

Nipple Discharge, Imaging Evaluation and therapeutic approaches (Prospective study to 172 patients)

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Abstract

When diagnosing nipple discharge, the doctor has a significant problem. Multiple disorders (including intraductal papillomas, nipple discharge can be a sign of several medical conditions, including mammary duct ectasia, breast cancer, pituitary adenomas, breast abscesses/infections, and more. The potential correlation between nipple discharge and underlying cancer makes it an important medical and patient concern. More and more women are seeking medical advice for nipple discharge as the public's understanding of breast cancer grows. Determining the etiology, assessing the risk of malignancy, and planning therapy of the patient with nipple discharge requires a thorough clinical assessment. Mammography, breast ultrasonography, and perhaps galactography are all diagnostic tools that can assist the doctor in making a diagnosis and developing a treatment strategy. A central or single lactiferous duct excision may be recommended as the surgery to undergo when diagnosing breast disease. For breast cancer patients experiencing nipple discharge, the recommended course of treatment is either a modified radical mastectomy or breast-conservation therapy, which involves duct-lobular segmentectomy with sufficient, free margins (preferably greater than 1 cm), axillary lymph node dissection at levels I and II, and radiotherapy to the breasts. Methods and patients The research will begin in October 2020 and follow 172 patients at the teaching hospital until October 2021. This research just involved female participants. All of the patients who participated in our research reported nipple discharge as their primary complaint. All patients had clinical examinations, mammograms, ultrasounds, and cytology. Patients who reported with nipple discharge and a suspected breast lump were evaluated using Fine Needle Aspiration Cytology (FNAC) and a final histological investigation.

Result The most prevalent age group of women reporting nipple discharge was 30-39 (32.5%), with bloody nipple discharge accounting for 40.8% of all cases. It is worth noting that aberrant nipple discharge is more commonly associated with benign breast disorders than malignant ones. When it came to diagnosing cancer of the breast, direct cytology from nipple discharge was quite effective (79.1%). When it came to diagnosing malignant breast illnesses, histology was the gold standard (100%) and FNAC was second best (78.5%).

Conclusions Do not ignore nipple discharge of any kind, but especially if it is bloody or purulent, since this might indicate the presence of either benign or malignant breast illnesses. When diagnosing cancer of the breast, direct cytology from nipple discharge is useful. The histology team can definitively diagnose breast cancer if there is a mass present.

Keywords:: galactorrhea, nipple discharge, breast cancer, mastectomy, duct excision

Aim Of The Study

- 1-Ascertain the significance of nipple discharge as an initial sign of breast disorders.
- 2-Look at the correlation between age and the most prevalent kind of nipple discharge to find out what it is.
- Thirdly, be aware of the correlation between breast illness and nipple discharge.
- 4-Be familiar with the connection between nipple discharge and breast cancer.

Introduction

An often-repeated symptom is nipple discharge. It is common among women and frequently serves as the initial sign of breast disease. It is the initial sign experienced by $3\pm 10\%$ of women who seek help for breast-related issues and by $10\pm 50\%$ of women who have benign breast illness (1,2). The discharge of nipples is a source of anxiety for both patients and doctors. No one should expect cancer to be the reason. Around $2\pm 15\%$ of women and up to 20% of males who have surgery for a substantial discharge from the nipple will be discovered to have an underlying breast cancer (3 ± 5). Since nipple discharge was thought to be a certain sign of breast cancer (6,7), mastectomies were done needlessly without a histopathologic diagnosis until the 1950s. No more guesswork when it comes to treating nipple discharge thanks to new diagnostic tools for breast disease sufferers.

Thorough diagnostic inquiry is necessary to identify the underlying cause and administer the right treatment. In order to better manage patients who experience nipple discharge, this study will attempt to outline the present diagnostic approach as well as the treatment alternatives that are accessible.

Classification ± Definition

For a nipple to be considered to have a discharge, it must be a real, external outflow of fluid from the mammary ducts. When it is non-lactational, persistent, and occurs spontaneously, it is deemed clinically important (8). About 20% to 50% of women will have nipple secretions after breast manipulations, including massaging the breasts or aspirating them using a particular device (9,10), therefore this is a crucial factor to think about.

There are several kinds of nipple discharge when seen under a microscope. With the exception of abscesses that also produce a purulent discharge, medical treatment is available for secretions that are milky, multicolored, or pustular. Claret, watery, serous, pink, serosanguineous, and sanguineous are some of the other varieties. Surgical excision is typically necessary to collect tissue for histological analysis since any of these four categories might be signs of malignancy. When breast cancer is present, nipple discharge is a common sign that the tumor has invaded the ductal system (11).

From a pathogenetic standpoint, there are two types of nipple discharge: _ non-neoplastic _ and _ neoplastic.

NON-NEOPLASTIC

Galactorrhea

Gallbladder or both breasts might cause milky diarrhea, which is a medical emergency. After pregnancy, it is often seen and may last for around 1.5 years (8). It can also happen to teenage females and go on for a few months to a year if there's no underlying disease. In addition to idiopathic causes, galacterrhea can develop as a side effect of certain medications, such as exogenous estrogen, tricyclic antidepressants, cannabis, antihypertensives, phenothiazines, H2 antagonists, antipsychotic agents, oral contraceptives, and endocrine abnormalities like hypothyroidism and hyperthyroidism (12,13). The hypothalamic-pituitary axis is an endocrine mechanism that regulates lactation; these medications disrupt it, causing galactorrhea. One typical process is to enhance prolactin release from the anterior pituitary by decreasing dopamine's inhibitory impact.

