

Microductectomy: Current Surgical Technique for Pathological Ductal Discharge

Oscar Garcia-Angulo*, Carlos Lehmann, Eder Lancheros, Sandra Diaz, Luis Guzman, Mauricio Garcia, Carlos Duarte and Javier Angel

Breast surgery service from the National Cancer Institute, Fundación Universitaria de Ciencias de la Salud, Bogotá, Colombia

*Corresponding author

Oscar Garcia-Angulo, Breast surgery service from the National Cancer Institute, Fundación Universitaria de Ciencias de la Salud, Bogotá, Colombia, E-mail: osaga72@gmail.com

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Abstract

Thelorrhoea is one of the most common reasons for consultation in mastology. In the cases of a discharge with a pathological appearance, an appropriate approach is important given the possibility of it originating in a malignant neoplasm. Its study currently includes advanced diagnostic procedures such as ductoscopy with biopsy or brushing. However, these kinds of diagnostic intervention are not available everywhere and therefore, the surgical removal of the affected duct continues to be of great value diagnostically as well as therapeutically, especially in women with unsatisfied parity.

Introduction

Thelorrhoea, also known as thelorrhoea, represents one of the main reasons for consultation in mastology. According to its clinical characteristics it can be classified as a physiological discharge or a pathological discharge. Most discharge is physiological and does not require specific treatment. However, it is important to identify pathological thelorrhoea given their association of up to 5% to 15% with a malignant neoplastic process [1,2].

The evaluation includes a complete clinical history associated to a rigorous physical breast exam and auxiliary diagnostic studies according to clinical findings, the patient's age and available resources. Surgical intervention is frequently necessary to completely remove terminal ducts, which have a diagnostic as well as therapeutic intention. However, this technique is not recommended for young patients with unsatisfied parity. In this kind of patient, we have described a selective resection technique of the affected terminal duct or a microductectomy, which removes the affected duct while preserving the integrity and function of the other terminal ducts [2].

We present two clinical cases of young patients with pathological thelorrhoea, who had this procedure, as well as a brief description of the surgical technique and discussion on the evaluation strategies available.

Case 1

23-year-old patient with a bloody left thelorrhoea developed in the last week. The report from the breast ultrasound shows bilateral retroareolar ectasia predominantly on the left breast. There is no significant medical or surgical history. On the physical exam we can observe secretion of serosanguineous fluid through an orifice of the duct located on coordinate 1 of the left nipple. Left microductectomy

was performed with a pathological report compatible with: non-atypical intraductal papilloma.

Case 2

35-year-old patient with left unilateral spontaneous bloody thelorrhoea for the last 7 months, with a breast ultrasound report that showed a complex ductal ectasia. No significant medical or surgical history. The physical exam as the only positive finding identified as left bloody thelorrhoea reproducible upon acupressure. Microductectomy performed with a pathology report compatible with: intraductal papilloma.

Surgical Technique

The surgical technique is done under general anesthesia. There is gentle pressure on the nipple to produce the excretion of fluid and identify the affected duct. Then a Jelco 22 G is introduced in this duct, manipulating is softly to dilate the external orifice (Fig 1). Once the Jelco has been inserted, 0.1 to 0.2 ml of methylene blue is inserted for its subsequent identification (Fig 2). Others have described the use of a technique using indocyanine green as an alternative, identifying the duct by the fluorescence produced [3].

Then a periareolar incision is made adjacent to the duct that will be excised, with a deep dissection until the duct with the coloring on the inside is identified (Fig 3). The duct is dissected from the surrounding tissue, dissection that extends to the periphery of the mammary gland. Shen et al have demonstrated that many intraductal papilloma are located within the duct at an average depth of 2.7 cm from the nipple orifice, therefore, we recommend extending the resection beyond this distance (Fig 4) [4]. With the duct completely dissected, we perform a complete resection, from the retroareolar tissue to its periphery (Fig 5).



