BLEEDING FROM THE NIPPLE

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A study of the literature of the past four decades reveals a wide divergence of views on the significance and management of bleeding from the nipple. At one extreme we find the opinion of Bloodgood (1922) that 'discharge from the nipple, like pain, is not an indication of a lesion of the breast for which operation is indicated,' and that 'the prevailing view that a woman with a discharge from the nipple should be protected from cancer by the removal of the breast is based on fear and not fact.' At the other extreme is the view of MacCarty of the Mayo Clinic, quoted by Gray and Wood (1941), that 'a breast with continued serous or bloody discharge should be removed by simple mastectomy.'

Little dispute exists regarding the treatment of bleeding from the nipple due to carcinoma. Where the lesion concerned is considered to be benign, however, as in papillomatosis or fibro-adenosis, so we enter the sphere of controversy. Pathologists who see in these lesions potential or actual malignancy have influenced surgical opinion towards radical treatment; those who consider these lesions to be benign have swayed opinion towards conservatism. Until we are able to determine accurately the precise extent to which these benign lesions are precancerous, so long will the bleeding nipple remain a subject for dispute.

Recent contributions to the literature (Wakeley 1947, Adair 1949, Haagensen, Stout and Phillips 1951) have favoured the conservative approach in the management of these patients. It was in an attempt to see how far our own clinical experience justifies this view that the records of Hammersmith Hospital were searched for a series of patients with bloodstained discharge from the nipple, and a review of this material and a discussion of the management forms the basis of this paper.

Material

Over a ten year period from 1941 to 1951 the records of 41 patients in whom bleeding from the nipple occurred during the course of a breast disease have been traced. In three of these

patients slides of breast tissue are not available for microscopic examination. They are therefore excluded from the series, leaving a total of 38 patients in whom there is histological confirmation of the diagnosis.

Before separating these patients into groups according to the cause of bleeding, it is necessary to define the terms in use, since the terminology of the benign lesions of the breast is not as yet standardized. Apart from rare causes, such as trauma and inflammation, of which no examples occurred in our series, the vast majority of blood-stained discharges from the nipple originate from benign or malignant hyperplasia of the duct epithelium.

This epithelial hyperplasia may be seen in all gradations, the simplest being found in *fibro-adenosis*, where a heaping up of the duct epithelium into several layers occurs. In the same or different breasts we may see multiple microscopic epithelial polypi sprouting like fingers or fronds into the lumen of the ducts (Fig. 1). This process of polyp formation proceeds until one or more attain considerable proportions and present as *papillomata* in the ducts or in cystic expansions of the ducts and then become visible with the naked eye (Fig. 3). Less commonly, a single polyp arises in a duct, usually close to the nipple, where it constitutes a solitary *duct papilloma* and may reach a size of several centimetres in diameter (Fig. 2).

In more perilous fashion, the process of epithelial hyperplasia may proceed until the ducts are filled and distended with solid masses of cells which cytologically show all the characters of malignancy and can only be distinguished from invasive carcinoma by the absence of penetration of these cells into the surrounding tissues. This is the condition described by Muir as *intraduct carcinoma* (Fig. 4).

Those breasts in which the sections showed fibroadenosis without epithelial polyp formation have been grouped together as *simple fibroadenosis*.

Epithelial polyp formation in the breast has been classified as *papillomatosis* and is subdivided into three groups according to degree:

- (a) Multiple microscopic polypi.
- (b) Multiple macroscopic polypi.
- (c) Solitary duct papilloma.

Intraduct carcinoma has been placed in a separate group, as has overt carcinoma of the breast.

In the presence of an eczema of the nipple the diagnosis of Paget's disease is foremost in the surgeon's mind and the subsequent occurrence of bleeding will not decisively affect the management of the condition. For this reason patients with Paget's disease are excluded from this series except for one instance in which a true bloodstained discharge preceded the appearance of the eczema and in which, for a short time before her arrival in hospital, the patient was an example of bleeding from the nipple without obvious cause. This patient is included with the carcinomata (Table 1).

TABLE 1

Pathological Cause	No. of Cases
Simple fibroadenosis	7
Papillomatosis:	
(a) Microscopic polypi	5
(b) Macroscopic polypi	6
(c) Solitary duct papilloma	1
Total	12
Intraduct carcinoma	3
Carcinoma	16
Total	38

The ages of the patients, all women, ranged from 16 to 81 years. The incidence of each type of disease in successive decades is shown in Table 2.

Table 2 shows that bleeding from the nipple occurred from benign causes in a younger group (average age 44.5 years) than in the group with malignant disease (average age 64.8 years).

Excluding the patient with Paget's disease of the nipple in whom the diagnosis was made on inspection at her first visit to hospital, 31 patients presented with one or more masses in the breast whilst six had no masses of any sort palpable at the first examination. It is of interest to note that all the patients with proven cancer presented with a palpable mass in the breast but that the six patients without a palpable mass had benign lesions.

