these fragments will show completely the morphology of the tumor. That there are fragments at all show that the tumor is of the villous character. Recommendation has been repeatedly made for washing out the bladder in order to bring with the outflow as many of these fragments as possible. To this practice David Wallace, in a paper read before the Medico-Chirurgical Society of Edinburgh December 7, 1892, objects that "the plan is useless because these fragments are often retained in the bladder for some time and are macerated, and thus allow of no conclusion; secondly, it is dangerous on account of the risk of setting up a hemorrhage."

Pain and Irritability.—Pain, which is frequent in the latter stages of bladder tumors, is very commonly absent in the beginning, but it progresses equally with irritability. In a small proportion of cases pain is the earliest symptom. Barling, in his admirable article already quoted, says "frequent micturition and pain either separately or together, may first attract attention. Such was the case in ten out of seventy-six cases of papilloma and eighteen out of thirty-nine of other innocent growths, seven out of twenty-two sarcomata and twelve out of sixty-

four carcinomata—in all forty-seven out of 201 cases.” “It will be seen,” says Barling, “that these two symptoms, more commonly than the hemorrhage, indicate in the first instance the presence of a *firm* growth such as fibro-myoma or fibro-myxoma.”

When the bladder becomes nearly filled with the tumor, then there is not only the pain due to the growth, but violent tenesmus, with frequent micturition. By abdominal palpation we may learn something and indeed gain very definite information if we conjoin the external palpation with the rectal or vaginal touch. In the male the finger in the rectum, while the other hand is pressing the hypogastrium, gives full information of the size of the prostate and of any irregularities that may be present in the bladder wall. The catheter or sound may also be used with one hand, while the finger of the other makes the recto-vesical exploration. In the female the tumor, unless attached by a very narrow pedicle, may be felt through the anterior wall of the vagina with great ease. In sounding the bladder, antiseptic precautions should be taken by requiring the instruments to be boiled before using. In case it be deemed expedient to distend the bladder, a solution of boracic acid 4 to 100 may be used, but it must be remembered that the bladder should be entirely empty to obtain the full benefit of a bimanual examination. Barling, who praised highly this form of examination, recommends that during this examination the fixation of the bladder to surrounding tissues, if it exist, should be noticed, and as well the lumbar and pelvic lymphatic glands, for the purpose of gaining information regarding the malignancy of the growth, or otherwise.

The cystoscope, which in the hands of Nitze, Leiter and Fenwick has given such excellent results, will be found of little value in general practice, although of so much value to those expert in its use. The ob-

scuration of the cystoscope window by mucus from the urethra or bladder is quite frequent, and in case of hematuria the obscuration may be total. It is well, however, to try the instrument, because in some cases a clear view may be obtained. To render the instrument aseptic it should be immersed in a weak solution of carbolic acid for ten minutes before using. Watson recommends that the bladder should be washed to clear it of mucus before using the cystoscope, and that the capacity of the bladder should not be less than five ounces and some clear fluid contents should remain in the bladder. It is proper to state that as the modern cystoscope is essentially a hollow tube with an incandescent beak, this beak becomes extremely hot if burned in the air, but in urine or water remains cool. The cystoscope can not therefore be used in an empty bladder, nor can the beak be allowed to touch the mucous membrane. Moullin (*Treatise on Surgery*, 2d American Edition) has pointed out that even under the most favorable conditions the visual field of the cystoscope is very limited; "that only a minute part of the bladder wall can be seen at one time, and that even with the naked eye, when the bladder is laid open, it is not always possible to be certain as to the clinical features of a minute growth. Natural rugosities of the bladder wall, low villous growths of an inflammatory character such as are not unfrequently met with in cases of calculi, prolapse of the ureter and many other conditions, present a closely similar appearance."

