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GAVIN PUBLISHERS

Archives of Surgery

Research Article

Sookar N, et al. Arch Surg: AOS-110.

DOI: 10.29011/ AOS-110. 000010

Management of Pathological Nipple Discharge without Ductoscopy or Ductogram in Low Resource Countries

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Citation: Sookar N, Sookar N, Cuffie E, Ali J (2019) Management of Pathological Nipple Discharge without Ductoscopy or Ductogram in Low Resource Countries. Arch Surg: AOS-110. DOI: 10.29011/ AOS-110. 000010

Received Date: 15 November, 2018; **Accepted Date:** 08 January, 2019; **Published Date:** 11 January, 2019

Abstract

Introduction: Most cases of nipple discharge are physiologic or benign. Pathological Nipple Discharge (PND) may be due to invasive cancer in up to 15% of presentations, the most frequently described pathologies being intraductal papilloma and duct ectasia. However, invasive or non-invasive cancer, though relatively uncommon, must be ruled out. The classical diagnostic workup of these patients not only involves history, physical examination, mammography, specialised ultrasonograpy, MRI and cytology, but several invasive and costly procedures including ductoscopy and ductography which are frequently not available in low resource countries such as Trinidad and Tobago. These tests also have a poor positive predictive value in the diagnosis of PND and there is no universally accepted diagnostic protocol. Surgical excision of the offending duct is the recognised definitive procedure for excluding cancer in the presence of bloody nipple discharge. We report our experience in a prospective consecutive group of patients with PND utilizing a specific breast examination technique which localises the PND to a single quadrant thereby allowing focussed excision of the offending lesion.

Methods: Between June 2017 and September 2018, 30 consecutive patients who had surgery for PND in our institution were studied. These patients were all subject to the same examination technique for localising the PND to a specific quadrant. The specimens were then histologically examined.

Results: The offending pathological lesion was successfully and accurately identified in all 30 patients using this examination technique. Only 2 of these patients had intraductal mass lesions suggested on ultrasound examination but the precise location of these 2 lesions were confirmed by the examination technique which we describe in this manuscript. Of the 30 patients, Intraductal Papilloma (IDP) was the most prevalent (n=20) followed by duct ectasia (n=8) and finally ductal carcinoma in-situ which accounted for 2 cases (n=2).

Conclusion: This study demonstrates the use of a simple and cost-effective technique for the evaluation of PND in resource poor countries that obviates the need for more expensive and invasive investigative procedures.

Keywords: Ductogram; Ductoscopy; Intraductal Papilloma (IDP); Pathological Nipple Discharge (PND)

Introduction

Bloody nipple discharge represents a diagnostic challenge for many physicians. It is a fairly common presentation of breast disease and accounts for up to 5% of the presenting complaints in many breast centres [1,2]. It is important to distinguish pathological from non-pathological nipple discharge and there are many aspects of the patient's history that would allow this differentiation. Bilateral nipple discharge usually involves multiple mammary ducts and is non-pathological in the majority of cases [3,4]. They include physiologic discharge, pregnancy, breastfeeding and manual stimulation of the nipple. Unilateral nipple discharge on the other hand, typically involves ducts confined to a specific area of the breast, is usually bloody and represents underlying pathology. Intraductal papillomas, duct ectasia, breast cancer and breast abscesses are the most commonly identified pathology in these cases.

The most important diagnosis to consider when evaluating PND is the possibility of an underlying invasive carcinoma. Women presenting with a pathological nipple discharge is initially assessed using the triple assessment of physical examination, imaging (ultrasound and/or mammography) and if a mass is identified, biopsy. Most PND does not have an associated palpable mass on physical exam but may have an abnormal mammogram or ultrasound. In these cases, image guided core biopsy is done for pathologic diagnosis. Because these lesions occur close to the nipple they may be difficult to image on standard ultrasonography or mammography because of the density and crowding of tissue in this region. Special ultrasonograhic techniques are described for identifying these lesions [5].

