

# PAPILLARY-CYSTADENOMATA OF THE BREAST.

A REPORT ON TWENTY CASES OF THE PAPILLARY CYSTADENOMA TYPE OF  
FIBRO-EPITHELIAL TUMORS OF THE BREAST.\*

BY ROBERT B. GREENOUGH, M.D.,

OF BOSTON, MASS.

Surgeon to Out Patients, Massachusetts General Hospital, and Instructor in Surgery  
Harvard Medical School,

AND

CHANNING C. SIMMONS, M.D.,

Assistant Surgical Pathologist, Massachusetts General Hospital, and Assistant in Surgery  
in the Harvard Medical School.

IN the Oration in Surgery delivered by Dr. J. Collins Warren at the meeting of the American Medical Association at Portland, Oregon, in July, 1905, a classification of benign breast tumors was presented which was based upon the study of 758 consecutive cases collected and analyzed by the writers of this communication. This classification was offered in the hope that the existing confusion in the nomenclature of tumors of the breast might be done away with.

The difficult point in the classification of benign breast tumors is the association of connective tissue and epithelium in their composition. The breast is a gland structure of epithelial lined ducts supported in a stroma of connective tissue. All tumors having origin in the breast tissue show a participation of both of these elements in varying proportion. In one case perhaps the fibrous tissue predominates, in another the epithelial, but an authentic case of a tumor composed solely of either fibrous tissue or epithelium has not yet been described. It is because of the attempts of different pathologists and clinicians to apply to the tumors of the breast the names accepted for tumors of other organs that such hopeless con-

---

\* Read at a meeting of "The Obstetrical Society of Boston," Nov. 27, 1906.

fusion has resulted, and it was not until Ribbert in his classification of tumors offered a special group of mixed or "fibro-epithelial" tumors that this confusion began to pass away. Ribbert's classification, however, is purely pathological and does not lend itself to the description of the different forms of tumors of the breast as they appear in surgical practice, and the purpose of Dr. Warren's classification is to harmonize the clinical signs and symptoms of these tumors with their pathological nomenclature.

The first, and perhaps most important, distinction made by Dr. Warren's classification is the separation from the group of tumors of the diffuse processes, giving to the latter the names of (a) diffuse hypertrophy and (b) abnormal involution. Cases of diffuse hypertrophy have sometimes been confounded with tumors of the periductal fibroma type, and abnormal involution, or cystic disease, has been regarded by many writers as a peculiar form of a new growth, and has been called cystadenoma. Because of its diffuse character, however, this disease cannot properly be regarded as a tumor, although the epithelium shows a tendency to proliferation which in certain respects closely resembles a neoplastic process. The lack of encapsulation, however, and the participation in the process of the whole breast and often of the breast of the other side, seems to warrant its removal from the category of true new growths.

The fibro-epithelial tumors of Ribbert have been divided by Dr. Warren into two groups—the fibrous and the epithelial types (see Table I).

TABLE I.  
CLASSIFICATION OF BENIGN BREAST TUMORS. (WARREN.)

- I. Fibro-epithelial tumors:
- |                                   |   |   |
|-----------------------------------|---|---|
| (A) Fibrous type                  | } | 1. Periductal fibroma.<br>2. Periductal myxoma.<br>3. Periductal sarcoma. |
| (B) Epithelial type (Cystadenoma) | } | 1. Fibro-cystadenoma.<br>2. Papillary cystadenoma.                        |
- II. Hyperplasia:
- |   |  |
|---|--|
| (A) Diffuse hypertrophy.                  |  |
| (B) Abnormal involution (cystic disease). |  |

Tumors of the fibrous type in which the fibrous tissue predominates have been called periductal fibroma, periductal myxoma, or periductal sarcoma. They are tumors arising from the peculiar hyaline periductal fibrous tissue of the breast, and they are made up for the most part of this fibrous tissue, although they contain portions of the epithelial gland substance in the form of much distorted ducts and clefts lined with epithelium. The bulk of the tumor is made up of fibrous tissue and it is classified as periductal fibroma, periductal myxoma, or periductal sarcoma, according to the degree of cellular development and richness in nuclei of this tissue. In these tumors it is obvious that the epithelium participates in the growth only as it is secondarily involved by the increase in amount of the fibrous tissue. They are the firmly encapsulated tumors found in the breasts of young women, may be single or multiple, are freely movable in the breast substance and have passed under a variety of names, such as, fibro-adenoma, chronic mammary tumor, proliferous cyst, adenoccle, cystosarcoma phylloides, intracanalicular papillary fibroma, etc.

