THE TREATMENT OF THE BLEEDING BREAST

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This paper represents an effort to clarify the much debated question of the best treatment for the bleeding breast. Its object is to defend the theorem that in prolonged bleeding from the breast, either continuous or intermittent, the source of the bleeding should be removed. If this can be accomplished by removing a single nodule or even a sector, such a procedure may be safe in some cases. If a localized focus cannot be found, the entire breast in many cases should be removed. Case I is an example.

Case I (B. B. 840): A social worker, thirty-one years old, married for six years but never pregnant, was first seen June 10, 1932. She was healthy and working regularly. Except for the breast condition her present history was unimportant. Her mother had died at thirty-eight of cancer of the breast, and her maternal grandmother at sixty of cancer of the stomach. An aunt (a sister of the mother) was living after operation for cancer of the ovary. The patient's paternal grandfather's brother and his daughter had died of cancer, and an uncle had died of cancer of the leg.

Bleeding from the left breast was first observed two months before the patient was seen, and had continued to date. It was never profuse, but at night and in the morning there was invariably some blood on the clothing, and the patient could always express a drop of blood from the nipple by pressure at nearly any point of the breast. The breast was painless and there were no symptoms in the other breast. The general health remained excellent. No lumps had been noticed.

General physical examination showed a healthy, well developed, robust woman. Both breasts were well developed and slightly pendulous. Including the nipples, they were equal and normal on inspection. The right breast on palpation showed normal glandular tissue, with no nodules or thickening. Palpation of the left breast showed the same condition as the right except that under the areola it was a little firmer and "stringy." No nodules could be felt anywhere. Examination confirmed the patient's statement that moderate pressure with one finger at practically any part of the breast would express a drop or two of dark red blood from the nipple. There were no palpable glands in the axillae or neck. Roentgenograms of both breasts showed similar pictures and no nodules.

The patient was extremely worried both on account of the family history and on account of inspecting her clothing at every change to see how much bleeding had occurred. Because of this, and since there was no prospect of relief otherwise, removal of the breast was decided upon.

The left breast was removed under ether on July 6, 1932. A lower outer incision was made and subcutaneous excision done, leaving the nipple. Recovery was uneventful, and from the psychological standpoint the patient was greatly relieved.

Gross Pathology: The specimen, which consisted wholly of breast tissue with no skin or muscle, measured 6 to 7 inches in diameter and was 1½ inches thick.
at the midpoint. It was studded throughout with scores of small cysts, some just visible, others as much as a quarter of an inch in diameter. There were no solid tumors and no duct papillomata visible to the naked eye. Numerous sections showed the same gross appearance (Fig. 1).

Microscopic Examination: The sections showing the entire breast measured 5 × 1½ inches. As may be seen in Figure 1, which is only slightly reduced, there was the usual mixture of glandular tissue and fat. The cysts all showed a faintly colored content of compressed, desquamated epithelium, red and white blood cells, sometimes fresh but more frequently in various stages of degeneration, and coagulated blood serum. Every duct and many acini, including whole lobules, were filled with this material, which was constantly escaping at the nipple or waiting to be expressed by pressure. Figure 2 shows a group of typical ducts and dilated acini filled with débris. Another area, in which the dilatation of the acini is less marked, is shown in Figure 3.

The most important histologic feature in this breast is the epithelium lining the ducts and acini. Everywhere it shows marked hyperplasia. In a few lobules the acini appear only slightly dilated, but are filled with poorly developed hyperplastic epithelium. The interacinar connective tissue shows some edema and moderate round-cell infiltration. The predominating type of epithelium is that shown in Figure 2: all the ducts show piled-up hyperplastic epithelium of various degrees. This consists in some parts, of a flattened compressed layer of poorly formed cells three or four deep. In others half the circumference of a duct is lined by an irregular strip ten or twelve cells thick, often with small cavities. In many ducts there are numerous short, thick, papillary processes projecting into the lumen, which prove under high-power magnification to be thickened masses of epithelium, without a connective-tissue stalk. The projections seen in this tissue are always buds. There are no true papillomata with connective-tissue stalks. Figure 4 is a high power photomicrograph of one of the larger processes. The lining epithelium itself is of a fairly uniform type. Bizarre forms and monster cells are not seen. Mitotic figures are scarce, if present at all, and the epithelium, though definitely hyperplastic, does not look malignant. Breaking through of the basement membrane is not seen. Sections such as that reproduced in Figure 1 were repeated at intervals of about a quarter of an inch throughout the entire breast. They all conform closely to the above description. All show literally hundreds of ducts and acini filled with old blood products ready to ooze or be pressed out. By means of these numerous whole sections the entire gland has been carefully studied. Nowhere have true papillomata been found and nowhere is there any evidence of malignancy.
Fig. 2. Case I (B.B. 840): Characteristic Group of Dilated Acini and Ducts Filled with Desquamated Old Blood (Low Power)