Physiologic

Physiologic nipple discharge is not a natural occurrence and can be brought on by testing for nipple discharge, manipulating the breasts or nipples, using external estrogens, or experiencing sexual excitement. It develops from several ducts and is often bilateral and serous.

Periductal mastitis

While pregnant, often in the second trimester, you may notice nipple discharge, which can be unilateral or bilateral and even bloody secretion; this may persist for up to two years after you stop breastfeeding (14). It's important to note that this does not necessarily indicate any serious underlying breast disease. Epithelial growth and the projection of many tissue spurs resembling small papillomas into the alveoli and ducts, followed by the creation of a delicate capillary network inside the ducts, are likely the causes of the discharge of the glands in this context. Because they only have one layer of epithelial cells covering them, these pseudo-papillomas are very vulnerable to trauma, which can cause them to rupture or desquamate, leading to a bloody flow from the nipple while the mother is nursing (15). In order to rule out the presence of a mass, a thorough physical examination is required, and these individuals should be monitored on a monthly basis. Breastfeeding is safe and effective in resolving this issue, which often disappears after birth.

Mammary duct ectasia

Another common reason for a sticky, colorful discharge from the nipples is non-puerperal periductal mastitis (16).

Local care, enhanced nipple cleanliness procedures, avoiding any nipple manipulation, non-steroidal anti-inflammatory drugs, bromocriptine, and anti-staphylococcal antibiotics are all part of the medical intervention that is typically necessary and effective when an infection is detected. Weaning the baby may be necessary for the mastitis to go away in a nursing mother. However, surgical removal and drainage will be required if the inflammation causes an abscess to develop. Notably, a necrotic breast cancer, which is uncommon in women who do not breastfeed, might be mistaken for a breast abscess (13). In order to properly drain a breast abscess, it is necessary to take a biopsy of the abscess wall while making the incision. To rule out Paget's disease of the breast, a biopsy of a non-healing eczematoid lesion on the nipple is necessary (17).

Mammary duct ectasia

The lactiferous ducts and sinuses respond to the continuous fluctuation in estrogen and progesterone levels by increasing glandular secretions, which ultimately lead to mammary duct ectasia. Chronic infection of the mammary ducts, also known as periductal mastitis, is a common complication of mammary duct ectasia. A discharge of several colors—green, yellow, white, brown, gray, or reddish brown—from the nipples is the outcome of this. The discharge is often bilateral and comes from a network of ducts. Cellular analysis may reveal epithelium without scales. Fibrosis and scarring of the lactiferous ducts and sinuses packed with cellular debris and desquamated epithelium can be seen in an excisional biopsy (18).

NEOPLASTIC

The most common characteristics of neoplastic nipple discharge are its unilaterality, duct localization, spontaneous nature, intermittent nature, and persistence (3). Blood, serosanguinous, hazy, serous, or green-gray fluids are all possible. Even when the fluid is red and oozing, benign breast problems are most often the cause of neoplastic nipple discharge. Intraductal papillomas and papillomatosis constitute around 45% of nipple discharge cases and are the most prevalent neoplastic nipple discharge causes (19). Twenty-five percent of nipple discharge cases are due to non-neoplastic reasons, whereas fifteen percent are linked to fibrocystic disease and mammary duct ectasia, respectively (20). Nipple discharge is only seen in 1% to 5% of breast cancer cases, and only around 10% (ranging from 2% to 15%) of pathologic nipple discharge cases are caused by carcinoma. Being above the age of 55, having a discharge that is bloody, and having a mass (20 ± 22) are all factors that are thought to be indicators of malignancy. One research indicated that whilst only 7% of women under the age of 60 had an underlying cancer, 32% of women over the age of 60 were found to have spontaneous nipple discharge (23). While most tumors that cause discharge have a visible bulk, 13% of malignancies that cause nipple discharges do not (20).

Assessment for Diagnosis

The potential link between nipple discharge and breast cancer makes it an important medical and patient concern. On the other hand, benign lesions, rather than malignant ones, are usually the ones that cause nipple discharge. In order to identify and treat the underlying pathology, a thorough diagnostic assessment needs to be conducted.

Clinical assessment

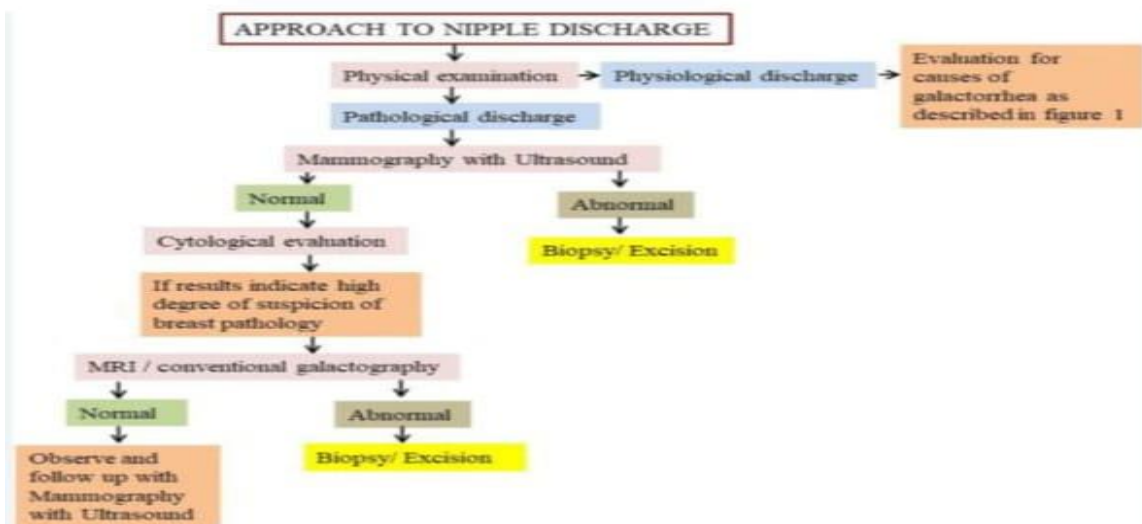
If a patient presents with nipple discharge, it is important to get a thorough medical history. The best way to tell if a patient's nipple discharge is due to galactorrhea, normal physiological processes, or anything more serious is to take a thorough medical history at the first appointment.