The epithelial type of fibro-epithelial tumors are those in which the epithelial new growth overshadows the growth of fibrous tissue. In these tumors fibrous tissue is present merely as a stroma to support the epithelial new formation. Tumors of this type, or cystadenomata, are divided into two main classes—fibro-cystadenoma and papillary cystadenoma. The first class, the fibro-cystadenomata, are localized tumors of periductal fibroma origin, in which epithelial proliferation or cyst formation has progressed to such an extent as to overshadow the growth of fibrous tissue. These tumors have been described in the past as cystic fibroma or cystic fibro-adenoma. They are comparatively rare and are of little importance as compared to those of the second group.

Papillary cystadenomata are not uncommon. They are localized tumors—either single or multiple—and involve, as a rule, the large ducts of the breast. They consist of one or more cysts partially filled with papillary outgrowths, arising from

the wall. The papillary growths have a vascular branching connective tissue stalk supporting a luxuriant growth of epithelium in the form of villous projections and gland-like interlacing tubules and canals. The epithelium shows no tendency to infiltrate the surrounding tissues. Tumors of this class have been recognized and described by many writers and under many names: adenoma, villous papilloma, duct papilloma, duct cancer, cystadenoma intracanalicular, carcinoma villosus, endocanalicular papillary fibroma, etc.

The material upon which this report is based consists of twenty cases of papillary cystadenoma. The specimens were obtained from private practice and at the Massachusetts General Hospital in the services of the following surgeons: Dr. J. C. Warren, Dr. A. T. Cabot, Dr. H. H. A. Beach, Dr. C. B. Porter, Dr. M. H. Richardson, Dr. J. W. Elliot, Dr. W. M. Couant, Dr. S. J. Mixter, Dr. F. G. Balch, Dr. R. B. Greenough, Dr. C. A. Porter, and Dr. C. L. Scudder, to all of whom the writers would here express their thanks for the privilege of reporting the cases. Much of the pathological material was placed at our disposal by Drs. W. F. Whitney and J. H. Wright, to whom we would also express our gratitude.

Of the twenty cases of papillary cystadenoma three showed the presence of adenocarcinoma. In the other seventeen cases no evidence of malignant disease was to be obtained. A gross and microscopic examination was made of the specimen in nineteen of the twenty cases; in seventeen cases the microscopic specimens and in many cases the gross specimens also were available for re-examination.

The gross appearances of the seventeen specimens of simple papillary cystadenoma showed the following characteristics: A palpable tumor was present in the breast substance in every case. In twelve instances the tumor was single. In five a number of different nodules were present, forming a conglomerate mass. The tumors varied from the size of a pea to that of an orange. Their situation was almost invariably in the central portion of the breast close to or under the nipple, although the larger cysts extended outward and occasionally

occupied almost the entire substance of the gland. In cross section these tumors presented one or more cysts of varying size containing fluid, which was usually bloody, and filled to a greater or less extent by papillary outgrowths from the wall. The cysts were as a rule well marked off from the surrounding breast tissue and were not adherent to the skin, although in six cases the skin appeared to be closely applied over the tumor and was not freely movable, a fact which was attributable rather to the size of the cyst and its position near the nipple than to any infiltration of the tissue. Retraction of the nipple was noted in the record in three of the seventeen cases of simple papillary tumor and in two of the three cases of adenocarcinoma. It is possible that the development of a benign tumor in the large ducts acts in somewhat the same way as the development of cancer to cause a drag upon the ducts and retraction of the nipple.

The axillary glands were enlarged in only two cases. They did not show malignant involvement even in the cases of carcinoma.

Microscopic sections of the tumors showed one or more cysts. The cysts were as a rule well marked off by a definite layer of fibrous tissue from the surrounding substance of the breast. The breast tissue usually showed evidence of compression by an increase of its fibrous tissue, and occasionally the presence of a small amount of round-cell infiltration. In some cases involution changes were present in the surrounding tissue, which is not surprising when we consider the age of the patients under consideration.

The walls of the cysts were lined with flattened or columnar epithelium which was apparently derived from the larger ducts (Figs. 1 to 6). In one specimen of a tumor of this nature, not in this series, a fortunate section revealed a continuous line of epithelium from the nipple to the wall of the cyst cavity.