Watson asserts that in favorable conditions it can be decided with the cystoscope whether the growth is pedunculated or sessile or has an ulcerated surface. When ulcerated, with raised, ragged or oedematous edges, the probability is that the tumor is cancerous. "The fine villous projections of the papilloma often give a most characteristic and beau-

tiful picture. . . . The condition most likely to be mistaken for a bladder tumor is the projecting portion of a hypertrophied prostate, and this is especially true when its surface is occupied by granulation tissue, but the position of the growth, the detection by rectal touch of the hypertrophied prostate, and the history of the case will usually make its nature clear." Incrustations also may be detected by the cystoscope. It has already been mentioned in this paper that bladder tumors where greatly projecting frequently become incrustated with phosphatic deposits to an extent that sometimes causes them to be mistaken for stone.

Dr. A. F. Norton, (*Medical Press and Bulletin* 1892) has tabulated a diagnostic summary between tumors and calculi, as follows:

TABLE A.—DIAGNOSIS.—(NORTON.)

	Tumors of Bladder.	Stone in Bladder.	Stone in Kidney.
Blood . .	Large clots	Clots in shreds . .	Mixed freely with urine.
Mucus . .	Often none	Always present . .	None.
Pus	None	Quantity corresponds to amount of mucus.	Pus present in quantity with little or no mucus.
Irritability of Bladder.	None unless tumor enters urethra.	Great	Depends on presence of pus.
Pain	None unless in region of meatus.	Always marked and extending to perineum.	Pain in one or both loins.
Sound . .	Occasionally slides over soft tumor.	Detects stone. . . .	No result.
Cystoscope	Detects tumor unless much blood.	Detects stone. . . .	No result.

Dittel, *Weiner Medicinsche Wochen*, Nov. 24, 1892), gives another instance in which cystoscopy fails, that is in presence of acute nephritis or pyelitis, and also in cases where the capacity of the bladder is so small that its expansion is impossible. Finally, it may be said for the cystoscope that in favorable cases it gives

very material light on the question of the best route for removal of the growth. Fenwick, an enthusiast on the subject of the cystoscope, and whose own instrument is one of the best, asserts that as between that instrument and the "Boutonnière périnéale" as a means of diagnosis, he had negative results twice in forty-three cases of cystoscopy and fourteen negative results out of forty-three by the boutonnière périnéale. It will be remembered that this operation was the favorite method of Sir Henry Thompson.

Exploratory Operations.—The boutonnière périnéale originally proposed by Sir Henry Thompson, and followed by Whitehead, consists in making incision externally into the membranous urethra, then passing the finger into the bladder through the prostatic urethra, and making digital exploration. The idea evidently sprung from the fact that the bladder could be easily explored in the female through the short urethra. This operation is contra indicated in very fat persons and those in whom there is great enlargement of the prostate.

We may now summarize the general diagnosis: We must make the diagnosis from renal disease, renal calculus, cystitis, vesical calculus, vesical varicosities, and hemophilic hemorrhage. To exclude renal disease and tumors of the kidney we must make careful physical exploration of the kidney by ballottement, and abdominal palpation, and chemical examination of the urine; we may exclude tumor from renal calculus by the history of the case, which would show a record of renal colic, ceasing on passing of the stone, and the blood following the cessation of the pain. During the continuance of the colic there is usually severe pain in the glans penis. Renal colic is absent in cases of bladder tumor. The sound will easily detect the presence of vesical calculi, excepting the cases of incrustations which as already mentioned are best detected by the cystoscope. In cases of

stone the hematuria is not usually increased by the operation of sounding, nor is the hemorrhage as severe in stone as in cases of tumor. Varix of the bladder is extremely rare and may be detected by the cystoscope. In cystitis there is less hematuria, the pain is more acute, the tenesmus is more frequent, and palpation shows little thickening or infiltration of the bladder wall. Hemophilic bleeding is usually accompanied by hemorrhages elsewhere, or accompanied by the scorbutic cachexia; certain idiosyncrasies of the patient may also cause parenchymatous oozing, and finally vicarious menstruation from the bladder may take place, in so small a proportion of cases, however, as to render this circumstance scarcely worth consideration.