In a lesion of the periphery of the breast retraction of the nipple is regarded as a sign of malignancy. In patients with bleeding from the nipple the causative lesion frequently lies close to the areola and retraction, although common, does not appear to be a sign of diagnostic significance. Retraction occurred ten times in this series, six times in patients with benign conditions and four times in those with malignant disease.

Patients with carcinoma of the breast in the series were treated by methods appropriate to the stage of the disease and to the general condition of the patient according to principles which do not come within the scope of this paper.

Muir considered intraduct carcinoma to be a benign condition but it is here regarded as a lesion of disputed malignancy. Should such a diagnosis be confirmed, we believe that a simple mastectomy is the minimum surgical procedure necessary. Three patients in this series were diagnosed as intraduct carcinoma and all were treated by simple mastectomy followed by post-operative prophylactic irradiation. The value of radiotherapy in this condition must remain a matter for conjecture but its administration is an indication of the tendency amongst surgeons to regard intraduct carcinoma as a lesion closely related to invasive cancer.

The treatment of bleeding from the nipple due to benign lesions is, however, of present interest, and our survey reflects a change in the attitude towards the management of this group at Hammer-smith Hospital during the past decade.

Up to the end of 1947, 13 patients with bleeding from innocent lesions were subjected to amputation

TABLE 2

Age	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	Totals
Simple fibroadenosis		1	3	2		1			7
Microscopic papillomatosis	1				2	2			5
Macroscopic papillomatosis			2	3	1				6
Solitary duct papilloma					1				1
Intraduct carcinoma					1	1	1		3
Carcinoma			1		5	2	7	1	16
Totals	1	1	6	5	10	6	8	1	38

FIG. 3.—Macroscopic papillomatosis. Photomicrograph of a section through the breast (x 45) showing a duct beneath the areola visibly distended by a large papilloma.

FIG. 4.—Intraduct carcinoma. Photomicrograph of a section of the breast (x 54) showing several ducts filled and distended by masses of cells which cytologically have the characters of malignancy. This is the intraduct carcinoma of Muir.

FIG. 5.—(Mr. Selwyn Taylor's patient.) Mammogram of right breast showing lipiodol in the duct system of a lobule, outlining an oval filling defect in the right branch about 12 mm. long. The lobule when removed was shown to contain a group of large papillomata

of the breast; in ten cases simple, and in three radical mastectomy was performed. These patients are, then, of little value to this series for follow up purposes since the removal of the breast has eradicated the problem of the premalignancy or otherwise of the benign lesions.

Since 1947 a more conservative approach has been adopted in the management of bleeding from the nipple due to benign causes. Six patients have been treated either by wedge excision or biopsy of the affected zone of the breast. These patients have since shown no further bleeding or evidence of malignant change in the remainder of the breast. This corresponds with the recently recorded results of larger series, particularly those of Haagen-*et al.* (1951). They describe a series of 72 patients with intraduct papilloma of the breast treated by wedge excision and followed for at least five years, 31 of them for more than ten years, in whom no malignancy subsequently developed. In addition Adair (1949) has followed up to eight years 416 patients with 'papillomatosis' treated conservatively, in none of whom has carcinoma developed. These results and those of Wakeley

(1947) and Estes and Phillips (1949) show that the danger of carcinoma developing in the remainder of the affected breast following the local excision of a benign lesion for bleeding is very small indeed, and provides ample justification for adopting the more conservative approach. This is particularly welcome in the younger patients in whom removal of a breast may represent so serious a psychological trauma.

Management

The patient with bleeding from the nipple should have a full history taken followed by a thorough physical examination. Certain special investigations may also be required but finally, on the basis of these clinical investigations, the patient is placed into one of three groups each requiring somewhat different management. It is not proposed to deal with every detail of the routine examination of the breast but only with those points which in the case of bleeding from the nipple require particular attention.

Palpation. On palpation of the breast the great majority of patients with bleeding from the nipple will show clear physical signs of disease. These signs may consist either of a definite mass, a small localized swelling deep to the areola, or the localized or diffuse nodularity associated with fibroadenosis. Pressure on any of these locations may produce a drop or two of blood at the nipple, sometimes with disappearance of the mass. In any of these circumstances the management is straightforward and treatment is directed towards the mass in the breast exactly as if no bleeding had occurred.

In other cases, no mass is palpable but pressure on a particular sector constantly produces the discharge from the nipple. In such a case that sector should be completely excised and submitted for histology. If the section is benign, no further treatment is necessary; if malignant, which is highly unlikely, a radical mastectomy will be necessary.

The problem in management arises in those patients, fortunately a minority, in which all these tests of palpation and pressure are negative and localization of the disease to any one part of the breast is impossible. The temptation, in such patients, to perform an immediate simple mastectomy should be avoided and they should be asked to attend at weekly intervals for repeated examination. Frequently, in a few weeks, localizing signs will appear in the breast and wedge excision of the area can then be performed. The chances of a breast with no palpable abnormality harbouring a cancer is very small (less than 1 per cent. according to Bloodgood, 1922), and the danger to the patient of a few weeks of observation is negligible.