Note thick layers of lining epithelium with numerous buds. Courtesy of Major P. E. McNabb.

Fig. 3. Case I (B.B. 840): Group of Acini in Which the Dilatation Is Less Marked

The hyperplasia of the epithelium is apparent.
Summary of Pathological Condition: No palpable tumor, no certain microscopic evidence of carcinoma, no duct papilloma. The entire lining of ducts and acini is practically a thickened, hyperplastic, bleeding, continuous epithelial membrane.

Fig. 4. Case I (B.B. 840): Portion of a Dilated Duct Showing Hyperplastic Epithelium; One Typical Bud with No Connective-tissue Stalk (High Power)

A similar condition is shown by another case with a more distressing after-result.

Case II (B. M. 2480): The patient, who was a single woman of thirty-six, was operated on by a colleague Sept. 23, 1930, for a “fibro-adenoma” which had been discovered nine months earlier and had given no symptoms. The patient stated definitely that there had been no bleeding prior to operation. The lump in the breast was excised locally; the wound healed promptly, and the patient had no trouble until nearly two years later. Then, beginning June 10, 1932, the breast bled for three days. The bleeding stopped spontaneously and did not recur, but the breast at this time felt as though something had “burst inside.” It remained sore, but at no time could the patient feel a lump. She returned to her doctor, and a radical operation was done July 26, 1932.

Pathology: The tissue removed at the first operation, in 1930, was examined by the writer, a paraffin section about 3/4 of an inch in diameter being available for study (Fig. 5). This shows an oblong area of normal fat, at one side of which (left in cut) is an area of normal breast tissue. On the other side of the fat lobule is an area about a quarter of an inch in width in which there are a number of dilated ducts or acini. This area shows no capsule or demarcation from the surrounding fat or normal breast tissue.

Under the microscope (Fig. 6) each tiny tubule is seen to be surrounded by a fairly regular connective-tissue wall. The inner lining is a coat of hyperplastic,
epithelial cells, sometimes 8 or 10 cells thick. The center of many of these tubules is empty. Others contain desquamated epithelium, granular débris, and occasionally a few degenerated blood cells. Occasionally a tubule is lined only with a single layer of flattened, compressed epithelium. A few are completely filled

with hyperplastic epithelium. The epithelium cells in the tubules are regular in type, show rather densely staining non-vesicular, oval or round nuclei with little chromatin structure visible. Mitotic figures are not seen. In only one tubule the epithelium is somewhat irregular with a possible suggestion of malignancy. No breaking through of the basement membrane is seen. This connective tissue shows a few small areas of round-cell infiltration.

Following the second and radical operation in 1932, it was fortunately possible to prepare a section of the entire breast (Fig. 7). This shows that practically half the breast is the seat of a diffuse, poorly delimited cancer. The largest area of malignant tissue is at the extreme edge of the breast. A small malignant nodule is plainly seen just under the subcutaneous tissue about three
eighths of an inch to the right of the nipple, and several small scattered nodules are seen near by. Other nodules are observed less than a quarter of an inch from the muscle surface. The muscle tissue itself is not invaded.

Microscopically the cancer is of the comedo type (Figs. 8 and 9). There is, however, definite permeation of connective tissue outside the "comedos" and there is definite permeation of near-by fat.

The axillary nodes are not involved.