Figure 1

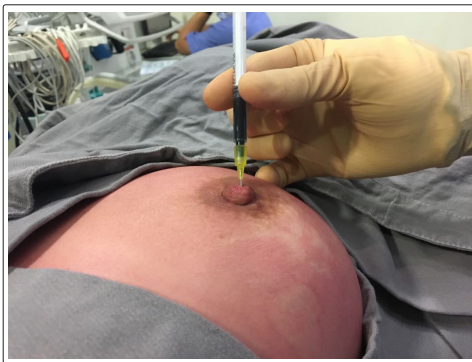


Figure 2

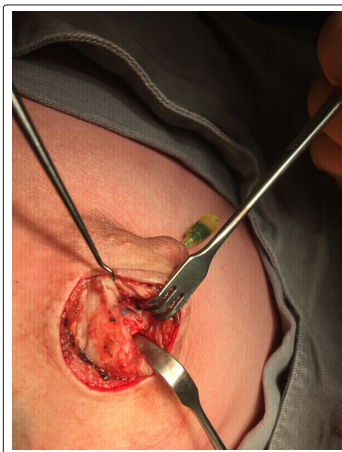


Figure 3



Figure 4



Figure 5

Discussion

Thelorrhoea is a condition found in 5% of women attending consultation with a breast pathology and is third in frequency as the reason for consultation, after breast pain and the presence of palpable lumps [4,5]. According to its clinical characteristics, thelorrhoea can be classified as physiological or pathological. Pathological discharge tends to be unilateral, serous or bloody and appears spontaneously, usually through a single breast duct [3]. This type of discharge tends to be associated to proliferating lesions with intraductal papilloma (the most frequent etiology), florid papillomatosis or breast cancer. On the contrary, physiological discharge can occur bilaterally, its discharge is not serous or bloody and is only evident by applying pressure on the nipple. This kind of discharge can be caused by ductal ectasia or other inflammatory processes such as abscesses or breast infections [4,6].

When there are doubts about the presence of a true bloody thelorrhoea, the use of a discharge exam using a test strip for hemoglobin can be used. An analysis of 270 patients who had surgery for thelorrhoea from one duct revealed that all occult cancers are accompanied by the presence of hemoglobin in the discharge [7].

Given its probable association to breast cancer, we always recommend initiating a diagnostic process of the cases of spontaneous discharge through one duct, especially if it is a bloody thelorrhoea [5]. This evaluation starts with a rigorous clinical breast exam along with an ultrasound study and, in women over 40, a complementary mammogram. The breast ultrasound could identify endoluminal lesions that suggesting papilloma after which we recommend a pathological study by percutaneous route [1]. Different studies have been used such as discharge cytology, galactography (ductography), discharge carcinoembryonic antigen studies and even galactography with magnetic resonance. However, all of these studies have been associated with low sensitivity for cancer diagnosis and some of them, such as the galactography, are uncomfortable for patients [4,5].

Recently there have been alternative diagnostic methods in order to avoid surgical management. One of these is a micro-endoscopic ductal evaluation technique (ductoscopy), which allows a direct visualization of the epithelium in the breast duct [4,8]. A study of 1048 successful ductoscopies showed the appearance of specific lesions in 40% of the procedures: 11% were carcinomas, 52% were papilloma and 1% were ductal hyperplasia with atypia. Sensitivity to detect malignant lesions in this study was 94%.

This information confirms the value of the ductoscopy in the pathological discharge evaluation [9]. For this reason, the ductoscopy has been recently included in the spontaneous thelorrhoea evaluation [1,5]. However, this technology is not available in all the geographical regions of the world due to the high cost and complexity [10].

The ductoscopy can be accompanied by other auxiliary diagnostic techniques such as intraluminal brushing with cytology or intraductal biopsy. Brushing includes adding an endoluminal micro-brushing to obtain samples for cytological study. Beechy-Newman et al evaluated the diagnostic potential ductoscopy with brushing. Of the 50 patients reported in their study, 33 patients showed endoluminal lesions whose definite pathologies showed a single intraductal papilloma in 15, multiple papilloma in 3, and the remaining 15 patients had signs of acute swelling or swelling prior to scarring. In 7 of the 8 patients with visible papilloma and who had ductal lavage and brushing, there were papillary cell clusters (sensitivity of 87.5%) which shows a good sensitivity for brushing [4].