The most characteristic feature was the presence of papillary outgrowths from the cyst wall. These papillary growths were composed of a fibrous tissue stroma, with many blood vessels, supporting one or more layers of epithelium continuous

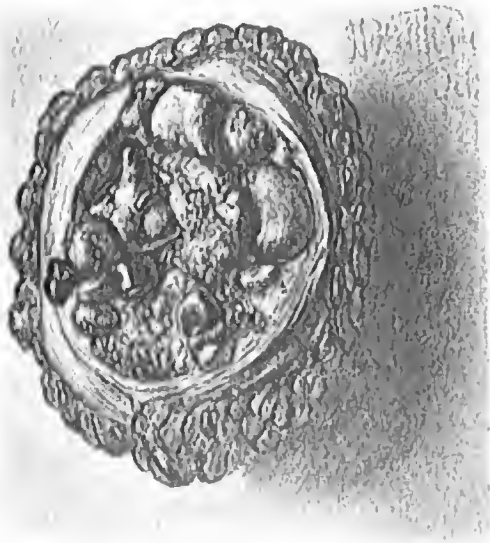


FIG. 1.—Papillary cystadenoma from a girl of 19, removed by an areolar incision. The specimen consisted of a cyst cavity situated directly under the nipple and filled with papillary ingrowths. These varied greatly in size, shape, consistency and color, and the whole could be aptly compared to a gall-bladder full of stones. The color and shape of these ingrowths was due to edema, hemorrhage and necrosis.

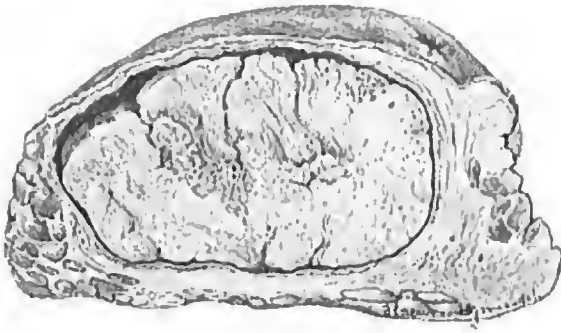


FIG. 2.—Papillary cystadenoma. The cyst was of four years' duration and occurred in a woman 43 years old. It illustrates well the single large type of cyst, the size being due not to the rapid growth but to the long duration. There was a small fistulous opening through the skin. The cyst contained a papillary mass of grayish white friable tissue, which on section was composed of distorted glands and fine fibrous stalks largely necrotic.

U. of M.

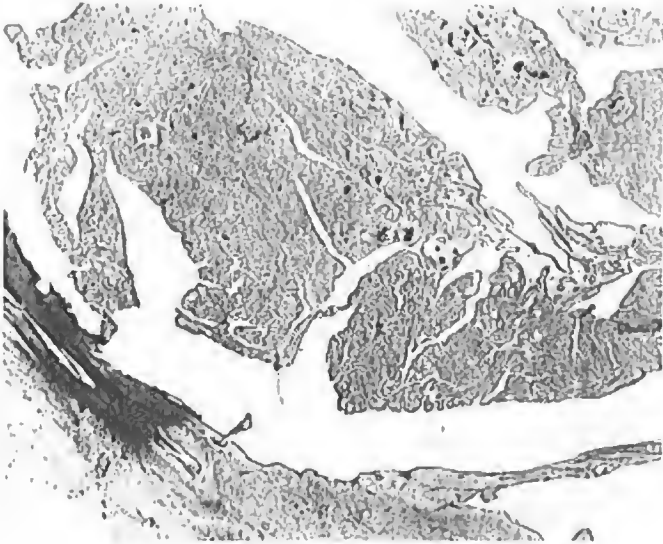
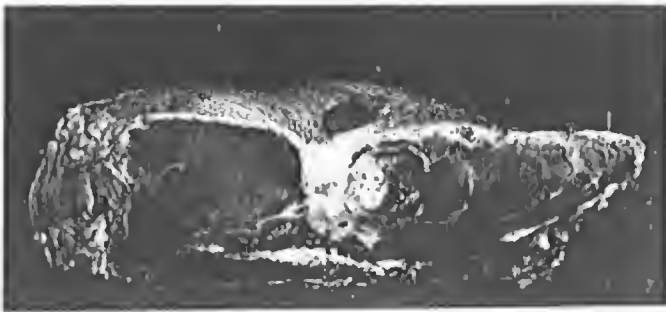
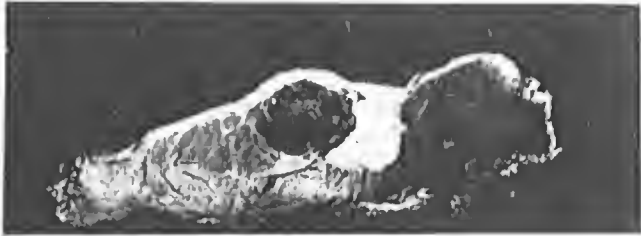


FIG. 3.—Papillary cystadenoma. Section showing the cyst wall and papillary ingrowth. The cyst was lined by a layer of flattened epithelium. The fibrous tissue around this was dense and infiltrated with round cells. The gland ducts in the vicinity were flattened and mechanically disturbed, but otherwise showed little change. The papillary growth completely filled the cyst, which was 2 cm. in diameter. It apparently had several attachments, one of which is seen to the left of the photograph, although this evidently is not the chief one. The appearance of the glands and fibrous tissue is well shown. The dark areas in the papillary growth, (suggesting artifacts) are vessels filled with blood. On the right of the drawing (where the glands are not as numerous) the fibrous tissue is calcareous.





