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## NEOPLASMS OF THE PENIS, SCROTUM, TESTICLE AND CORD.\*

BY OLIVER C. SMITH, M.D., HARTFORD, CONN.,  
*Surgeon to the Hartford Hospital.*

*Neoplasms of the penis.*—Whether properly classed as neoplasms or not, several peculiar structural changes occur in the penile tissues which should perhaps be mentioned, although of rare occurrence.

*First*, fibrous sclerosis of the corpora cavernosa and spongiosum: A condition which consists in the development of fibrous masses in the sheath, septum, or erectile tissue of the corpora and which usually comes insidiously without apparent cause. The fibrous mass may form in any part of the corpora and be unilateral, bilateral, or multiple, but the growth is usually single, near the dorsum of the penis. The growth is slow and ultimately causes distortion of the organ. There may be some discomfort caused thus, and pain may be present in the early stages. Impotence often develops in chronic cases. The age incidence is chiefly from forty-five to sixty years. Horwitz states that the condition is not so rare as is generally supposed. Prognosis is poor because no form of successful treatment has been devised.

*Second*, fibrous and osseous transformations of the penis, an extremely rare condition of obscure pathological nature. The growths occur in any part of the organ, may be single or multiple and are seldom larger than a dime. No operative measures have been successful.

*Third*, horny growths of the penis, a rather rare condition, usually located on the glans, in the form of plaques or outgrowths, of which latter type some of large size have been reported. They seem to occur as the result of prolonged irritation or as sequels to papillomata, with which they should perhaps be classed. One case developed in the scar of a circumcision, and one case is reported which probably was congenital. The base of the growth shows a tendency to epitheliomatous change, and early and complete excision is the proper treatment. They cause no pain, but some mechanical discomfort.

*Fourth*, elephantiasis, sometimes termed "fibroma diffusum," occurring in endemic and sporadic form and usually, but not invariably, associated with a similar involvement of the scrotum. The etiology is not thoroughly clear, but the majority of cases can be traced to filaria sanguinis hominis. The condition consists in the diffuse growth of fibrous tissue in the cutis, often

increasing the size of the organ to a great extent. Amputation is the best treatment; if due to filariasis the parent worms may be in this way removed, and even if some elements remain in the tissue left in place, further development does not necessarily follow.

*Fifth*, papillomata, whose structure consists of hypertrophied papillae covered with epithelium. They are not necessarily venereal, but are the result of some condition causing local irritation, although they may occur under the most cleanly conditions. They usually appear on or just behind the corona, and two classes are described: 1. Soft warts on the mucosa of the glans or at the muco-cutaneous junction, most frequent in youth and early adult life. Long foreskins undoubtedly predispose. They begin as small papulae, grow rapidly, proliferate, often become eroded and may attain excessive size. 2. Hard warts on the skin at some distance from the glans, commonly associated with the first form. Their growth is slower and they are more commonly sessile than are those of the first variety. The treatment consists in cleanliness and in eradication by means of acids, nitric or lactic, or removal by ligation and cauterization, or by excision. Since a long foreskin is not infrequently present, it will often be found possible to remove the growths on the portion of the redundant prepuce removed in the operation of circumcision.

Cystic tumors occasionally occur. Gerulans makes the following classification: 1. Traumatic epithelial cysts, described as complicating ritual circumcision. 2. Cystadenoma, of which one case has been reported, arising from the sebaceous glands. 3. Atheroma of the prepuce and upper surface of the glans, the most common form, derived from hair follicles and less often from the sebaceous glands, and often present in considerable numbers and seldom of large size. 4. Dermoid cysts, congenital, usually in the median line, of the size of hazel or walnut. In all of these conditions there is some danger of malignant change, on which account removal is to be advised by excision of the sac *in toto*.

Among neoplasms properly so-called numerous forms of rare local occurrence are described in addition to sarcoma and carcinoma. Lipoma, angioma and circumscribed fibroma have been reported.