If PND presents with normal mammography and ultrasound, additional evaluation techniques are utilized. These include ductography and ductoscopy. Ductography allows for the visualization of a filling defect using mammography with contrast. Ductoscopy utilises endoscopic techniques to visualize ductal lesions. The use of nipple discharge cytology and its significance in detecting blood in nipple discharge is still under investigation. Many studies show that this form of detection has a low sensitivity rate for malignancy. There have been other studies showing a high negative predictive value. The general consensus is that blood in the discharge is not reliable in predicting breast malignancy [6,7].

If the offending duct can be localized, microdochectomy is the preferred procedure [8]. Invasive breast cancer associated with PND is treated according to widely accepted guidelines either with modified radical mastectomy or wide local excision and axillary lymph node sampling followed by radiotherapy [9,10]. In developing countries such as Trinidad and Tobago, the aforementioned evaluation techniques such as ductography and ductoscopy are usually unavailable in the public health care system. Therefore, a more cost-effective technique was sought to assist in the localization of a duct contributing to pathological nipple discharge and an eventual successful excision of this pathological duct.

Methods

A total of 30 consecutive female patients between June 2017 and September 2018, who presented with bloody nipple discharge were prospectively identified. Their ages ranged between 23 and 72 (median 42). PND was defined as at least 2 separate episodes of spontaneous bloody nipple discharge at least 2 weeks apart. These patients were all subject to the same examination technique for localising the PND to a specific quadrant. This involves deep palpation of each of the four quadrants beginning peripherally and continuing towards the nipple until discharge is visible at the nipple see (Figure 1). This location on the breast is marked prior to surgery and confirmed in the operating room where a peri-areolar incision of approximately 2 cm is made at the junction of the areolar and the skin of the breast.

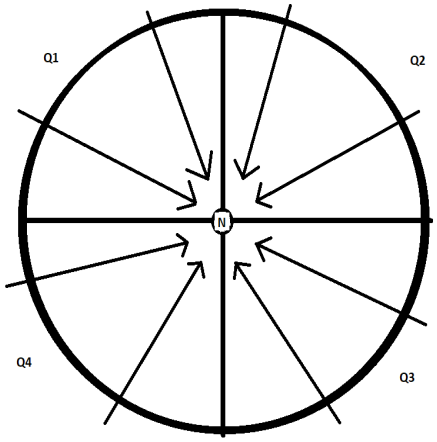

Figure 1: The arrows represent the direction of palpation, which is directed towards the nipple (N). This process is repeated for each subsequent quadrant (Q1, Q2, Q3 and Q4) until expression of the bloody discharge is seen.

The areola is elevated by dissection up to the nipple and the breast skin is elevated by dissection towards the previously marked area on the breast. The ductal tissue is visualized and examined for dilatation, mass or discharge which is frequently evident as bluish discoloration of the involved duct/ducts. The offending ductal tissue is excised using electrocautery followed by electrocoagulation for hemostasis. The offending duct is usually identified deep to the areola or within 2-3 cm of the peri-areolar incision. The excised specimens are then sent for histologic assessment. Before closing the incision with 4-0 monocryl suture, hemostasis to yield a totally dry field is accomplished and the field examined for any further discharge and to ensure that all the dilated or diseased ductal tissue is excised.

Results

Pathological lesions were identified in all 30 patients using the technique described above (100% accuracy). (Figure 2) demonstrates the various pathologies identified on ductal excision.

- **Age range:** 23-72 (Median 42).
- **Number of intraductal papillomas:** 20/30 (67%)
- **Number of ductal ectasia:** 8/30 (26%)
- **Number of DCIS:** 2/30 (7%)
- **Radiology results:** Mammography did not allow identification of any of the offending lesions. Duct ectasia lesions were

reported on ultrasound examination but the offending ductal tissue producing the discharge were confirmed using our palpation technique in the operating room.