It is critical to ascertain if the discharge is detectable just during breast manipulation or if it occurs naturally. Remember that a patient who is affected by the discharge after breast manipulation may want to find out if the discharge has ceased or is still present by manipulating the breast and nipple even more. This might be a challenge for the surgeon. The doctor should reassure the patient that the risk of cancer is low in this instance and tell her to cease touching her breasts if she continues to have discharge from her nipples.

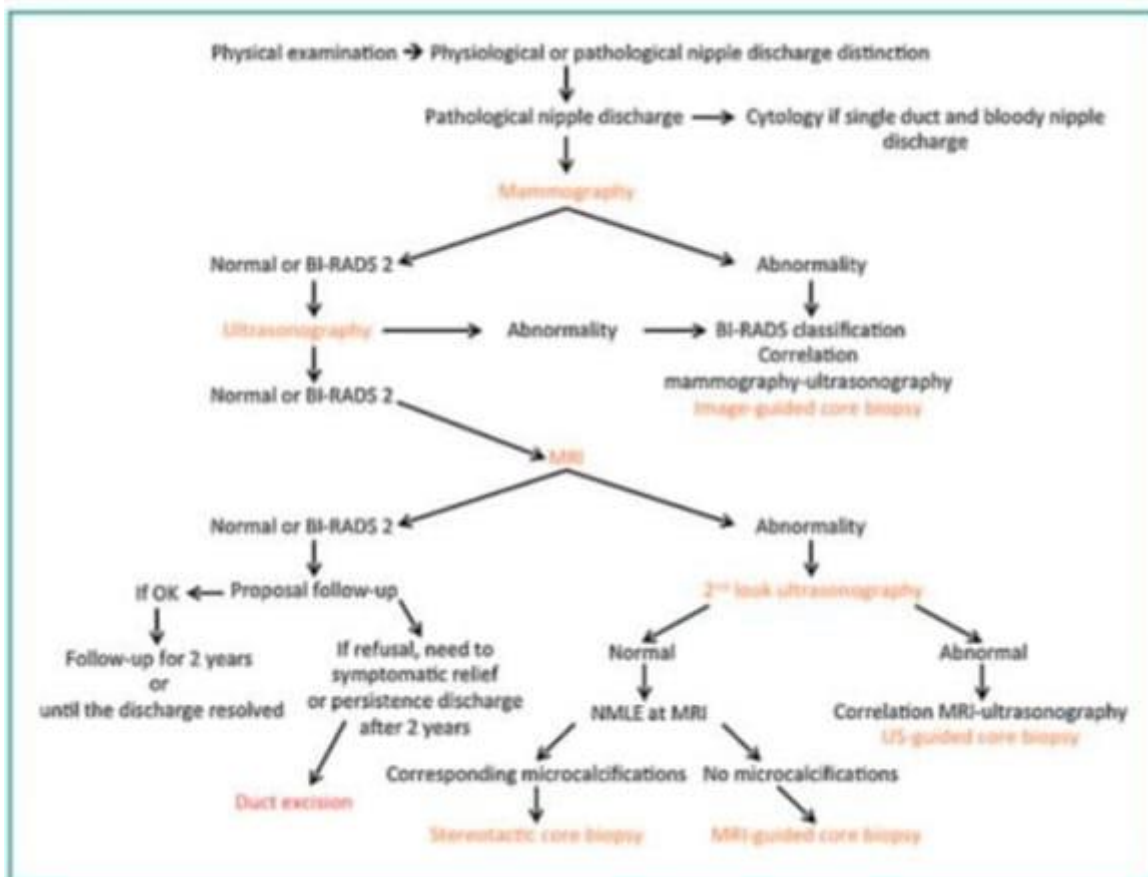
Brassieres that don't fit properly might squeeze the breast too much, leading to nipple discharge; this is more common in younger women (23). The next step for the doctor is to find out if the discharge is just on one side or both. Unilateral nipple discharges are typically indicative of systemic disorders or abnormalities in the body's physiology.

The following step is to do a complete evaluation of the breasts. Inflammatory changes, dimpling skin, nipple retraction or eczema, a breast lump (subareolar or elsewhere in the breast), and axillary lymphadenopathy are

all pathological physical findings that the doctor should be aware of. In order to identify whether the discharge is coming from a single nipple duct or several ducts, it is crucial to pinpoint the exact quadrant of the breast where the drainage is coming from during the clinical examination. To get a good look at it, a magnifying lens might be useful. A trigger point is usually visible in a woman who has an intraductal lesion. Compression of this trigger point consistently causes the discharge, even though it is not often linked to a palpable abnormality.



Nipple Discharge—When to Worry and Whe



Types of Pathologic Discharge: Benign and Malignant

Both benign and malignant pathologic nipple discharges typically originate from a single duct orifice, are clear or sometimes tinged with blood, and tend to be unilateral and spontaneous.

The presence of either serous or blood-tinged discharge might indicate cancer, hence it is unnecessary to do fecal occult blood tests on the discharge [13]. Due to its high expense and lack of sensitivity and specificity, cytologic investigation of the discharge is not advised [14, 15].