Sarcoma, though comparatively rare, is the most serious tumor involving this organ. It is more commonly primary than secondary and may be of the round-celled, spindle-celled, or melanotic type. The origin is in the corpora cavernosa or spongiosum, starting in the connective tissues, the endothelium of the cavernous spaces, or in the tunica albuginea. The tumor may start in any portion of the penis, in the form of circumscribed nodules or diffuse growth. Neighboring tissues are involved by direct extension, and metastases are very liable to occur at an early stage in prostate, testicle, and inguinal glands. Growth is often very rapid and may be extreme. Ulceration and hemorrhage are common. There is usually interference with urination, and pain is

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commonly intense, due to pressure or to extension into the urethra. Trauma has been noted as a possible cause.

The tumor can be distinguished from carcinoma by its situation in one of the cavernous bodies, its outer configuration, the lessened and delayed tendency to ulceration, and by microscopic examination. The course is progressive toward fatal termination in from ten months to two years, from metastases, infection of the genito-urinary tract, and from general causes.

With the exception of the melanotic form, the prognosis is comparatively favorable if the tumor has not involved neighboring organs to any extent, although the majority of cases do not reach the surgeon at this early stage. Extirpation of the penis, with removal of the inguinal glands, offers a good chance of cure under the best conditions. In advanced cases only palliative measures can be used.

*Cancer of the penis.* — Barney, in 1903, made a study of 100 unselected cases of this type and his findings in the main accord with those of other authoritative writers. I shall with his permission quote freely from his monograph.

The medullary form has been reported in a few cases, usually in young adults, apparently as the result of injury. Scirrhus is the rarest of all tumors of the penis, while epithelioma is the most common, forming from 1% to 3% of all carcinoma in males, and may be regarded as the only form demanding discussion.

It is most common in the fifth, sixth and seventh decades, but numerous cases have been reported in the second and third decades as well as in the ninth. Phimosis is conceded by nearly all writers to be the most important factor in the etiology. Kaufmann says that in elderly men with phimosis and a foul discharge from the prepuce, cancer is a strong probability, even without induration. Chronic balanitis is frequently associated with the so-called "venereal wart," and Kaufmann reports 29 out of 33 cases as beginning in these simple vegetations. It has been often noted that Jews seem immune to this disease. It is certain that epithelioma finds a starting point sometimes in chancres or their scars. Trauma must also be regarded as a factor, 6 of Barney's cases showing the development of the tumors from old circumcision wounds or scars.

Two types of growth are usually described, the cauliflower, or proliferating, and the ulcerating, with indurated edges and rapidly destructive properties. Clinically it may often be impossible to differentiate these two types, especially in cases of long standing. The cauliflower growth is the more common variety. The ulcerated form has a foul, sanguino-purulent discharge. The proliferating type is also usually bathed in a creamy acrid secretion. Hemorrhage is not uncommon. The growth usually starts in the dorsum of the glans near the corona or in the preputial reflection.

The epithelioma begins as a simple wart, a pimple, slight erosion or raw patch, more rarely as a true ulcer, and very rarely in the urethral meatus. Thomson speaks of a precancerous con-

dition of the epithelium, consisting in either a catarrhal condition, balanitis, or, more frequently, a marked thickening of the epidermis, described as psoriasis preputialis by Schuchardt.

Cases are occasionally reported, — McFarland found 8 and I have seen 1, — in which contact with a carcinomatous cervix may have been an immediate causal factor. It is questionable whether these cases are more than coincidences, and the present status of carcinoma study commends an indefinite answer.

Histologically, the tumor is an ordinary squamous-celled epithelioma. Involvement of other tissues occurs:

1. By extension along the main lymphatic vessels in the subcutaneous tissue of the dorsum and continuous with the primary growth. This extension may be apparent only on microscopic examination.

2. By penetration in time of the erectile tissue and urethra by epithelial prolongation.

3. More rarely by development of outlying foci in the erectile tissue.

4. By contact of epitheliomatous tissue with adjacent tissues, as from glans to prepuce or vice versa, or from either to scrotum. It seems that the process tends to be localized for a long time to its original site, a tendency most marked when the prepuce is the original site.