**Fig. 7. Case II (B.M. 2480): Whole Section of Breast Removed at Second Operation, About Three Fifths Natural Size**

The malignant area showing "comedo" type of carcinoma occupies a large part of the right half of the breast.

The first sections in Case II were studied with special care before the decision was reached that the condition was benign and that no further surgery was indicated. Even in the light of later events, the writer on reviewing the tissue first removed can see nothing which would indicate malignancy.

There are two possible explanations of the course of events in this case. (1) There may have been at the time of the first operation definite cancer present in the breast elsewhere than in the area removed. (2) The marked epithelial hyperplasia already developed to the degree described in the area first removed may have been present elsewhere in the breast and may have progressed to malignancy later at another point.

Case II has been reported in detail because the later course here was exactly what might have resulted in Case I. The parallel is especially close because the tissue first removed in Case II shows the same general type of epithelial hyperplasia as did that in Case I. The essential factors are the same in both cases except that the epithelial hyperplasia in Case I involved the whole breast, and was more marked. The significant point is that in Case I the only item that called attention to a dangerous pathological condition was bleeding from the nipple. The pathological condition
actually found involved the entire breast and was exactly comparable to the lesion first removed in Case II, in which the dreaded development of malignancy actually occurred.

The other cases of bleeding from the nipple in the writer's material (mostly contributed) may be briefly summarized. There are available about 400 histories in which the presence or absence of bleeding was definitely noted. In 16 there was a history of bleeding. Eleven of these were carcinoma and 5 benign conditions. In 7 of the 11 cases of cancer, bleeding was the first symptom and the first warning that anything was wrong with the breast. More
<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Age and Civil State</th>
<th>Number of Children</th>
<th>Age of Last</th>
<th>First Symptom</th>
<th>Bleeding Noticed before Operation</th>
<th>Tumor Noticed before Operation</th>
<th>Structural Type of Tumor</th>
<th>Grade</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.M. 1510</td>
<td>47 M</td>
<td>1</td>
<td>24</td>
<td>Lump</td>
<td>1 year</td>
<td>12 years</td>
<td>Duct papilloma (carcinomatous)</td>
<td>I</td>
<td>Rapid growth of tumor in past six months. Child died after birth</td>
</tr>
<tr>
<td>B.M. 1672</td>
<td>53 M</td>
<td>4</td>
<td>14</td>
<td>Lump</td>
<td>3 months</td>
<td>10 months</td>
<td>Scirrhous</td>
<td>III</td>
<td>Nursed all children about one year</td>
</tr>
<tr>
<td>B.M. 1829</td>
<td>83 W</td>
<td>3</td>
<td>55</td>
<td>Lump</td>
<td>Few days</td>
<td>5 years</td>
<td>Glandular</td>
<td>I</td>
<td>Nursing?</td>
</tr>
<tr>
<td>B.M. 2050</td>
<td>52 W</td>
<td>1</td>
<td>23</td>
<td>Bleeding</td>
<td>6 months</td>
<td>?</td>
<td>Mucoid</td>
<td>II</td>
<td>Malignant cells in blood vessels and glands involved. No nursing</td>
</tr>
<tr>
<td>B.M. 2107</td>
<td>40 M</td>
<td>2</td>
<td>16</td>
<td>Bleeding</td>
<td>2 years</td>
<td>5 days</td>
<td>Scirrhous</td>
<td>IV</td>
<td>Nursed both children about four months</td>
</tr>
<tr>
<td>B.M. 2136</td>
<td>50 S</td>
<td>0</td>
<td>—</td>
<td>Bleeding</td>
<td>12 years</td>
<td>9 months</td>
<td>Scirrhous</td>
<td>IV</td>
<td>Tumor 1 1/2 cm. in diameter</td>
</tr>
<tr>
<td>B.M. 2149</td>
<td>41 S</td>
<td>0</td>
<td>—</td>
<td>Bleeding</td>
<td>8 months</td>
<td>2 months</td>
<td>Medullary</td>
<td>II</td>
<td>Tumor removed from same breast 2 years before</td>
</tr>
<tr>
<td>B.M. 2189</td>
<td>41 M</td>
<td>0</td>
<td>—</td>
<td>Bleeding</td>
<td>2 months</td>
<td>?</td>
<td>Comedo</td>
<td>I</td>
<td>Tumor removed from same breast 2 years before</td>
</tr>
<tr>
<td>B.M. 2466</td>
<td>57 W</td>
<td>0</td>
<td>—</td>
<td>Bleeding</td>
<td>3 months</td>
<td>?</td>
<td>Ductal</td>
<td>II</td>
<td>Tumor removed from same breast 2 years before</td>
</tr>
<tr>
<td>B.M. 2467</td>
<td>2 W</td>
<td>1</td>
<td>28</td>
<td>Lump</td>
<td>1 month</td>
<td>1 year</td>
<td>Scirrhous</td>
<td>II</td>
<td>Tumor removed from same breast 2 years before</td>
</tr>
<tr>
<td>B.M. 2480</td>
<td>43 S</td>
<td>0</td>
<td>—</td>
<td>Bleeding</td>
<td>2 weeks</td>
<td>?</td>
<td>Comedo</td>
<td>I</td>
<td>Tumor removed from same breast 2 years before</td>
</tr>
</tbody>
</table>
striking still is the fact that in 4 of the 7 cases the patient was unaware of the presence of a tumor when she first consulted her physician on account of the bleeding. Two of the 7 women were colored.