It is possible to gauge the level of suspicion for pathologic nipple discharge using patient demographics. Women with nipple discharge, for instance, have an increased risk of underlying breast cancer as they age [8, 16–18]. Nipple discharge was the sole symptom in 32% of breast cancer patients aged 60 and over, but in just 3% of women less than 40 years old, according to Seltzer et al. [19], this was not the case for women with breast cancer diagnosed at an earlier age.

Obtaining diagnostic imaging is necessary for any nipple discharge that is linked to a palpable anomaly or new nipple inversion [20]. Also, it's usually cause for concern when a male patient experiences nipple discharge. While males seldom have discharge, it is linked to breast cancer in a quarter to three quarters of instances [21, 22].

Pathologic nipple discharge is most often caused by papillomas, which account for 35-58% of cases. The two main ways to categorize them are as one or more peripheral papillomas (Figs. 2 and 3). We remove papillary masses that cause discharge from the nipples. With an upgrade rate to malignancy on excisional biopsy ranging from 21.3% to 33.8%, surgical excision of papillomas with atypia is generally recommended. Controversy surrounds the treatment of papillomas that do not cause symptoms but do not exhibit atypia. The incidence of malignancy progression is estimated to be 2-12%. Observation of asymptomatic papillomas is increasingly recommended when radiologic and histopathologic results are in concordance, however some clinicians still prescribe removal of all papillomas. There may be instances where pathologic causes overlap with processes that are believed to be physiological. Duct ectasia is responsible for 17–36% of pathologic discharge cases, making it the second most prevalent cause. Pathologic discharge (unilaterally clear or red) and physiologic discharge (bilaterally yellow or brown) are both possible outcomes of duct ectasia. Nonphysiologic duct ectasia can be associated with imaging characteristics that could suggest cancer, such as a dilated duct at the periphery, localized thickening of the wall, and nearby hypoechoic tissue that could be a tumor [10].

mammogram

Despite the fact that mammogram DM is the first line of defense in evaluating a patient with PND, no research have yet compared the diagnostic accuracy of tomosynthesis and digital mammography in the context of nipple discharge. If the last mammography was taken greater than six months ago, DM should be done again. It is recommended to utilize US as the initial examination if the patient has undergone a mammography within the last 6 months (01). Tomosynthesis has the potential to be helpful in the evaluation of nipple discharge as it more accurately defines noncalcified lesions than traditional mammographic procedures (11–14).

Ultrasound

After a negative DM result, US should be used to assess the retroareolar area. While ductography was once considered a necessary adjunct to DM or DM in conjunction with US, it is now considered superfluous due to the fact that US more correctly shows the size of the lesion than a ductogram (10). Imaging the retroareolar area successfully may require US procedures such rolled-nipple methods, peripheral compression, and 2 hand compression (10). An ultrasound-guided biopsy should be performed on any lesions detected by ultrasound. Women under the age of 40 should undergo US in combination with a mammogram as their first imaging modality, whereas women 40 and over should undergo mammography as their first imaging modality (10).

Imaging of the ducts and galactose

In the process of diagnosing PND, many imaging techniques have been employed. Ductography involves inserting an iodinated contrast material through a cannula into the secretory duct. Patients presenting with

nipple discharge were traditionally evaluated with ductography or galactography. When done after a negative DM and US, ductography might discover underlying abnormalities in 14% to 86% of instances, with varying degrees of effectiveness (6,18-20). A negative ductogram does not always rule out malignancy (6), but ductography is useful for finding peripheral intraductal lesions and evaluating the probability of malignancy. Nevertheless, central duct excision (CDE) is still necessary for a definite diagnosis. It is rarely routinely performed because it is technically difficult for the radiologist to do and because patients experience discomfort during the process.

Ductoscopy with fiber optics

Introduced in the 1990s, the fiberoptic ductoscopy system (FDS) served as a risk-free substitute for ductography. A minimally invasive microendoscopic method called ductoscopy can be used to see the lactiferous duct, lavage the duct, and collect cells for cytologic analysis (21,22). There have been mixed results when using cytologic examination with FDS during ductal lavage or when used alone to assess nipple discharge. There are three possible classifications for cytological findings that test positive for FDS: cancerous cells, cells with abnormalities, and clusters of healthy ductal cells. No cells, one or two normal ductal cells, or other normal cell types including lymphocytes and histiocytes were all considered negative cytological results (23). Not all surgeons are on board with using ductoscopy during ductal excision, but when it is, it can facilitate direct biopsy of an intraductal disease.

Molecular Biology

The cytologic examination of PND is a low-cost, non-invasive, and easy way to detect changes in breast tissue using histological sample, which might help with the diagnosis of PND. Traditional cytospin preparations, including Papanicolaou and Diff-Quick labeling, are employed in the cytological analysis (23). When interpreted in conjunction with other modalities, such as clinical and radiologic results, cytological data can be useful, according to some. Retrospective investigations have revealed sensitivity levels as low as 11% and specificity as low as 76%, whereas the reported sensitivity and specificity of cytology in literature range from 46% to 95%. While a recent meta-analysis indicated a high pooled specificity of 90% and an overall pooled sensitivity of 38% for nipple discharge assessment, it is not suitable to be used as the only modality for this purpose (17).

MRI

Breast MRI is being used more and more to assess PND. With a sensitivity of 93% to 100%, breast MRI is an excellent tool for detecting breast cancer (10).

Aspiration with a fine needle (FNA)

All palpable masses should undergo FNA since it is a safe and effective initial step in assessing a dominant breast mass. Nevertheless, this procedure has the drawback of producing false negative results and there may not be enough samples to make a diagnosis. In such a situation, an excisional biopsy is required, which is still the gold standard for diagnosing breast masses and making decisions (28±30).