Invasions of the inguinal glands seem to be more frequent than is generally supposed, a conclusion somewhat at variance with the preceding statement, due to the fact that the surface of the growth is usually infected with bacteria. The lymphatic induration in vessels and nodes is in some cases solely inflammatory. Patterson says that without operation these glands suppurate, forming large ulcers infiltrated with cancer tissue. Because of this double infection operation meets with difficulties: The free communication between the numerous glands and their intimate association with important structures; adherence of the glands to surrounding parts by inflammatory process; softening of glands by inflammation, rendering complete extirpation difficult, so that small particles of cancer tissue are left behind. There may be internal metastases even when the inguinal glands are not demonstrably involved.

For symptoms we have the history of the origin and growth of the local tumor; pain is seldom severe and develops late, due to ulceration and passage of urine over the ulcer, phimosis, perhaps a foul-smelling discharge, interference with urination, and possibly hemorrhage, involvement of other tissues and organs, increasing cachexia and perhaps infection of the urinary tract, with final death. I wish to quote some of Barney's conclusions:

"Phimosis is pre-eminently the most important of its exciting causes, occurring in over 85% of cases. Circumcision, therefore, cannot be too strongly advised, especially after middle life, in all cases where the prepuce cannot be easily and completely retracted. Syphilis and trauma are to be considered next in importance from an etiologic standpoint.

"Most cases seek relief during the first and second

years of the disease, but it is not unusual to see cases of from five to fifteen years' duration.

"Pain occurs in 43.5% of all cases. It is rarely severe, and usually occurs late in the disease.

"Enlargement of the inguinal glands occurs in over 75% of all cases. In 60% these glands are cancerous. The rest show simple hyperplasia from septic absorption.

"Glandular involvement may occur early, but from my study of these cases I am inclined to regard it rather as of late occurrence.

"Inguinal metastases cause death sooner or later. If well advanced, attempts at their removal are to be considered only as 'surgical vandalism.'

"Invasion of the vital organs occurs in over 15% of all cases. It may occur without involving the inguinal glands.

"Recurrence takes place up to one year after operation in over 39% of cases; up to two years in over 19%; up to three years in over 16%; up to four years in over 6%, and, most notable of all, it occurs over five years after operation in over 12% of cases.

"The gross mortality is 32%; that of the primary cases is 29%; of the recurrent cases, 38.5%.

"Thirty-eight per cent of all cases are cured; of these, the primary cases form 36.5% and recurrent cases, 42%.

"Early amputation of the penis at the pubes with thorough dissection of the groins is the operation of choice. If taken in the earliest stages, however, amputation alone may effect a cure. The operation of splitting the scrotum and transplanting the urethra into the perineum, or of total emasculation, offers no greater hope of cure.

"The length of life from time of onset in primary cases is three years and four months; in recurrent cases it is eight years and three months.

"The length of life after final operation in primary cases is twenty-four months; in recurrent cases, four years and two months.

"Cases may live for over eleven years after the onset of the disease without operation."

The prognosis depends, of course, upon the extent of metastatic involvement. On this account, and for the sake of definite knowledge in operation, it is well to have in mind the anatomy of the regional lymphatics. The superficial lymphatics of the penis take origin in a dense network of vessels and channels under the mucosa of the glans and the skin of the prepuce and in the mucosa of the urethra, and, passing through a main collecting channel on the dorsum of the penis, empty into the upper, oblique group of the superficial inguinal glands along Poupart's ligament. It must be noted that there is a communication between the lymphatics of the lateral halves of the penis at the base of this organ, so that while the glands on the side of the tumor are usually the only ones involved, it is, however, possible that those on the opposite side should be involved, with or without, or preceding, the involvement of the glands on the side of the growth. The deep lymphatics drain the corpora cavernosa and spongiosum, pass beneath the pubic arch and enter the deep lymphatics of the pelvis, passing to the internal iliac glands along the internal vessels. The upper inguinal glands connect with the deep set and with the external iliac glands, which, with the internal iliac glands, connect with the lumbar

glands along the spine from the sacrum to the hilus of the kidney.

*Operative treatment.* — The diagnosis of carcinoma having been made, and a radical operation decided upon, quite as thorough work should be accomplished here as in operations upon other fields. Having in mind the distribution of the lymphatics and the knowledge that when recurrence follows operation it is usually in the lymphatic channels, the radical operation suggested by Curtis usually meets the requirements of the case.