It seems to be the general impression that duct papillomas are the type of lesion ordinarily associated with bleeding. Yet in only one of these 11 cases of cancer was a definite duct papilloma found. There was one duct type of carcinoma with very large cells, arising apparently from the epithelium of the terminal ducts. In two others the growth was of the comedo type. Of the remaining 7 cases, one was of the glandular type, four were scirrhou, one mucoid, and one medullary in type. Certainly in the last six cases there was nothing to explain the bleeding. There may, of course, have been duct papillomata elsewhere in the breast, but these were not observed even though many whole sections were studied.

Of the benign lesions, one was a periductal fibro-adenoma, one a smooth-walled blue-domed cyst, and two mild mazoplasia. In none of these cases were papillomata seen, nor was there anything to explain the bleeding. The fifth case is Case I, reported above.

The lactation history in one of the cases of cancer is unknown. Of the remaining 10 patients, 4 had no children and two had not nursed their children. In the 5 benign cases the nursing history is unknown in one. One patient had nursed one child seven months; the remaining three had no children. As far as can be determined from so small a number of cases, there is no indication that nursing predisposes to bleeding breast in either malignant or benign cases.

The age at which bleeding occurred in the malignant cases was about that of the usual appearance of cancer. In the small number of benign cases the age is greater than in the usual run of benign breast conditions as met clinically. In 7 of the 11 malignant cases, and in all of the benign cases, the bleeding was the first warning symptom of serious breast disease. In the small series of malignant cases there is no evidence of special frequency of any one definite pathological type.

**Discussion**

The most elaborate recent contribution to the subject of bleeding breasts is that of Adair (1). Of his 108 cases of bleeding from the nipple, 47.2 per cent were malignant. Adair’s recommendations as to treatment are conservative. He states that external radiation stopped bleeding in about half the cases, but in some cessation was temporary. Radiotherapy was not “adequately pursued to draw ultimate conclusions concerning cure.”
<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Age and Number of Children</th>
<th>Age of Last Child</th>
<th>First Symptom</th>
<th>Bleeding Noticed before Operation</th>
<th>Tumor Noticed before Operation</th>
<th>Characteristic Pathology</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.B. 730</td>
<td>46 M 0</td>
<td>—</td>
<td>Bleeding</td>
<td>15 years</td>
<td>8 years</td>
<td>Fibroadenoma, periductal</td>
<td>Sections of non-neoplastic breast not available</td>
</tr>
<tr>
<td>B.B. 788</td>
<td>49 M 0</td>
<td>—</td>
<td>Bleeding</td>
<td>3½ weeks</td>
<td>No tumor</td>
<td>Nothing in slides to explain bleeding</td>
<td>Nursed child 7 months. Considerable hyperplasia of epithelium in ducts and lobules</td>
</tr>
<tr>
<td>B.B. 797</td>
<td>44 M 1 11</td>
<td></td>
<td>Bleeding</td>
<td>16 years *</td>
<td>2 months</td>
<td>Cyst 1½ inches in diameter, smooth-walled</td>
<td>Nursing?</td>
</tr>
<tr>
<td>B.B. 851</td>
<td>53 M 3 11</td>
<td></td>
<td>Bleeding</td>
<td>2 weeks</td>
<td>No tumor</td>
<td>No definite lesion; nothing to explain bleeding</td>
<td>N</td>
</tr>
</tbody>
</table>
Adair states that 52 per cent of cases are cured by the simplest type of surgery and concludes: "We consider this extirpation as important preventive cancer surgery." It would seem fair to assume, then, that he subscribes to the principal contention of this paper, viz., that in bleeding from the nipple the pathological tissue must be removed whether this involves local or complete excision of the breast.