FIG. 4.—Mammary cystadenoma. Small multiple type. These tumors were situated under the nipple and occupied the larger ducts. They were all small, the largest being but  $\frac{1}{2}$  cm. in diameter. The papillary projections in the one to the right of the photograph are formed of delicate branching stalks of fibrous tissue covered with epithelium, the whole forming an irregular mass of somewhat atypical gland ducts. In the cyst in the center of the specimen the epithelial proliferation has been so great as to mask the fibrous tissue, while in that in the left, the fibrous tissue is abundant, somewhat necrotic and oedematous. There is a large amount of interstitial fibrous tissue surrounding the cysts.



**FIG. 5.**—Papillary cystadenoma with adenocarcinoma. The upper photograph shows the cyst cavity to the left and the adenocarcinoma (the dense white area) on the right.

In the lower photograph the cyst cavity is seen to the right of the nipple partially filled with papillary ingrowth from the base of which the adenocarcinoma has developed. This is almost directly under the retracted nipple and is adherent to the skin.

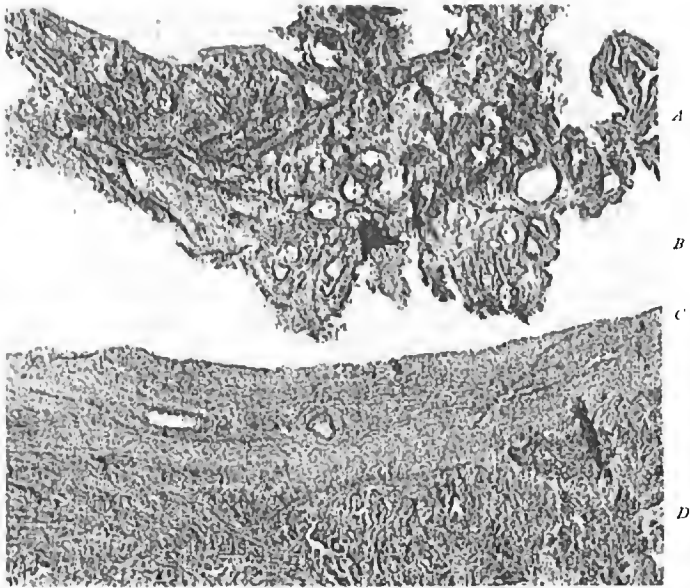


FIG. 6.—Papillary cystadenoma and adenocarcinoma. Section through the wall of a papillary cystadenoma. The cyst was situated under the nipple and was 2 cm. in diameter. It was filled with bloody fluid and contained a friable papillary ingrowth. Microscopically at the base of the papillary growth the surrounding tissue was infiltrated by the atypical glands characteristic of adenocarcinoma.

- A*, Papillary ingrowth.
- B*, Cyst cavity.
- C*, Cyst wall.
- D*, Adenocarcinoma.

with the lining of the cyst. The papillary masses were often divided into many branches and occasionally interlaced in such a way as to present the appearance of a multitude of gland tubules and ducts, lying in a fibrous stroma. The papillæ were often attached to the cyst wall at several points in their circumference. Degenerations of the connective tissue, hæmorrhagic areas and areas of œdema were not uncommon.

The epithelium appeared in many different forms. The lining of the larger cysts was commonly flattened and of several layers. That of the smaller cysts was higher and that covering the papillary outgrowths was often columnar and of different degrees of size and development varying from the familiar narrow cells of the normal ducts, to the high, columnar, well-formed cells seen in the adenomatous proliferation of abnormal involution. So far as anatomical and histological data were available, the origin of the papillary cystadenomata was in the fibrous tissue and epithelium of the walls of the larger ducts.

The degree of proliferation of the epithelium varied in different specimens and even in different portions of the same microscopic section. In one place several layers of flattened cells were found, while in others a single layer of high columnar cells alone was situated against the basement membrane.

The rate of growth of these tumors is very slow, and, as might be expected, the epithelium showed but little evidence of rapid reproduction; mitoses were occasionally seen but were comparatively rare. Degenerative processes in the papillary masses were not uncommon, and in one specimen particularly, a hyaline degeneration was observed which produced homogeneous masses of varying color from red to green and black, which resembled gall-stones closely as the papillary growths lay in the opened cyst.