New growths of the *urethra* are comparatively rare, papillomata, both sessile and pedunculated, fibrous, fibromyxomatous, fibromyxomatous and vascular polypi, cysts of Cowper's glands and of the prostatic utricle, carcinomata and sarcomata occur in frequency in about the order mentioned, according to Mark, from whose recent paper on the subject I have taken most of the data.

*Papillomata:* The most common site of these growths is at or near the external meatus, although they have been found throughout the entire extent of the urethra. One form, urethritis papillomatosa, is described as occurring upon the areas of infiltration found in chronic urethritis. It is probably unquestionable that papillomata originating posterior to the navicular fossa arise from one of two causes exclusively, chronic gonorrhea and syphilis. Single papillomata are of extreme rarity and are almost invariably found in that portion of the urethra lying between the peno-scrotal junction and the triangular ligament, apparently springing from isolated papillæ.

Multiple papillomata practically always originate at or near the external meatus and are usually associated with other similar growths of the glans. The urethroscopic appearance of these growths is typical. They are readily rubbed from their site of attachment, leaving a freely bleeding base.

*Polypi:* There is some confusion in the classification of these growths. Mark classes under this head, fibromata, fibromyxomata, fibromyxomata, and vascular polypi. The latter form is exceptionally rare in the male and appears as bright red, succulent looking growths, having distinct pedicles and being exquisitely sensitive. They are usually single.

The other forms of polypi resemble each other closely. The myxomatous type develops in areas of infiltration, usually the result of chronic urethritis. The mixed forms occur most commonly in the bulbous portion. True fibromata are extremely rare and have occurred solely in the prostatic urethra. The possibility of malignant change must always be borne in mind.

Cysts of the prostatic utricle are extremely rare and practically never found in the adult.

*Carcinoma:* Primary carcinoma of the urethra is especially rare in the male. Barney, in his recent paper, states that 48 cases have been reported. These growths are always of the squamous-celled type and occur usually in the bulbous portion. Gonorrheal stricture may be regarded

as an etiological factor. Diagnosis is rather difficult because symptoms and signs might fit almost any case of stricture. Mark says that we may safely consider any easily bleeding, fungating, raspberry-like growth in the urethra of a man over forty-eight years of age to be suggestive of carcinoma.

**Sarcoma:** It is the most uncommon of all new growths of the urethra, only a few cases having been reported.

In diagnosing growths of the urethra we have to think of urethritis, simple and specific, stricture, simple and specific ulceration, abscesses, and prostatic and vesical conditions.

Operative measures applied to tumors of the penis previously discussed apply also to those of the urethra.

**Neoplasms of the vas deferens.**—Solid tumors are comparatively rare. Sarcoma and carcinoma may occur in primary and secondary form. Lipoma, fibroma, myoma, and myxofibroma are observed occasionally, lipoma being the most common type, in simple form or combined with myxoma and fibroma. Although lipoma has often been regarded as secondary to the same condition in hernia, there is little doubt that it may originate also in the vas. This tumor tends to send small projections between the structures of the cord. While usually of small extent, specimens of immense size have been reported. Its growth is slow, painless, and often more or less lobulated. At first it is rather hard, later soft. It is not translucent and transmits no impulse in coughing. It may easily be confused with omental hernia, a positive diagnosis usually being impossible without incision. Treatment consists in removal of the tumor, which in the small forms may be possible by blunt dissection, while in some cases castration may be necessary.

Cystic tumors of the cord are not uncommon and include the various forms of hydrocele, of which the multilocular form is the most obscure and infrequent, and have been classified by Kocher as echinococcus cyst, spermatocele, cysts of fetal remains, cystic lymphangiomas and encysted hydrocele lobulated by adhesive inflammation.

In dealing with neoplasms of the cord we must consider varicocele, tuberculosis, syphilis and hernia.