Two of the intraductal papillomas were described as intraductal mass lesions but the location of the discharge was confirmed by our palpation technique prior to the incision in these cases as in all 30 of the cases.

The DCIS were not identified until the histologic assessment.

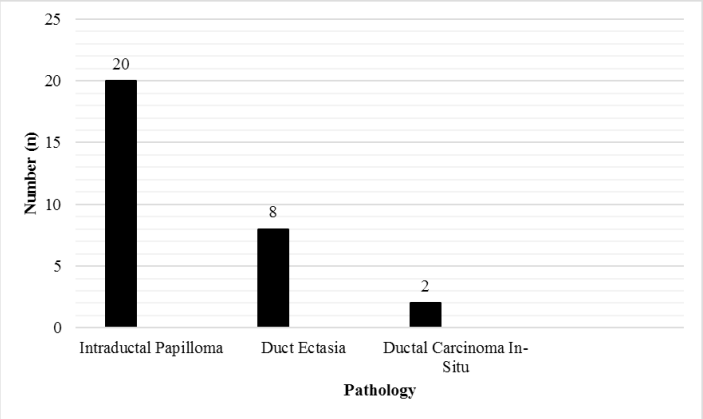

Figure 2: Pathology Identified on Ductal Excision.

- **Follow-up:** Each of our patients was seen in clinic at one week postoperatively and at six weeks with no complications reported and no recurrence of nipple discharge. They were further advised to contact us if there was any recurrence of nipple discharge and to date there has been no reports of new nipple discharge.

Discussion

Nipple discharge is the third most common complaint following breast pain and breast mass. Most nipple discharges are benign. Currently, there are no widely accepted guidelines regarding the management or diagnosis of pathological nipple discharge. It is however imperative that the routine assessment of breast disease is untaken (mammography +/- ultrasound with MRI where necessary, along with physical examination and biopsy if required).

In our cohort of 30 patients, 20 (67%) patients were found to have intraductal papilloma, 8 (27%) duct ectasia and 2 (6%) DCIS. This frequency and distribution of lesions are similar to reported series in the literature. The value of nipple discharge characteristics such as cytology and blood-staining in investigating PND has long been a subject of debate. Cytology is usually only undertaken if patients are having active discharge at the time of assessment in clinic. Previous large studies have also shown that Nipple Discharge Cytology has very low sensitivity for the detection of carcinoma among women with PND [7,11,12]. Furthermore, although nipple discharge that is serosanguinous or bloody is reported to be associated with an increased risk of carcinoma, cytological assessment of bloody nipple discharge usually does not represent carcinoma [13].

Most pathological nipple discharge will be of a benign nature, but malignancy should be ruled out. In our setting, the definitive form of diagnosis and treatment of PND is surgical intervention via microdochectomy followed by histological evaluation. The palpation technique described in our study identified an offending duct in 100% of cases giving the specific location for surgical excision. This therefore, eliminated the need for the more expensive evaluation techniques identified in the literature such as ductoscopy and ductography especially in low resource settings such as Trinidad and Tobago where these techniques are not usually available in the public system.

Conclusion

Pathologic Nipple Discharge should be fully investigated in order to avoid missing an underlying malignancy. It is the generally accepted view that Nipple Discharge cytology has very poor sensitivity for detecting breast cancer and is therefore of limited diagnostic value. The most reliable tool for definitive diagnosis and treatment of Pathologic Nipple discharge is surgical intervention. This study demonstrates the use of a simple and cost-effective technique for the evaluation of Pathologic Nipple Discharge in resource poor countries that obviates the need for more expensive and invasive tests. Our technique was one hundred percent successful in yielding a diagnosis and effective in eradicating the symptom of nipple discharge. Similar results utilizing this technique in other centres should prompt its wider application.

Conflicts of Interests Disclosure

The authors declare no conflicts of interest.

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