Intraductal biopsy guided by fiber optics-ductoscopy is a minimally invasive technique to obtain a direct pathological diagnosis in patients with suspicious thelorrhoea. In cases in which the pathological result shows benign lesions, there can be a strategy of close observation. Surgery is recommended in cases with pathological results of ductal hyperplasia with atypia [11].

There has been some criticism to ductoscopy in pathological thelorrhoea evaluation. The ductal system has several ramifications and intraductal lesions can occur in any of these branches. Despite 75% of the drainage occurring through the central ducts (seven on average) that are susceptible to being evaluated with ductoscopy, the other 13 to 18 deeper ducts which also drain towards the nipple can be left unevaluated [10]. In addition, the length of the ductoscopy does not allow a visualization of the distal ductal ramifications and much less the terminal ductal lobular unit, where breast cancer most frequently originates. In fact, 70% of cancer patients with thelorrhoea appearance, have a lesion > 2 cm from the nipple [10].

Definite management of spontaneous thelorrhoea through a single duct without significant findings in additional studies is still controversial. Some suggest an expectant management policy while others recommend systematic resection of the ducts involved [1].

Historically, complete resection of terminal ducts has been the treatment of choice for post-menopausal patients with pathological discharge, given the great amount of pathological information it offers added to the low morbidity of the procedure and associated good aesthetic results. For pre-menopausal women with expectations of pregnancy and breast feeding in the future, we recommend selective resection of the duct. Burton et al evaluated the usefulness of selective resection with the experience of 52 patients in a five-year period. None of the patients had a ductography or ductoscopy. An intraductal papilloma was identified in 60% of women under 50 and 73% of the women over 50 [1].

Below is a diagnostic approach for the evaluation of thelorrhoea in circumstances in which it is not possible to complete the study by ductoscopy (Fig. 1).

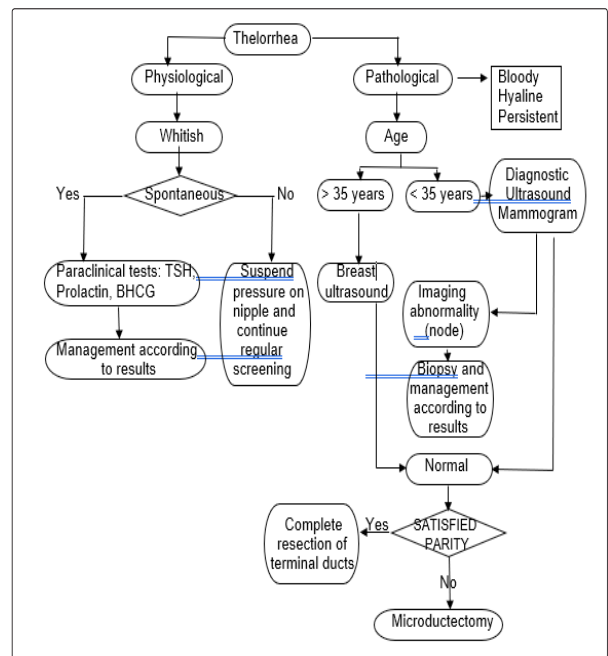


Figure 1: Proposed algorithm for the thelorrhoea approach

Conclusion

Microductectomy is useful surgical technique in the study and definite management of patients with single duct thelorrhagia, which do not have a satisfied parity. The technique requires knowledge of breast anatomy for a delicate cannulation of the affected duct, which must be dissected up to the duct lobular unit to have an accurate diagnosis. That is how microductectomy is an efficient diagnostic and therapeutic tool with low morbidity that can be used in places where ductoscopy is not available.

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