Markers of tumors

It has been suggested that people with underlying breast cancer can be identified by measuring the carcinoembryonic antigen (CEA) in nipple discharge.

Surgical Factors to Consider

Patients undergoing "surgical" nipple discharge require a comprehensive strategy for their care. Figure 1 shows the many systemic causes of nipple discharge and how they should be addressed. The surgeon should identify whether the discharge is generated by pressing on the breast or if it is spontaneous during the first diagnostic assessment. 'Surgical illnesses' of the breast often induce unilateral, spontaneous, and lactiferous duct-mediated nipple discharge. Following the steps outlined earlier, the surgeon has to pinpoint the exact "trigger point" on the breast (19). Lots of times, patients will have pinpointed this spot before their test even begins.

Pathologic abnormalities of the lactiferous ducts, including intraductal papilloma, fibrocystic alteration, breast abscess, and malignant tumor, are the known causes of "surgical" discharge from the breasts. An excisional biopsy should be conducted and the patient should be managed appropriately if a detectable mass or a worrisome lesion on mammography is found (28±30). It is more difficult to handle patients when there are no palpable or worrisome tumors on mammography.

If the nipple discharge isn't due to micro-calcifications or other non-palpable breast lesions, then mammography is the way to go.

Patients undergoing surgical nipple discharge have two options for treatment: central duct excision or solitary lactiferous duct excision. Both treatments are compatible with both regional and general anesthesia.

By removing the whole main mammary duct system or the afflicted breast's central ducts, all of the lactiferous ducts and sinuses can be removed. Patients with substantial nipple discharge from many ducts are candidates for this procedure, which was initially detailed by Hadfield in 1960 and originally reported by Adair in 1957. The traditional approach involves making an incision around the areola that extends half way down the areolar-cutaneous junction; this allows for access to the inner workings of the areola. A subareolar dissection exposes the terminal ducts by abruptly elevating the areola's whole thickness as a flap. It is essential to achieve precise hemostasis before dissection begins. A single dilated duct can be removed if it is discovered during dissection. All of the lactiferous ducts and sinuses are removed if there are several dilated ducts or if none of them look abnormally large. No matter what, the dissection needs to be done at a distance of around 3 ± 5 cm. It is necessary to transect the ducts at the dermal level of the nipple in order to eradicate the ductal system in its entirety and remove even superficial lesions. Avoiding drains and allowing the leftover cavity to be filled with serum will produce superior cosmetic results. Damage to the neurovascular supply of the nipple and areola complex, leading to partial necrosis of the nipple and areola, is a possible consequence of the surgery. A far more prevalent consequence is the loss of feeling in the nipples.

Reducing the likelihood of not removing all of the infected lactiferous ducts and sinuses and preventing future nipple discharge due to missing several intraductal papillomas are the primary benefits of this approach (13). One potential drawback is the risk of cosmetic deformities in the area surrounding the areola and nipple. Plus, this operation can make it harder for women to breastfeed if they are of childbearing age.

Removing the affected tissue from the lactiferous duct, sinus, and mammary glands is another surgical option. One potential benefit of this procedure, known as a single duct excision, is that it preserves tissue, which is especially useful for breastfeeding mothers-to-be. A falsenegative biopsy or the method's incapacity to excise several lesions of the lactiferous ducts/sinuses might occur if the affected lactiferous duct is not adequately removed.

The secreting duct can be cannulated using a lachrymal duct probe during surgery to assist in cases where preoperative galactography and injection of methylene blue dye were not done.

an aid for the surgeon, who may need to inject methylene blue to help see the aberrant duct (13). Alternatively, once you've determined .Clamping the duct at the base of the nipple is necessary for the duct responsible for the nipple discharge, such as the duct carrying the papilloma. A cone-shaped section of the breast tissue surrounding the illness is removed to a depth of 3 ± 5 cm after a hemostat is used to grab the duct. Once again, there is no drainage and the remaining hole remains open. It is possible to excise a single lactiferous duct by making a smaller incision around the areola, at the areolocutaneous junction, which is just a third or perhaps a quarter of the areola's circumference. In order to avoid problems caused by the nipple/areola complex, this is crucial. Knowing which quadrant of the breast is responsible for the discharge (the "trigger point") can help in determining where to make the incision for maximum exposure.

In most cases, conservative management (i.e., hygiene measures) is sufficient for duct ectasia, and surgery is seldom necessary. Nonetheless, there are instances when surgery is necessary, such as when a suspicious tumor is detected, when the discharge is serosanguineous or sanguineous, etc. An abscess necessitates incision and drainage, whereas antibiotics should be administered to infectious causes of nipple discharge (shown by purulent discharge and local irritation) (14).

Age above 55, the existence of a lump, and bloody discharge are characteristics that, as mentioned before, are linked to a higher likelihood of underlying breast cancer (20 ± 22). Patients with a confirmed or highly suspected cancer diagnosis (based on clinical examination, mammography, ultrasonography, and fine-needle aspiration) obviously require surgery, but the optimal procedure is still up for debate (Figure 1).

Patients and Methods Section

From October 2020 to October 2021, 172 hospital patients participated in a prospective trial. Every single patient was hand-picked from the hospital's breast clinic. The female patients who participated in our research all had nipple discharge.

No patient was spared from the clinical evaluation, mammography, ultrasound, and cytology that was standard practice.

When patients complained of nipple discharge along with breast masses, doctors performed fine needle aspiration cytology (FNAC) and final histological examinations.