**Neoplasms of the seminal vesicles.**—Very few cases of primary malignant tumors, more commonly carcinoma, have been reported. Involvement by extension or metastasis from neighboring organs, especially in carcinoma of prostate and rectum, is not infrequently seen. Diagnosis is difficult and the condition is seldom brought to the surgeon's attention until vesical symptoms arise from involvement of the bladder wall. Cysts or hydrocele occur occasionally.

**Neoplasms of the scrotum.**—Elephantiasis is due to obstruction of the lymph channels, whether caused by chronic adenitis, extirpation of the inguinal nodes, or, as in the endemic form, by the filaria. The treatment consists in prophylaxis and removal of the scrotal mass by operation.

While it is hardly to be expected that one may remove the parent worms, yet this may be possible and, in any case, it seems that local recurrence is seldom seen.

Small sebaceous cysts are occasionally seen, most commonly on the raphe. These are usually small whitish nodules, but they may attain immense size.

Multiple minute blood cysts, doubtless capillary dilatations, sometimes occur after middle life. They vary in size up to that of a large pinhead, occur over the whole scrotum, are of a dark blood color and cause no symptoms. They may be removed by electrocautery.

Among neoplasms proper, angioma, fibroma, lipoma, fibromyxoma, osteochondroma, teratoma, sarcoma, and carcinoma have been reported. Melanotic sarcoma is very malignant and rapidly fatal. With the following exception, these tumors differ in no way from similar growths in other regions. Epithelioma occurs in this region, apparently as the result of chronic irritation, and is seen especially among chimney sweeps and paraffin workers. This tumor is infrequent in this country and does not seem to occur so often as formerly in the European districts where at one time it was of no infrequent occurrence. It begins as one or more small soft warts or tubercles, usually at the lower forepart of the scrotum. Growth is slow and chiefly superficial, and involvement of lymphatic vessels and nodes is comparatively tardy, so that operation offers a good chance of cure. During the early stages excision of a small area may be sufficient. It is to be remembered that the lymphatics of the scrotum drain into the inner or middle group of the upper set of superficial inguinal nodes.

Eczema and other skin conditions, edema, cellulitis, erysipelas, abscess, gangrene and emphysema must be considered in the differential diagnosis of neoplasms of the scrotum.

Of tumors affecting the tunica vaginalis, cysts, lipomata, and fibromata have been observed; rarely enchondromata, myomata, and sarcomata have been seen. These tumors are confined strictly to the tunica, so that they can be removed without injuring testicle or cord. Lipoma usually affects the tunica communis, the others the propria. Small lipomata may not require treatment. Fibromata are large and should be extirpated in order to save the neighboring organs from their mechanical effects. In myxomata and sarcomata it is necessary to remove the testicle, dividing the cord as high up as possible.

**Neoplasms of the testicle.**—Cysts, as distinguished from cystic tumors, are not uncommon in the testicle. The most common forms originate in some of the various fetal remains of the part. They seldom attain a size larger than that of a hen's egg, although a few very large ones have been reported. Diagnosis is based upon the position of the cysts near the head of the epididymis independent of that organ as well as of the testis so that the three distinct structures can be palpated. Their contents may be clear or milky and may contain spermatozoa.

Cysts in the head of the epididymis are usually referable to previous inflammation of the part and are usually small and of slow growth.

Cysts in the substance of the testis are also usually of slow growth and may or may not appear on the surface of the organ, sometimes protruding as thin-walled sacs.

Parasitic cysts occur, but are rare in this country.

Almost every variety of neoplasm may occur in the testicle, but the benign connective tissue forms are comparatively rare. All tumors in this region seem to show an increased liability to the cystic form. Metastatic growths are also noted in this region, hypernephroma being a relatively common secondary tumor here.

Cyst-adenoma is relatively frequent. It results from overgrowth and constriction of the semeniferous tubules, with consequent cystic dilatation. Preponderant proliferation or cyst-formation give respectively the picture of adenoma or cystoma. Epididymis and vas usually remain uninvolved. The tumor may attain the size of a man's head, usually has a smooth surface, is soft and elastic, and occasionally fluctuates. It occurs usually between the ages of twenty and forty, but is seen also in children, grows rapidly, and may cause great pain. Sarcomatous and carcinomatous change may occur at any time. Incision is usually necessary for diagnosis. In any case, removal is to be performed. Before malignant change has occurred, the prognosis is good after a purely local operation.