Progress and Prognosis.—Enough has been said of the general character of bladder tumors to show that while they follow the same general rules applicable to malignant and non-malignant tumors elsewhere, yet the benign tumors destroy life by repeated hemorrhages almost as certainly as the malignant tumors cause death by the natural progress of the growth. The danger of the epithelial substitution even in the most benign neoplasms, is always to be considered. Occasionally the simpler non-malignant tumors may remain in the bladder for several years, without other symptoms than infrequent light attacks of hematuria, and there is always amelioration of the symptoms after expulsion of fragments. Other varieties rest quiescent for a long time without giving rise to any very pronounced symptoms, when they suddenly develop with extreme rapidity and progress to a fatal termination. Sarcomata and carcinomata rarely extend beyond a period of three years, usually causing death within that time. (Albarran.) Barling's tables gives the average duration of life in cases of papilloma at a little over six years; two-thirds of twenty-five cases in which there

was no interference died before the expiration of five years.

TREATMENT.

The medical treatment of bladder tumors, as may be well supposed, is of little avail. The internal hemostatics such as ergot, gallic acid, tannic acid, and aromatic sulphuric acid have been recommended in cases where patients refuse operation, for the lessening of the hematuria. To relieve the spasm, lavage of the bladder with antiseptic solutions is recommended. The clots should be frequently washed out.

Operative interference may be divided into the palliative and radical treatment. The palliative operations consist in perineal section or supra pubic cystotomy. As between the two methods I very much prefer supra pubic cystotomy. This operation which is also extremely useful as a palliative in cases of tubercle, gives great relief in all cases and especially in sessile tumors and as well in the inoperable ones. Spasm of the bladder is surely prevented whenever a free outflow of the urine is secured, and many a patient hopelessly diseased is made comparatively comfortable by this operation. The application of caustics or antiseptics is made easier by having a free opening, through which they may be made. Efficient drainage, always an important factor in treatment may be secured by either method but the perineal method has always the disadvantage of occasional, sometimes frequent prostatic obstruction.

The radical or curative treatment consists in the use of the same two routes of reaching the bladder, but occasionally where a large opening must be made in the bladder the supra pubic operation is made at two sittings (*a deux temps*). At the first operation the bladder is reached and stitched to the wound,

TABLE B.—BLADDER TUMORS IN LITTLE GIRLS.