Cutler (2) calls attention to the value of transillumination in the location of small bleeding papillomata. He also apparently believes in removal of the source of the bleeding. At least the cases to which he refers were operated upon.

Since Adair's article, the most important contributions are those of Klages (3), Robles and Bannò (4), and Pribram (5). These authors are apparently convinced that it is wise to remove the source of the bleeding.

Bloodgood, on the other hand, has stated it as his opinion that bleeding per se never justifies complete removal of the breast. In fact, he believes that very often it does not call for interference of any kind. In a recent personal communication he says that he has records of many cases of bleeding breast of over fifteen years' duration and that the evidence is that these patients run no increased risk of developing cancer. He does add, however: "We now transilluminate and if we can pick out a duct papilloma we remove it."

Sir Lenthal Cheatle, in a personal communication, writes: "If traumatic and the injury is established beyond all doubt, I would leave the breast alone and the hemorrhage will stop. If the hemorrhage be due to a distinct sore on the surface of the nipple which has hard, abrupt edges, I would excise the breast and the axillary glands whether they were enlarged or not. I should feel confident I was dealing with a carcinoma arising in the upper ducts. If the hemorrhage occurred and no tumor could be felt, I should excise the breast and microscope it carefully. If . . . I found malignant disease I would do a second operation at once on the axilla. . . . The breast should be removed in all cases of hemorrhage from the nipple. One never knows from a clinical examination whether there is only one papilloma or many papillomata, or whether there is or is not carcinoma. These matters cannot be decided by anything else but a careful examination microscopically of the whole breast."

As to the exact type of lesion, it must be admitted that the mere presence of a bloody discharge from the nipple offers no presumptive evidence. It is admitted, too, that in breast cancer bloody discharge is rare. Finsterer (quoted by Klages) in 606 breast cancers saw bleeding from the nipple only four times. When
bleeding from the nipple is present, it occurs practically in equal proportions in malignant and benign conditions. Therefore, the presence or absence of bleeding has no bearing on the diagnosis of cancer, and bleeding if present is not of value as a differential diagnostic point.

Robles and Bannò clarify the situation by stating that "the bleeding mamma is not an entity in itself, nor is it a symptom of any particular alteration in the mammary gland, but above all it is to be considered as a symptom, sometimes the only symptom clinically appreciable, of a morbid state of the gland in which the fundamental anatomo-pathological condition can be very varied." No one has claimed, except in the rare cases of true vicarious menstruation, that bleeding can come from a normal breast. Robles and Bannò show that any type of benign lesion may be accompanied by bleeding; that perhaps the most frequent type is so-called chronic cystic mastitis, but that even in such cases the bleeding as a rule comes from a small duct papilloma which has arisen as part of the mastitis. Similar views are held by most other authors, with the duct papilloma looming large. One object of this paper is to show that bleeding may be due to diffuse epithelial hyperplasia throughout a breast in which there is no papilloma, no palpable tumor, and no palpable change of any kind. At least it may be said that no papilloma is demonstrable in numerous large sections of the entire breast.

Coming more definitely to the question of what course should be advised for bleeding breast, the cases may well be divided into those with a tumor, whether demonstrated by palpation or transillumination, and those with no demonstrable tumor.