The cyst cavity, in addition to the polypoid tumor masses, contained serous or sanguinolent fluid, apparently from thrombosis or rupture of the vessels of the villous stalks, and in some specimens the wall of the cyst was deeply stained with blood pigment of similar origin.

With regard to the etiology of tumors of this type, very

little can be said. Trauma was cited by the patient as the supposed cause of the tumor in five cases. In eight cases no history of trauma could be obtained, and in seven no data on this point were available. So far as age is concerned, the papillary cystadenoma is generally a tumor of old age. The average age of twenty patients was 49.5 years. The extremes, however, cover a large period—the youngest patient being 19 years old and the oldest 81. It is to be noted that no gross or microscopic peculiarities were found to differentiate the tumors of young women from those of older years. The influence of marriage and lactation does not appear to be significant. One of the twenty cases was a male patient of 51 years of age. Of the nineteen women, eleven were married and eight had had children. Thus of nineteen cases of papillary tumors there were eight in women whose breasts had undergone lactation, and eleven in those which had not. Whether in development the polypoid outgrowths from the wall of the duct produce the cyst, or whether the cyst is first produced, and the papillary outgrowth is a secondary process, can only be a matter of speculation.

The symptoms of papillary cystadenoma are perhaps more characteristic and better defined than those of the majority of tumors of the breast. One or more nodules are found in the central portion of the breast, not far removed from the region of the nipple. These nodules may vary from the size of a pea to that of an orange or larger. They are generally described as hard in consistency, but if not too deep in the breast tissue, and if of sufficient size, an elastic or cystic feeling may be appreciable. One tumor was described as soft, and in a number of cases no tumor at all was felt until some time after the recognition of the bloody discharge from the nipple. The size of the tumors varied in certain of the cases, according to the amount of fluid contained, and could be diminished at will by pressure, forcing the fluid out through the nipple. Pain was present in about one-half of the cases, but was rarely severe, and was not a conspicuous symptom of these tumors, in distinction to the more painful character of abnormal involution.

The symptom which is of the greatest value in the differentiation of papillary from other tumors of the breast is the existence of a serous or bloody discharge from the nipple. This discharge was present in eleven of the twenty cases, while in four of the others the record failed to give information upon the point. It is not to be expected that discharge will always be present, as the escape of the fluid must depend on the patency of the duct between the cyst and the outer world. In one case a fistulous opening was established from the cyst through a sinus which opened at the edge of the areola, but such a condition is obviously rare.

Tumors of this type are of slow growth. The average duration of the tumor before operation was 25.8 months, the longest being eight years and the shortest one month. It is significant, however, that in three cases at least the discharge from the nipple was present for a long time prior to the discovery of the tumor.

Enlargement of the axillary glands to such an extent as to make them readily palpable is not to be expected. In two of the twenty cases the records state that enlarged glands were felt in the axilla. In the remaining eighteen, including the three cases of carcinoma, no enlarged glands were felt. It is well known that in thin persons, and as a result of irritation, enlargement of the axillary glands sufficient to make them readily palpable is not uncommon. In cases of abnormal involution this frequently occurs. The presence of slightly enlarged glands, however, is of little significance in diagnosis.

The diagnosis of tumors of this character from other tumors of the breast is facilitated by three chief symptoms—*i.e.*, the situation, under or close to the nipple; the slow, painless growth; and the presence of a discharge from the nipple of bloody fluid. As accessory symptoms it should be noted that the skin is not adherent, nor are the axillary glands enlarged.

The conditions with which these tumors are most likely to be confounded are cancer, abnormal involution and periductal tumors. From cancer they are distinguished by their

slow growth, definite outline, and by the freedom of skin, muscles, and axillary glands from involvement in the disease. Discharge from the nipple in cancer is very rare.

From abnormal involution the diagnosis is more difficult. Serous discharge from the nipple in such cases is occasionally noted. The diffuse character of this condition, however, and the irregular nodular consistency of the breasts associated with pain and tenderness are points that aid in differentiation. Involution changes also are more common in the periphery of the breast, while papillary tumors occur almost invariably near the nipple.

From periductal fibromata, the diagnosis should not be difficult. The periductal tumors occur, as a rule, at a much younger age. They are firm and elastic, often of large size, and rarely occur near the nipple. They slip and slide in the breast tissue, and never produce discharge. The periductal fibromata are far more likely to be confused with the fibrocystadenomata (the other type of the cystadenoma or epithelial group), and it is doubtful if the two can be distinguished without the aid of the gross and microscopic examination.

