

# DERMATOLOGICAL PUNCH BIOPSY IN BREAST LESIONS

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## ABSTRACT

Breast skin biopsy by punch is an easy, low-cost and accessible procedure, performed under local anesthesia, using a 4 or 5 mm cutting cylinder (punch), which, when rotated in a rotary motion, allows the removal of a fragment with the various layers of the skin, including the epidermis, dermis, and subcutaneous tissue. The fragment is fixed in formalin and later processed and stained with Hematoxylin-Eosin (HE) for histological diagnosis. The paraffin block can also be used to perform immunohistochemistry for diagnostic conclusion and/or study of prognostic factors in breast cancer (estrogen and progesterone receptors, human epidermal growth factor receptor 2 (HER-2) and cell proliferation markers (Ki-67) Punch biopsy is indicated in cases of suspected skin involvement by breast diseases such as areola and nipple eczema, psoriasis, Paget's disease and inflammatory carcinoma.

**KEYWORDS: BREAST; PUNCH; PSORIASIS; INFLAMMATORY CARCINOMA; PAGET**

## INTRODUCTION

The introduction of punch skin biopsy of the breast was a great advance in the diagnosis of skin diseases in Mastology, as it is a method of easy applicability and low cost. Punches ranging from 1 to 8 mm are available, and can be made of metal or disposable plastic. It is a procedure performed under local anesthesia, and a 4 or 5 mm cutting cylinder (punch) is routinely used, which, when rotated in a rotational movement, allows the removal of a fragment with the various layers of the skin, including the epidermis, dermis, and subcutaneous cellular tissue<sup>1</sup> (Figure 1).

After anesthesia, the punch must be placed on the skin lesion to be biopsied, making rotation movements, maintaining strong vertical pressure that will make the instrument penetrate the tissue. A cylindrical column of skin with its epidermis, dermis and subcutaneous tissue layers is removed. This skin cylinder is carefully removed with the aid of atraumatic forceps or a skin hook and then the base of the tissue is sectioned with fine scissors as deeply as possible. The fragment is fixed in formalin and later processed and stained by the Hematoxylin-Eosin (HE) for histological diagnosis. Punch biopsy is indicated in cases of suspected skin involvement by breast diseases, such as areola and nipple eczema, psoriasis, Paget's disease and inflammatory carcinoma<sup>2</sup> (Figure 2).

## LITERATURE REVIEW

The skin lesions of the breast that are most frequently biopsied by punch are eczema, psoriasis, inflammatory carcinoma and Paget's disease.

Eczema or dermatitis are terms used to refer to a polymorphic inflammatory reaction involving the epidermis and dermis. They can be of different etiologies and present varied clinical findings, from erythema, vesicles, xerosis and lichenification. Dermatological lesions are accompanied by pruritus. They may occur due to skin contact with irritating chemicals (primary irritant contact eczema) or an allergen (allergic contact eczema) that triggers a hypersensitivity reaction, or skin dryness<sup>3</sup>. The diagnosis is made by clinical history, physical examination, patch tests and histopathology (Figure 3).

Psoriasis is an immunologically and genetically based chronic inflammatory disease that clinically presents with erythematous squamous plaques with a symmetrical distribution. Lesions are usually recurrent and may be accompanied by pruritus<sup>4</sup>. The diagnosis is mainly clinical, but the histopathological examination helps in doubtful cases (Figure 4).

Inflammatory carcinoma is a neoplasm with a poor prognosis, which usually courses with edema of the subcutaneous tissue of the breast, described as "orange peel skin" (peau d'orange), with invasion of the lymphatic vessels of the dermis by emboli of neoplastic cells (Figure 5).

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It manifests with hyperemia, edema and breast enlargement, associated with a palpable nodule. In general, there is extensive involvement of the axillary, supraclavicular and ipsilateral mammary lymph nodes, as well as the contralateral axillary lymph node chain<sup>5</sup>.