1. In cases with a tumor there is perhaps little need for argument. All careful observers are agreed that, unless there are contraindications, every benign tumor should be removed lest it become malignant. In any tumor with bleeding, all possible diagnostic means, including biopsy if necessary, should be adopted to reach a diagnosis, and a local or radical excision carried out accordingly. It is important, however, to realize that bleeding from such a tumor is not even presumptive evidence that it is malignant. Bleeding should not of itself stampede one into a radical operation or even a complete mastectomy unless there are multiple lesions or other conditions which would of themselves indicate mastectomy even though bleeding were not present.

It is also to be borne in mind that duct papillomas are frequently multiple, some being too minute to be discovered, and that it may well be that the palpable papilloma is not the one that is bleeding. The actual source of the bleeding may be undiscovered elsewhere in the breast. Robles and Bannò (loc. cit.) report one case of
bleeding breast in which a cyst was removed locally. The bleeding continued and a second exploration showed a papilloma between the cyst and the nipple. Any woman, therefore, who has had a local operation for a condition associated with bleeding should be watched with extra care at more frequent intervals than usual. Repetition of the bleeding demands careful consideration of more extensive removal.

Another important thing to remember is that, regardless of one's individual views as to the rôle of chronic mastitis and Schimmelbusch's disease as precursors of cancer, the factor of bleeding in such a condition is of much additional gravity as a warning symptom and should be given considerable weight in considering the necessity of complete mastectomy. Bleeding is of more significance as a warning symptom in a diffuse nodular breast lesion than in a localized one. When it is present, complete removal will usually be the best treatment.

2. In bleeding breast with no demonstrable tumor it is exceedingly difficult to determine the best procedure. The unnecessary removal of a breast is a distressing calamity. There is, on the one hand, the large experience of those who believe that women who have had bleeding from the breast do not run a greater risk of cancer than women who have not had this symptom. On the other hand are the 11 cases of cancer here recorded with bleeding as the first symptom noted in 7. Many months were lost waiting for the tumor, and when the tumor was removed it proved to be a cancer. On this side, too, is the opinion of some close students of this question, that bleeding from the breast is an exceedingly grave symptom, often demanding operative interference.

It may be accepted as a working rule that bleeding from the benign breast with no palpable tumor must come (a) from a small duct papilloma or (b) from the type of lesion noted in Case I, where the epithelium is very hyperplastic. Many students believe that every duct papilloma will become malignant if left long enough. The same seems true of the type of epithelial hyperplasia found in the cases here reported.

The circumstances of the bleeding naturally are to be taken into consideration. The bleeding of acute trauma is unimportant. Also a transient single bleeding without known cause demands not immediate action but careful and frequent subsequent observation. Continued or intermittent bleeding is so apt to be due to conditions which may develop into cancer, or to actual cancer, that it demands the most thorough study. When a tumor can not be demonstrated by any method, the proper safeguard will usually be removal of the entire breast.
SUMMARY

1. Two cases are reported. In the first patient bleeding from the breast occurred for two months without a demonstrable tumor. Sections of the entire breast showed no tumor and no papilloma, but a diffuse hyperplasia of the epithelium throughout. The same type of hyperplasia was present in the second case, but less marked and in only one area. In this case local excision was followed by cancer two years later.

2. In eleven cases of malignant disease with bleeding, the bleeding was the first symptom noted in seven.

3. Bleeding is a symptom only and does not establish per se a presumption for the diagnosis of either a malignant or a non-malignant lesion. Statistically the chance for one or the other is about even.

4. In malignant cases the lesion may be of any type.

5. In benign cases any type of lesion, local or diffuse, may be the cause of bleeding. Duct papilloma is the most common cause. There may be diffuse epithelial hyperplasia (Case I), or there may be no definite cause evident even though numerous whole breast sections are examined.

6. The writer believes that in protracted (at least over one month) bleeding from the breast, either continuous or intermittent, safety demands that the bleeding tissue be removed. If a palpable tumor is present, a local excision may suffice. If several tumors or diffuse thickening can be felt, or if no tumors can be demonstrated, the entire breast should be removed. All cases, no matter how treated, should be watched with unusual care.

REFERENCES