The prognosis of a papillary cystadenoma is uncertain. They are tumors of slow growth and may exist for years without producing serious inconvenience. By the English writers, tumors of this type have been described which in time protruded from the nipple as granular and bleeding polypi. This did not occur in any of these cases. Enlargement to such a size as to cause serious disfigurement did not occur, although one tumor as large as an orange was produced, and a fistulous opening leading to the cyst was already established when the case came under observation. There was no obvious suppuration, but it is to be supposed that infection might readily occur and be followed by necrosis and sloughing of the tumor.

As in all of the tumors of the adult breast, the chief point of interest in prognosis is the likelihood of cancer. In this series of twenty cases, cancer was present in three instances and appeared to be associated with the existence of the papillary tumor, that is, the cancerous nodule was in the wall of the

cyst, and the type of growth, adenocarcinoma, was the same in all three cases. Except for the infiltration of the surrounding tissues, the cancerous nodules presented characteristics of growth of the same general character as the papillary structures within the cyst, although the irregular cell growth and infiltration left no doubt about the diagnosis of adenocarcinoma. The occurrence of cancer, however, in fifteen per cent. of the cases of papillary cystadenoma is sufficient to warrant the early and complete removal of these tumors, and to justify their classification in a group apart from the periductal type of fibro-epithelial tumors which show no such predisposition to the occurrence of malignant disease.

The duration of the three cancer cases was 9, 12 and 18 months respectively, and their ages were 52, 69 and 76 years. Several of the cases which showed no evidence of malignant disease had been in existence for much longer periods, and in women of equally advanced years. It is perhaps worthy of note that none of the cancer cases showed the familiar symptom of discharge from the nipple, whereas it was present in all of the non-malignant tumors of more than eight months' duration of which we have specific notes. The occurrence of cancer in tumors of this character has been noted by many writers. It is undoubtedly this tendency which has led the English writers to the indiscriminate use of the word "duct-cancer" for papillary tumors of this kind. Tietze and Sasse have each described cases of this character, under the names of *cystadenoma proliferum destruens malignum* (Sasse) and *adenocarcinoma destruens* (Tietze). That a form of adenocarcinoma occurs in certain cases of papillary cystadenoma is supported by this series of cases, but that this is sharply to be differentiated from other forms of adenocarcinoma is perhaps open to question. Of the three cancer cases, two showed no evidence of recurrence at one and two years after amputation of the breast; the third case died of recurrence four years after operation. In only two cases, however, was the axilla dissected, and in these no diseased glands were found. In none of the three cases were the axillary glands palpably enlarged.



From the consideration of the course of development of papillary tumors of the breast it is obvious that radical removal of the tumor is to be advised. As in all other cases of breast tumor also, the frequency of the occurrence of cancer makes an exploratory operation the duty of the surgeon in every case of tumor in which the diagnosis cannot positively be determined to be benign and free from danger of subsequent malignancy; and the number of such cases, with the exception of the small multiple periductal fibromata, is almost nil. When the tumors are large, or multiple, amputation may be necessary to obtain complete removal; but when small and single the breast should certainly be saved. Excision may be performed from the under side of the breast by the "plastic resection" operation advised by Dr. Warren and described in the *Journal of the American Medical Association*, July 15, 1906. In some cases, however, the operation may be simplified, and a small tumor under the nipple readily removed by an incision which follows the lower border of the areola for a quarter or third of its circumference. This incision is carried through the skin alone. With retractors the wound is then drawn open in a direction radiating from the nipple, and the subsequent dissection for the removal of the tumor is carried on by radial incisions in order to avoid injury to the other ducts than the one involved in the tumor. This incision does very little damage to the breast and leaves a scar which is scarcely discernible after a month or two has elapsed.

If microscopic or gross examination of the specimen reveals the presence of carcinoma, it is obvious that a complete operation should be performed. In such a case the pectoral muscles and the axillary contents should be removed, for, although the type of cancer is of relatively low malignancy, the complete operation is only a reasonable precaution. When this is done, the prognosis should be far more favorable than in the average case of cancer of the breast.

Of the seventeen cases of non-malignant tumor in this series, seven had an amputation of the breast, eight had the tumor excised by a plastic or direct incision, and two by the

areola incision. In one of the amputation cases the axilla was also dissected. The results of these operations were as follows:

Of the seven amputation cases, one patient could not be traced, five were free from disease at periods of one, one and a half, two, three and eight years after operation, and one died of old age and debility three years after operation without recurrence.