Index of Bibliog.	Age of Patient.	Begin-ning.	Functional Symp-toms.	Physical Symptoms.	Nature of the Operation.	Nature of Tumor.	Results.
1 Vincent, Lyon Med., p. 264	9½ yrs.	15 days	Incontinence of urine	At the level with the incised vagina was found a tumor, with reddish to green surface, smooth and size of walnut	Division of the pedicle by thermo-cautery	Cyst	Recovery.
2 Pfenninger, Wurtemberg Med. Corr. Blatt, No. 23, 1834	34 mos.	.....	.....	The tumor made a projection through the urethra of the form of a strawberry	Dilatation of the canal and ligature of the tumor. After this first operation there was found by rectal touch and sound another, but removal was not attempted.	Papilloma (?)	Death from peritonitis.
3 Birkett, in Med. Chir. Transact., 1858	5 yrs.	.....	.....	Polypus coming out through urethra	Ligatured with silk . . . . .	.....	The child very weak, dies.
4 Bryant, Brit. Med. Jour., May, 1879. Operation performed in 1864	3 yrs.	.....	Hematuria . . . . .	.....	Ecraseur . . . . .	.....	Recovery, preserved 8 years afterward.
5 Pfenninger, Schmidts Jahrb., 1834, Vol. iv, p. 300	3 yrs. & 9 mos.	.....	.....	Tumor appeared at genital parts and obstructed urethra	Excision of the tumor . . . . .	.....	Death.
6 Guersant, Gaz. Hop., No. 23, 1868	22 mos.	.....	Frequent micturition	Polypus coming through urethra	Slitting up the urethra with the scissors to reach the pedicle, which was closed off by the ecraseur	Sarcoma	Gangrene of the vulva. Death eighth year.
7 Geraldès, Affections Chir. des Enfants, 1869	2 yrs.	.....	.....	Polypus coming through urethra	Excision of tumor	Sarcoma	Death.
8 Smith, Brit. Med. Jour., 1872, Vol. II, p. 64	4 yrs.	.....	.....	.....	.....	Medullary cancer	Death.
9 Patterson, The Amer. Jour. of the Med. Sciences, April, 1882, p. 464	19 mos.	.....	Very frequent desire to urinate, and very great pain before and after. One time only a little blood in the urine	Tumor coming out at urethra	Ligature. Another operation after. Removed two or three tumors surrounded by an infinite number of small ones . . . . .	.....	Without improvement. Death six months afterward. At the autopsy, a tumor as large as hen's egg on the posterior wall of the bladder.
10 Howard Marsh, Trans. Path. Soc.	2 yrs.	1 yr.	Slight hematuria. Retention of urine	Tumor coming from vagina	Ligature. Appearance of new excrescences.	Sarcoma	Death 16 mos. after first intervention.
11 Shattock, Brit. Med. Jour., I, 1883, p. 15 . . . . .	.....	.....	Obstruction of urethra by a prolongation of the tumor . . . . .	.....	.....	.....	Death from exhaustion.
12 De Saint-Germain, Rev. mensuelle des mal. de l'enfance, 1883, p. 43	7½ yrs.	1 mo.	Incontinence of urine	Tumor coming through urethra . . . . .	.....	Myxoma	Death.
13 Owen, Malad. chir. des enfants, trad. Laurent, 1891 . . . . .	.....	.....	Severe spontaneous pains. Incontinence	At urinary meatus, polypus mass, lobulated, red, and of the size of a strawberry. . . . .	.....	Myxoma	Death.
14 Albarran, Tumors of the Bladder, 1892. Guyon et Albarran	4 yrs.	7 mos.	.....	Appearance of tumor at the vulva	The urethra, dilated by the tumor, permitted seeing that the tumor, which came from vulva, was situated in the neck of the bladder. All around the neck, and disseminated through the bladder, neoplastic growths were felt. Ecraseur.	Myxoma	Death 40 days after.
15 Butlin, Lancet, 1882. Quoted by Albarran	4 yrs.	.....	.....	Fungous growth coming from urethra	Extirpated through urethra	Sarcoma	Rapidly returned.
16 Tewert, Billroth, Deutsch ch. 71	3 yrs.	.....	.....	Projecting through urethra	Extracted through urethra	Sarcoma	Returned. Cystitis, Peritonitis, Pyelo-nephritis.
17 Albarran . . . . .	.....	.....	Guyon's case, without history. Tumor hav-	ing the appearance of	a nasal poly-	pus.	

TABLE C.—BLADDER TUMORS IN BOYS.—DR. PHOCAS.