Sarcoma and carcinoma are the most common tumors of the testicle and are comparatively frequent. Authorities differ in regard to the relative frequency of the two forms, but it is probable that sarcoma is the more common.

Sarcoma originates usually in the testis, seldom in the epididymis. Almost every variety has been found, including lympho-, fibro-, myxo- and angio-sarcoma, and the melanotic form. The small round- or spindle-celled are the usual types. The growths are hard or soft, according to their type, the latter being, in general, the more malignant. They may attain very large size, especially in cases of cystic change. There is a tendency to fatty degeneration, and areas of hemorrhage are usually seen scattered through this growth. There is said to be less tendency than in carcinoma to break through the tunica albuginea, but there is greater tendency to wide dissemination, giving metastases in lungs, liver, kidneys and brain. After the growth is once outside the limiting membrane of the testis, progress is usually very rapid, often invading the abdomen along the cord. The melanotic form is, as is usual, very malignant. Sarcoma seems to occur most commonly in childhood and early life. Statistics differ in regard to the relative liability of old age and adult years. Trauma seems to play a definite etiological rôle. It is generally stated that the non-descended testicle is especially liable to sarcoma, but there is some question whether cryptorchids bear more than their relative ratio of incidence, and it is certain that the large majority of cryptorchids

that come to operation show no neoplastic change. The author, in a series of twenty operations upon cryptorchids, has found none to have undergone malignant degeneration or to be the site of a neoplasm. One had become infected with gonococcus and resulted in an abscess occurring on the right side, in the inguinal canal, simulating appendicitis. Treatment consists in early and radical operation. It is probable that there is no chance of cure if the growth has broken through the tunica albuginea. Various writers state that they have never seen a cure. Some hope may be offered by serum therapy.

Carcinoma usually originates in the body of the testis. It may occur at the two extremes of life, but it is most common between the ages of twenty and fifty. It is generally unilateral. It occurs in two forms, encephaloid and scirrhus. The latter grows slowly, is of irregular form and shows well-marked dense nodules. The medullary type is the more common, is of a more symmetrical shape and grows much more rapidly than the scirrhus form. Sarcomatous changes are said to co-exist sometimes. As in sarcoma, once the tunica albuginea is perforated, progress is rapid, the ovoid shape is lost, the growth becomes adherent to the scrotal wall, penetrates it, and appears on the surface as a fungus looking mass. Direct extension is limited, but early metastasis is the rule. Prognosis is, therefore, bad, except in the early stages. Treatment consists in early and radical operation, cutting the cord high up, and extirpating the inguinal nodes. The lymphatics of the testicle originate in a superficial set on the surface of the tunica vaginalis and a deep set from the testis, whose vessels pass along the cord to the lumbar nodes, up to the level of the hilus of the kidney. Cuneo describes a special node which is particularly liable to early involvement lying close to the point where the ureter crosses the iliac vessels. Ordinarily the superficial upper inguinal nodes are involved only when the scrotum has been invaded by the growth. Rare cases of inguinal involvement without scrotal disease are explained by lymphatic anastomosis along the blood-vessels. It can be seen from these facts that the prognosis of operation is poor. Few cases of complete recovery are reported when the tumor has been present for any length of time.

Mixed tumors, teratoma and dermoid cysts, to use terms that are more or less overlapping in a pathological sense, are by no means uncommon in the testicle. They are usually noticed at the age of puberty, at which time they usually begin to grow more rapidly. They may penetrate the skin and form sinuses through which fetal structures are discharged. These tumors are capable of malignant change at any time. It has recently been noted that these tumors sometimes contain tissue resembling chorio-epithelium, in which case they are of a most malignant type. It is probable that many testicular tumors previously diagnosed as carcinoma or sarcoma were of this type. There is still some question regarding the origin of this peculiar tissue in these tumors. Diagnosis

of teratoma is possible only by incision. On account of the serious possibilities of these tumors they should be removed at an early date. The testicle can sometimes be preserved.