Of the ten excisions, three were untraced, one showed a local recurrence of the tumor after six months, which has persisted for three and a half years without further increase; another showed a local recurrence eighteen months after operation, which was removed, and the patient has not since reported. The other five cases were examined or reported free from disease at periods of one and a half, three, six, and eighteen months, and four years after operation. Of the two cases of recurrence, one was proved by microscopic examination to be similar to the original tumor and non-malignant, and the other had existed without change for three and a half years, so that the presumption is fair that complete removal of the original tumor was not obtained at the first excision. It is obvious that this should be done in every case, even if amputation is required; but we believe that so radical a procedure is rarely needed.

#### SUMMARY.

Twenty breast tumors of the papillary cystadenoma type showed the following characteristics:

(1) They were single or multiple, involving the large ducts near the nipple, and composed of one or more cyst cavities from the walls of which grew papillary outgrowths composed of a fibrous tissue stroma and a luxuriant growth of duct epithelium in the form of irregular gland tubules and polypoid projections.

(2) Tumors of this character have been described by many names, viz. adenoma, duct papilloma, duct cancer, vilous papilloma, cystadenoma intracaniculare, proliferous cysts, etc.

- (3) They occur in the male breast as well as in the female.
- (4) They occur at all adult ages and independent of trauma, marriage or lactation.
- (5) They are usually painless.
- (6) They are generally situated near to or beneath the nipple.
- (7) They are usually of small size, but occasionally attain the dimensions of an orange.
- (8) They are of slow growth.
- (9) Their most characteristic symptom is the presence of a discharge from the nipple which may be serous, but is usually bloody in character.
- (10) Do not cause enlargement of the axillary glands.
- (11) Fifteen per cent. of the twenty cases in this series were associated with a form of cancer (adenocarcinoma) of a relatively low type of malignancy.
- (12) Treatment demands the complete removal of the tumor, either by excision or, if necessary, amputation of the breast.
- (13) Excision may be performed by plastic resection or by an areola incision.
- (14) The association of cancer with papillary cystadenoma in fifteen per cent. of the cases justifies the separation of this group from other fibro-epithelial tumors of the breast in clinical and pathological classification.

#### ABSTRACT OF CASES.

I. No. 123. 1896. Dr. J. W. Elliot (ix-180). Female, 57. Married, 1 child. 2 months' duration. Tumor, size of walnut. Right breast. Upper outer quadrant, no pain; discharge not recorded. Excised. Recurrence 2 years later. Same situation. Size of hen's egg. Excised. Both papillary cystadenoma. No later report.

II. No. 11. 1896. Dr. J. C. Warren (320-44). Female, 44. Single. 6 years' duration. Tumor, 2 inches in diameter. Left breast. Upper half. Pain slight. Discharge from nipple for 10 years. Excised. Papillary cystadenoma. No later report.

III. No. 65. 1897. Dr. H. H. A. Beach (325-211). Female, 52. Married, 1 child. 11 years' duration. Tumor, 3 inches in diameter, under nipple. No pain. Discharge not recorded. Excised. Papillary cystadenoma. No further report.

IV. No. 15. 1895. Dr. A. T. Cabot (334-70). Female, 61. Single. 9 months' duration. Tumor, size of orange. Left breast, under nipple. No pain. Discharge not recorded. Amputation. Papillary cystadenoma. 1906, reports no further trouble.

V. No. 91. 1900. Dr. H. H. A. Beach (339-2). Female, 57. Widow. 2 miscarriages. 1 months' duration. Tumor, size of hazel nut, under nipple. Pain slight. Discharge serous for 10 years. Bloody in last 12 months. Excision. Papillary cystadenoma. No later report.

VI. No. 217. 1901. Dr. J. C. Warren. Female, 81, single. Tumor, size 3 cm., near nipple. Slight pain. No discharge. Amputation. Papillary cystadenoma. Died  $3\frac{1}{2}$  years later of old age and debility. No trouble with breast.

VII. No. 166. 1902. Dr. A. T. Cabot (li-220). Female, 42. Married. 6 children, 1 miscarriage. Normal lactation.  $1\frac{1}{2}$  years duration. Tumor size almond, under nipple. Slight pain. Discharge brownish and bloody for 3 years. Excision. Papillary cystadenoma. Tumor recurred in same situation and has persisted for 4 years. No further operation.

VIII. No. 171. 1902. Dr. W. M. Conant (lix-14). Female, 45. Married, 8 children; 2 miscarriages. Breast abscess on other side 2 years ago. 6 months' duration. Tumor under nipple. No pain. Discharge bloody on pressure. Excised. Papillary cystadenoma. Report, 4 years later, no trouble.