Assessment in the clinic:

Past events: Detailed medical history, including patient age, symptom duration, marital status, pregnancy status, breastfeeding status, main complaint, related symptoms, breast lump, breast illnesses, and surgeries. The staff at the breast clinic and my supervisor conducted the physical examination. The color of the discharge from the nipples, changes in skin tone or color, nipple retraction, lump location, size, and movement, lymph nodes in the area, and a check of the contralateral breast. Ultrasound examinations are performed by medical professionals from the hospital's ultrasound department. Medical professionals from the hospital's mammography department conduct the examination. The histopathology department of the teaching hospital performed the cytology, FNAC, and histopathological examinations.

Statistical analysis Stata Enterprise ver. 5.1 was used for data analysis. database management system (SAS, Inc., Cary, NC, USA). Statistical Information features, both clinical and otherwise, were presented as middle values for continuous variables and percentages for categorical variables. A comparison was made using the chi-square test. distinctions between multiple-category variables. A t-test for students in order to compare differences, the Wilcoxon rank sum test was employed. considering variables that are continuous. Having a p-value lower than The significance level was set at 0.05.

RESULTS

Women describing nipple discharge were most often in the 30–39 age bracket, followed by the 40–49 age bracket. (Figure 1) and (Table 1).

Table (1): Age distribution of patient complaining from nipple discharge.

Age	Number of patient	%
10 – 19	12	6.9
20 – 29	22	12.7
30 – 39	56	32.5
40 – 49	46	26.8
>50	36	20.1
Total	172	100

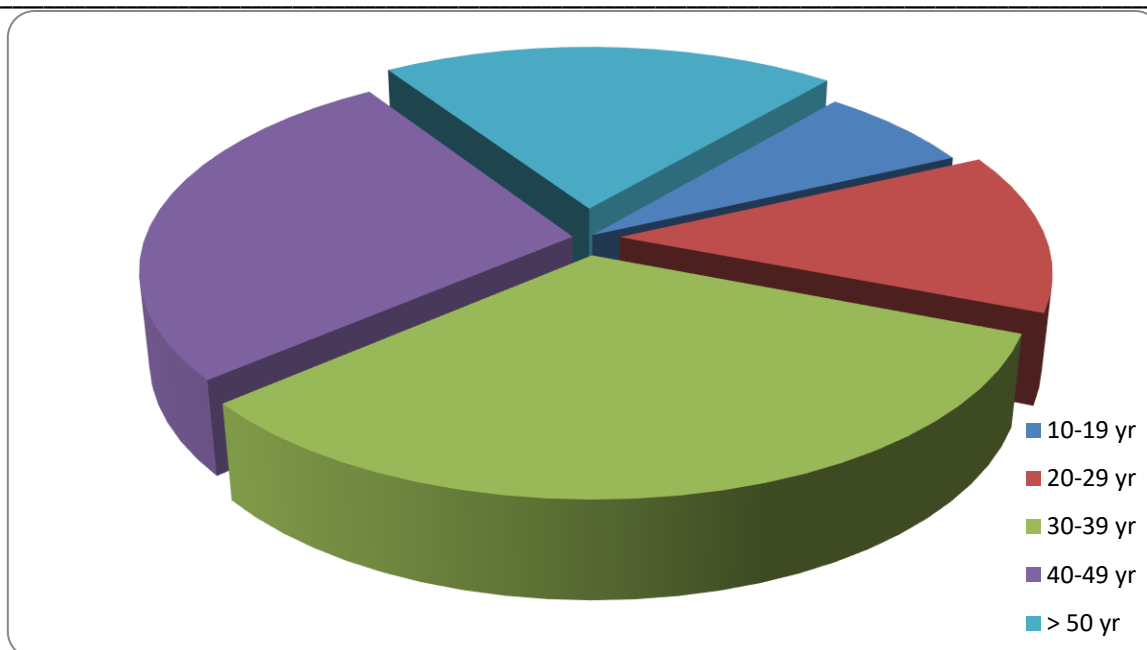


Figure (1): The age distribution of patient complaining from nipple discharge.

: The different kinds of nipple discharge: Bloody and purulent nipple discharge were the most prevalent, watery and serous nipple discharge were less common. In Table 2.

Table (2): Types of nipple discharge

Types of nipple discharge	Number	%
Bloody	70	40.8
Purulent	48	28
White	22	12.7
Serous	16	9.3
Watery	10	5.8
Serosanguinous	6	3.4
Total	172	100

The correlation between discharge from the nipples and breast tumors:

Breast lumps and nipple discharge are highly related. There was a correlation between breast lumps and a high frequency of bloody or purulent nipple discharge. However, fewer cases of other forms of nipple discharge were linked to breast lumps. (Picture 2 and Table 3).

Table (3): The relationship between types of nipple discharge and presence of breast mass.

Types of nipple discharge	With mass n (%)	Without mass n (%)	Total	P Value
Bloody	44 (45.8)	26 (34.1)	70	P > 0.05
Purulent	28 (29.1)	20 (26.2)	48	P > 0.05
White	8 (8.3)	14 (18.4)	22	P > 0.05
Serous	10 (10.4)	6 (7.8)	16	P > 0.05
Watery	4 (4.2)	6 (7.8)	10	P > 0.05