Index of Bibliog.	Age.	Date of Com-mence-ment.	Principal Symptoms Observed.	Size, Place, etc.	Operation.	Nature of Tumor.	Results.
1 Deschamp, 1794, Encyclop. des. Sc. Med.	12 yrs.	.....	The patient had a stone. Tumor was recognized in course of an operation . . . . .	.....	Cystotomy	Fungus	Recovery.
2 Gross, 1825. Quoted by Geraldès	2 yrs.	.....	Stone. Tumor found during operation . . . . .	.....	Cystotomy	Polypus	Death. Leafy poly-pus tumor.
3 Stanley, Lond. Times and Gazette, July, 1852. Quoted by Wien	30 mos.	.....	Micturition incom-plete	Tumor situated under orifice of ureter . . . . .	.....	Polypus	Death.
4 Savary, Med. Times and Gazette, 1852, Vol. II	13 mos.	.....	Vesical symptoms, as from a stone	Polypus growth im-plemented in mucous membrane back of uretral orifices . . . . .	.....	Polypus tumor	Death.
5 Gross, 1834, Treatise on formation of urinary calculi	2 yrs.	.....	.....	.....	Median cystotomy. Only superficial parts of tumor removed. A very extensive base prevented going farther in operation . . . . .	.....	Death in about 44 hours.
6 Gussenbauer, Archiv. f. Klin. Chir., 1875; 2nd ed., p. 411, Bill-roth	12 yrs.	.....	Rational symptoms of stone, which led the surgeon to an error. . . . .	.....	At first a perineal cystotomy; then, on account of the size of the growth, a hypo-gastric incision	Myxoma	Recovery 1 month after operation.
7 Charon, Bull. Acad. Med. de Belgique, 1878	3 yrs.	.....	Symptoms of stone . . . . .	.....	Bilateral cystotomy	Myxoma	Death 15 days after operation.
8 Owen, Med. Times and Gazette, 1885, Vol. II, p. 212 . . . . .	.....	.....	Pains in the hypogastrium. Retention of urine	Neck and floor of the bladder	Cystotomy	Sarcoma	Death.
9 Ditarch, Prager Med. Woch., 1889, No. 48	21 mos.	.....	.....	Base of bladder . . . . .	.....	Spindle-celled sarcoma	Death.
10 Marshall, Encycloped. Internationale	1½ yrs.	.....	.....	.....	.....	Myxoma	Death.
11 Villnze, Virchow and Hirsch, 1887, Vol. I, p. 275	13 yrs.	.....	Hematuria. Reten-tion . . . . .	.....	.....	Myxoma	Returned 2 years after. Death.
12 Albarran, 1889, M. Guyon	5 yrs.	.....	Hematuria . . . . .	.....	Supra-pubic cystoto-my. Extirpation by galvano-cautery	Polypus, taking on epithelial growth.	Returned 2 years after. Recovery.
13 Phocas	6½ yrs.	15 days	Incontinence	Infiltration	Supra-pubic cystoto-my	Myxo-sarcoma	Death 5 mos. after operation.
14 *W.D. Spanton, Trans. Path. Soc. London, Vol. XLIII, p. 218	5 yrs.	.....	Dysuria. No hematu-ria	Size of man's fist. Springing from pros-tate	Supra-pubic cystoto-my	Myxo-sarcoma	Died 13 weeks after dysuria first ob-served.

* Added by me.—J. B. H.

which in two or three days is sure to be extra-peritoneal. At the second operation the bladder is opened either by the Paquelin cautery or the scissors, and the tumor dealt with. The treatment of the tumor consists in avulsion by forceps, curetting, cauterization or extirpation by the knife. For tumors with a pedicle, nothing is easier than avulsion, but these tumors constitute a relatively small proportion of those encountered, which are generally sessile. The use of the sharp spoon followed if necessary by the Paquelin button will be found most available, and most frequently used. The ligature is used by some surgeons in preference to torsion in cases of pediculated tumors. The cases that may be considered as inoperable are those in which there is glandular infection, fixation of the bladder, infiltration of bladder wall and surrounding tissues.

Symphysiotomy to reach the anterior wall, recently proposed by Albarran, and Wickhoff of Vienna, seems to me a cruel operation, and, so far as I can judge, an unnecessary one.

The statistics of operations are sufficiently favorable to warrant the recommendation to operation in all classes of tumors, if done early, and in cases of non-malignant tumors at any stage but the earlier the better.

Dr. Phocas, in a paper read before the French Congress of Surgery, at Paris, in 1892, has made the accompanying table of tumors of the bladder in children, a study of which will be found interesting, but the mortality is much greater than in adults.

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