It is important to advise patients attending for these repeated examinations not to examine or squeeze their breasts in the intervals, in order to avoid emptying the involved lobules. Wakeley (1947) recommended painting the affected nipple with collodion in order to seal the orifices of the ducts and so permit a recognizable distension of the lobule in the interval. Sometimes the blunt end of a fine straight surgical needle may be inserted into the orifice of the nipple duct which is seen to emit the discharge and can be introduced along the lactiferous duct into the affected lobule, enabling it to be identified at operation (Babcock).

In the few remaining patients in whom no localizing signs are clinically demonstrable even after repeated examination, we may avail ourselves of transillumination of the breast or mammography as aids in localization.

Transillumination of the breast is performed in a darkened room with a specially constructed source of light placed behind the breast. This occasionally reveals the presence of a zone of disease which is not palpable with the hand.

Papillomatosis of the ducts in its microscopic form, for example, is an impalpable lesion which will transmit light. When bleeding occurs, however, a duct distended with blood may show up as an opaque zone on transillumination (Adair, 1930; Campbell, 1946).

Mammography is a recently devised radiological technique whereby a lesion of the mammary ducts may be outlined by the injection of contrast media. Hicken *et al.* (1938) have reported over 600 roentgenographic studies of the breast using radio-opaque fluids in the ducts with or without simultaneous carbon dioxide gas inflation of the breast to give a double contrast effect. They claim mammography as a safe technique of considerable value in the diagnosis and location of benign, space-occupying lesions in the ducts. However, others who have tried this technique have concluded to the contrary. Romano and McFetridge (1938) in a series of 25 patients submitted to mammography found the suggested X-ray diagnosis misleading in ten, and in three patients the reaction to the introduction of the radio-opaque fluid was so severe that a simple mastectomy had to be performed for the resulting 'mastitis.' They consider that mammography is misleading, unjustifiable and even dangerous.

Fig. 5 shows the mammograph of a woman, aged 32, complaining of an intermittent blood-stained discharge from the right nipple of six weeks' duration. Examination revealed no palpable tumour in the breast nor would pressure in any sector produce the discharge from the nipple. However when the whole breast was taken between the hands and squeezed some blood ap-

peared at the nipple. The sawn-off end of a fine hypodermic needle was inserted into the orifice of the bleeding duct in the nipple and 3 ml. of lipiodol were injected. The ducts of a lobule in the lower outer quadrant of the breast are outlined and show obstruction of a branch of the duct with displacement of the patent branches around an oval filling defect about 12 mm. long. A resection of this lobule of the breast was performed and the specimen showed several large papillomata in the main duct, one of which was ulcerated on its surface and was presumably the source of the bleeding. In this instance, mammography was safe and useful, but the information obtained might well have been forthcoming from repeated examination of the breast.

Mammography is not without risk and cannot be recommended for routine use.

The Discharge. Examination of a drop of the discharge from the nipple should be performed to confirm the presence of blood cells. When blood has been retained in the breast for some time, it undergoes alteration to a dark brown or black fluid and a smear of this may show no recognizable blood cells. In this instance a biochemical examination of the fluid may be of value in differentiating between those discharges darkened by altered blood and those which are dark from contained melanin or other pigment. (Atkins (1950) reports that the former give oxidase-positive reactions and the latter oxidase-negative reactions.

Papanicolaou staining of the smear of the nipple discharge has been recommended for diagnostic purposes but cannot be regarded as a reliable method since the cytology is considerably more difficult to interpret, even in expert hands, than a paraffin section of the lesion which itself is often a problem in diagnosis.

Summary of Management

The following is a summary of the scheme which at present is considered best in the management of bleeding from the nipple.

Group 1. Patients with bleeding and a mass which is clinically malignant and operable.

The patient is prepared for radical mastectomy and at operation the mass is incised. If the lesion is macroscopically clearly a malignant one, the operation is carried out according to plan. If there is any doubt a sector of the breast containing the tumour is excised, the wound is closed and the pathological section is awaited. If this is benign, no further treatment is necessary beyond a regular follow-up.

Group 2. Patients with bleeding either from a swelling of the breast which is clinically benign or

from a localized sector of the breast as determined by pressure or other test.

A wedge resection of the sector of the breast containing the source of bleeding is carried out, including the corresponding main ducts up to the deep aspect of the nipple. The specimen is examined histologically. If the result is benign, the patient is reassured and no further treatment is required beyond a careful follow up. In the unlikely event of the result being malignant a radical mastectomy should be performed.

Group 3. Patients with bleeding but without any tumour or localizing signs even after several examinations.

If the patient is under 50 years of age she is kept under regular observation. If localizing signs develop, treatment is as in Groups 1 or 2, whichever is appropriate.

If the patient is over 50 years of age a simple mastectomy can be performed with some justification, since the chances of malignancy are significantly greater.

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