Serosangous	2 (2.1)	4 (5.2)	6	P > 0.05
Total	48	38	172	

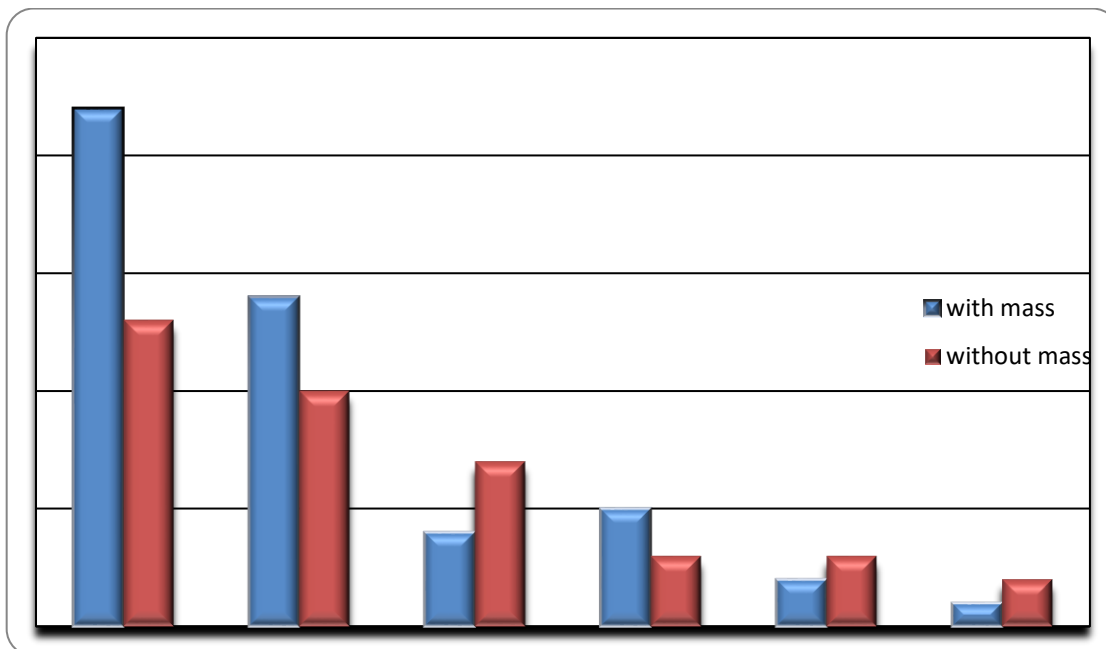
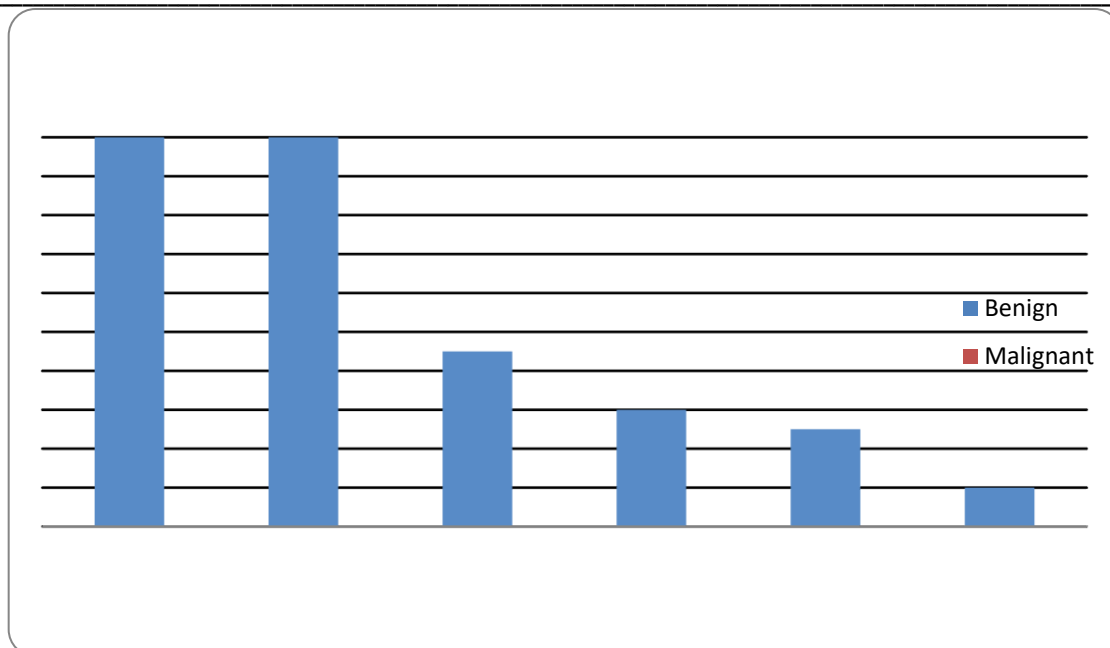


Figure (2): The relationship between type of nipple discharge and presence of breast masses.

The correlation between benign and malignant breast illnesses and nipple discharge types: More cases of abnormal nipple discharge are associated with benign breast illnesses compared to malignant ones. There is a high correlation between malignant breast illnesses and the presence of bloody nipple discharge. Bloody nipple discharge is the most prevalent kind, however the purulent, serous, and serosangous kinds are all linked to breast cancer. The presence of white or watery discharge from the nipples was not associated with cancer of the breast. (Figure 3), (Table 4)

Table (4): The relationship between the types of nipple discharge and the breast diseases (Benign or malignant).

Type of nipple discharge	Benign breast diseases n (%)	Malignant breast diseases n (%)	Total	P value
Bloody	40 (32.2)	30 (62.5)	70	P < 0.05
Purulent	40 (32.2)	8 (16.6)	48	P > 0.05
White	18 (14.6)	4 (8.3)	22	P > 0.05
Serous	12 (9.7)	4 (8.3)	16	P > 0.05
Watery	10 (8.1)	0 (0)	10	P > 0.05
Serosangous	4 (3.2)	2 (4.1)	6	P > 0.05
Total	62	24	172	



Figure(3): The relationship between the type of nipple discharge and the breast diseases (benign and malignant).