IX. No. 184. 1903. Dr. W. M. Conant (lxxxii-295). Female, 35. Married, 8 children. 1 year's duration. Tumor size of chestnut, under nipple. No pain. Bloody discharge. Amputation. Examination, 4 years later. No trouble.

X. No. 204. 1904. Dr. S. J. Mixer (469-145). Female, 67. Married, children? Duration 2 years. Tumor, size of egg, near nipple. No pain. Discharge not recorded. Amputation. Papillary cystadenoma. Reports, 3 years later, no trouble.

XI. No. 210. 1905. Dr. C. A. Porter. Female, 43. Married, 4 children. 4 years' duration. Tumor, size of small orange, near nipple. Sinus at edge of areola. Painful of late. Discharge from sinus watery and bloody. Amputation. Papillary cystadenoma. Report, 18 months, no trouble.

XII. No. 209. 1905. Dr. R. B. Greenough (42-352). Female, 19. Single.  $1\frac{1}{2}$  years duration. Tumor, size of half a hen's egg. No pain. Bloody discharge from nipple. Excision by areola incision. Papillary cystadenoma. 19 months later, examination, no further trouble.

XIII. No. 211. 1905. Dr. Wm. M. Conant. Male, 51. 4 months' duration. Tumor size of walnut. Upper outer quadrant. Pain not marked. Bloody discharge from nipple on pressure. Amputation with dissection of axilla. Papillary cystadenoma. Examination, 16 months later, no trouble.

XIV. No. 205. 1906. Dr. S. J. Mixer. Female, 24. Single, 4 years' duration. Tumor size of lemon, under nipple. Slight pain at time of catamenia. Discharge from nipple bloody and purulent(?). Excision. Papillary cystadenoma. No later report.

XV. No. 206. 1906. Dr. J. C. Warren. Female, 34. Married, no children. 8 years' duration. Tumor, size of walnut. Right breast; lower inner quadrant. No pain. Discharge not noted. Plastic resection. Periductal fibroma and papillary cystadenoma. 6 months later, result perfect.

XVI. No. 208. 1906. Dr. F. G. Balch. Female, 30. Single. 4 months' duration. Tumor, size of walnut, under nipple. Considerable pain. No discharge. Excision with areola incision. Papillary cystadenoma. Result, 3 months later, perfect.

XVII. No. 212. 1906. Dr. C. L. Scudder. Female, 40. Single. 7 years' duration. No pain. Bloody and serous discharge. Plastic resection. Papillary cystadenoma. No later report.

XVIII. No. 216. 1898. Dr. S. J. Mixer (333-177). Female, 52. Married, no children. 9 months' duration. Tumor, 2 inches in diameter, near nipple. Pain slight. Discharge not recorded. Nipple retracted. Skin adherent. No glands felt in axilla. Amputation. Papillary cystadenoma and adenocarcinoma. Died four years later of cancer of the breast.

XIX. No. 215. 1901. Dr. H. H. A. Beach (385-136). Female, 76. Widow, 2 children. 1 year duration. Tumor, size of walnut; upper inner quadrant. No pain; non-adherent. No gland felt in axilla. Amputation. Axilla not dissected. Papillary cystadenoma and adenocarcinoma. Report, 1 year later, no recurrence.

XX. No. 214. 1905. Dr. J. C. Warren. Female, 69. Single. 18 months' duration. Tumor, size of walnut, under nipple. Adherent to skin. No glands felt in axilla. Slight pain. No discharge. Complete amputation. Axilla not dissected. Papillary cystadenoma and adenocarcinoma. 2 years later, examination showed no recurrence.

#### REFERENCES.

1. 1876. Labbe and Coyne, "Traité des Tumeurs du Sein," Paris, G. Masson.
2. 1880. S. W. Gross, "Tumors of the Mammary Gland," Philadelphia.
3. 1887. Bryant, "Diseases of the Breast," Cassell & Co., London.
4. 1894. W. Roger Williams, "Diseases of Breast," John Bole & Sons, London.
5. 1897. Sasse, *Archiv für klin. Chirurgie*, Vol. liv, p. 1.
6. 1898. A. M. Shield, "Diseases of Breast," Macmillan & Co., London.
7. 1900. Tietze, "Über das Cystadenoma Mammæ (Schimmelbusch), etc. *Zeitsch. f. Chir.*, Vol. lvi, p. 512.
8. 1904. Stewart, *Jour. Am. Med. Asso.*, Aug. 6, 1904.
9. 1905. W. McA. Eccles, *Med. Press and Circular*, n.s. lxxx, 542, London.
10. 1905. J. C. Warren, *Jour. Am. Med. Asso.*, July 15, 1905.
11. 1906. A. Clark, *Brit. Med. Jour.*, 1906, i, 185, London.