In making a differential diagnosis and a prognosis on testicular tumors, various points must be borne in mind: In general that the growth may be syphilitic and that nearly all testicular neoplasms are malignant or may become so. The tumor is not usually noticed until it has involved the entire organ. Carcinoma grows more rapidly than sarcoma, as a rule. The benign cystic disease may retain a certain size for many years and there may be no sign of the change that will ultimately present it as malignant. The teratoma also are often quiescent for years and may then suddenly assume rapid growth, with or without malignancy. Kocher's average duration of carcinoma from first symptom to date of operation was one and one-third years, and Kober's list of sarcomata showed an average duration of two and two-third years. Since the tumor is commonly accompanied by hydrocele, the absorption of this fluid causes an apparent recession in the tumor's size. Pain is often slight throughout, but may become severe in the later stages, or if pressure within the tunic is severe. Testicular sensation is lost sooner or later. The oval shape of the testicle is preserved at first. The surface of the tumor later becomes uneven, nodular, elastic, and perhaps fluctuating. Finally, the tunica albuginea gives way and elastic masses are felt projecting through it, the scrotal veins enlarge, and inguinal, iliac, and lumbar glands become palpable. Thence, fascia and skin are involved, forming the fungus hematomas. White and Martin, and Keyes, from whose latest volume I have ventured to quote extensively, have valuable diagnostic tables. The various conditions that must be considered in any given case are: Hypertrophy, contusion, gangrene, neuralgia, orchitis, epididymitis, tuberculosis, syphilis, hydrocele, spermatocele, hernia, and the various cysts and tumors.

In conclusion, we may say that the advances which have been accomplished in recent years in dealing with neoplasms of the organs which we have considered are more accurate methods in gaining early and correct diagnosis, more nearly exact knowledge of the methods of extension, a more intimate understanding of the lymphatic distribution, and a more definite appreciation, gained from the conviction of those with the widest experience in this work, of the great importance of early operative procedure in neoplasms which are malignant or may become malignant, and of the necessity for complete and thorough removal of growth and of all infected tissue.

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## NEW GROWTHS OF THE PROSTATE AND BLADDER.\*

BY ROBERT HOLMES GREENE, M.D., NEW YORK,

*Professor Genito-Urinary Surgery in the Medical Department, Fordham University; Genito-Urinary Surgeon to the City and French Hospitals, New York City.*

THE researches of many observers demonstrate that inflammations of the bladder are more frequent in women than they are in men. Concerning tumors of the bladder, the contrary is the case. More than any other predisposing cause of tumor formations are conditions of chronic inflammation. We would expect women, then, to have more bladder tumors than men, and they probably would were it not for the part played by the prostate as a causative factor in bladder growths. Some observers, such as Motz, consider that two thirds of bladder tumors are of prostatic origin. This view the result of researches made by the author with Dr. Brooks would tend to corroborate.<sup>1</sup>

Until the past ten years, the ordinary hypertrophy of the prostate of the aged was considered by many to be either fibroma or an adenoma, and many of these cases were reported as examples of benign tumors, while malignant diseases of the prostate were considered to be comparatively rare. During the past ten years the work of Cienca-nowski<sup>2</sup> in Poland, Brooks and the author in this country, and several other investigators, has shown that adenoma and fibroma of the prostate was a comparatively rare condition, and that the so-called hypertrophy was the after result of a chronic inflammatory condition, which either blocked up the mouths of the acini of the prostate, later causing their distension and thereby the enlargement of the gland, or fibrous connective tissue formed between the acini, pressing them together, and, when extensive, making the small hard prostate, thus not infrequently giving rise to the condition reported "as prostatism without a prostate."

\* Read before the New York Society of the American Urological Association, March 26, 1909.

<sup>1</sup> Greene, Robert Holmes, A.M., M.D., and Brooks, Harlow, M.D.: A Contribution to the Pathology and Prognosis of Diseases of the Bladder. *Med. News*, June 20, 1903.

<sup>2</sup> Cienca-nowski: Quelques Aperçus sur le Prostatisme. *Ann. des mal. des org. gén.-urin.*, 1901.