The correlation between benign and malignant illnesses and the location of nipple discharge. Breast disorders, whether benign or malignant, are more likely to cause unilateral nipple discharge rather than bilateral.

Table(5): The relationship between the site of nipple discharge and benign and malignant diseases.

	ND with benign n (%)	ND with malignant n (%)	P value
Unilateral Breast	88(70.9)	42 (87.5)	P > 0.05
Bilateral breast	36 (29.1)	6 (12.5)	P > 0.05
Total	124	48	172

4-1-6: The efficacy of direct cytology of nipple discharge:

The direct cytology from nipple discharge had a good efficacy in diagnosis of malignant breast diseases that it detrmind the malignant cell in many cases.

Table(6): The relationship between effectiveness of cytology from nipple discharge and malignant diseases

	No malignant	%	Malignant	%	Total
Cytology from nipple discharge	10	20.8	38	79.1	48

The reliability of diagnostic tools for the detection of breast cancer: Histopathology was the gold standard for diagnosing cancer of the breast, but FNAC and direct cytology from nipple discharge were considered less reliable diagnostic tools. Although radiography, including breast ultrasonography and mammograms, and clinical examination failed to detect malignant breast illnesses .

Table 7: Diagnostic tests' efficacy in identifying breast cancer

	Number of malignant cases	%
Clinical examination	8	16.6
Radiology (ultrasound and mammogram)	18	37.5
Cytology from nipple discharge	38	79.2
FNAC	42	78.5
Histopathology	48	100

The correlation between the amount of time a nipple discharges and whether it is bloody or not From the time of bloody nipple discharge until the time of inspection, the most frequent length was between 0 and 13 days, whereas 2-4 weeks was the least common range. In contrast, the most frequent length for non-bloody nipple discharge was between two and four weeks, while the least common period was between zero and thirteen days. The correlation between the length of time a nipple discharges and whether it is bloody or not is seen in Table 8.

Duration	Bloody discharge	%	Non bloody discharge	%
At time of examination	0	0	10	9.8
0-13 days	36	51.5	24	23.5
2-4 weeks	20	28.5	30	29.4
1-3 month	6	8.5	16	15.7
4-6 month	4	5.7	6	5.9
7 month-1 year	2	2.8	4	4
Unknown	2	2.8	12	11.7
Total	70	100	102	100

Discussion

It is important to study the unusual clinical indication of spontaneous nipple discharge in non-lactating breasts. In 2001, Sheen-Chen and colleagues reported... A solid indicator of prognosis, the kind and type of discharge can frequently reveal the nature of the underlying lesion. In 2003, Paterok and colleagues published... Out of a total of 88 patients in our study, only two were male, with ages of 16 and 14, respectively. This is because we recruited them from the breast clinic at Baquba teaching hospital, where men are less likely to

seek medical care due to social norms and more likely to consult with other clinics; as a result, 86 of our patients were female.

Distribution of ages:

Consistent with (Paterok EM et al., 2003), our study found that the most prevalent age categories for patients were those between 30 and 39 years old (32.5% of the total) and 40 to 49 years old (26.8% of the total).

Nipple discharge kinds

Consistent with the findings of (Paul R. et al., 2000), the most prevalent kind of nipple discharge in our research was bloody discharge (40.8%).

How breast lumps relate to nipple discharge:

Our findings contradict those of (Charles W. et al., 2001) which found that most cases of bloody or purulent discharge were associated with breast masses, while a smaller number of cases did not have any mass at all. This discrepancy is likely attributable to a lack of adequate health education regarding the significance of breast diseases and their symptoms in our nation, as well as a shortage of dedicated breast clinics in all of our cities.

The correlation between benign and malignant nipple discharge kinds and breast diseases:

The occurrence of abnormal nipple discharge, regardless of its type, is more prevalent in benign breast diseases compared to malignant ones. Among the different types of nipple discharge, bloody nipple discharge was the most common in malignant breast diseases, with a significant P-value of less than 0.05. This finding is in strong agreement with the findings of Caleffi et al. (2004).

How benign and malignant illnesses are related to the location of nipple discharge.

Our study's findings on the location of nipple discharge are consistent with those of Rosen PP et al. (2001): 75.5% of cases of benign and malignant breast illnesses include unilateral nipple discharge, whereas 24.5% involve bilateral nipple discharge.

The effectiveness of direct cytology of nipple discharge in diagnosing malignant breast diseases was found to be 79.1% in our study, which is similar to the results reported in the study by Sheen-Chen et al. (2001).

The reliability of diagnostic tools for the detection of breast cancer

Histopathology(100%), FNAC (78.5%), and direct cytology (79.1%), all of which are accurate in diagnosing malignant breast illnesses, are the most effective diagnostic tests for nipple discharge (Caleffi M., et al., 2004).

Results of bloody and non-bloody nipple discharge as a function of time

Compared to a study by Herbert et al. (2002), where the average duration was two to four weeks, our results show that most cases of bloody nipple discharge in our community had a duration of zero to thirteen days. This is likely because bloody nipple discharge is a more serious and alarming symptom associated with malignant breast diseases in our community.

Recommendation And Conclusion

- 1-The nipple discharge is a crucial indicator of breast illnesses in their early stages.
- 2-A breast mass is the most common cause of nipple discharge, especially bloody discharge.
- 3-Do not ignore nipple discharge of any kind, but especially if it is bloody or purulent, since this might indicate the presence of either benign or malignant breast illnesses.
- 4-Diagnosing malignant breast illnesses can be aided by direct cytology from nipple discharge.
- 5-Detective diagnosis of breast cancer is possible using histology.

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