The diagnosis is based on clinical data and imaging tests. To characterize inflammatory breast cancer, it is necessary to have erythema and edema of the dermis in at least one third of the breast<sup>6</sup>.

Histopathological examination by cutaneous incisional or punch biopsy of compromised skin and/or core biopsy of evident tumors.

Paget's disease is a clinical form of breast carcinoma, characterized as an eczematous change in the nipple associated with underlying breast cancer, with infiltration of the nipple epidermis by Paget's cells, which are large, pale-stained cells with round or oval nuclei and prominent nucleoli<sup>7</sup>. The cells are among the normal keratinocytes of the nipple epidermis, occurring singly in the superficial layers and in clusters towards the basement membrane (Figure 6).

Most patients with Paget's disease initially present with eczema or long-standing nipple ulceration, which can progress to frank erosion, exudation and papillary effusion<sup>8</sup>.

The histopathological evaluation of the nipple should be performed by incisional biopsy with a conventional scalpel or by dermatological punch. The breast skin punch biopsy is an outpatient procedure performed under local anesthesia, using a 4 or 5 mm cutting cylinder (punch), which, when rotated, goes deeper into the skin and allows the removal of a cone with the various skin layers, including epidermis, dermis and subcutaneous tissue<sup>1</sup> (Figures 7 and 8).



Figure 2: Material needed to perform the punch biopsy. Anesthetic (lidocaine), syringe, needle, punch and formaldehyde.



Figure 3: Left areola eczema.



Figure 1: Use of Punch in breast dermatological lesions.



Figure 4 - Plaque psoriasis on the right breast.



Figure 5: Inflammatory carcinoma in the left breast. Infiltrate the skin by neoplasm ("orange peel" skin).

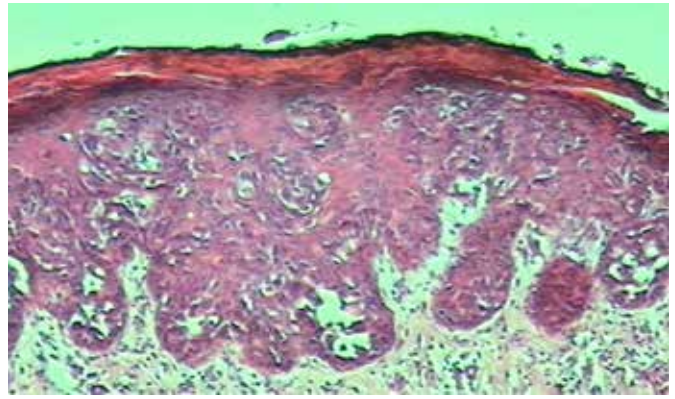


Photo 8: Microscopic appearance of the skin of Paget's disease showing thickening of the epidermis (acanthosis).



Photo 6: Paget's disease of the left breast.

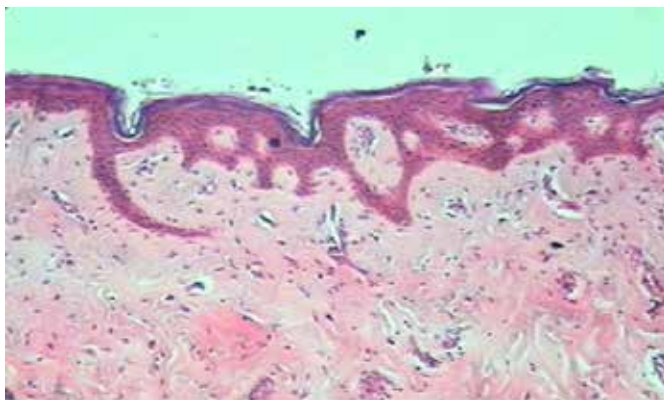


Photo 7: Microscopic appearance of normal skin with its keratin, epidermis and dermis layers.

## CONCLUSION

The development of punch for skin biopsies of breast lesions was a major advance in mastology and dermatology. It is an outpatient procedure that can be done in the office under local anesthesia, very tolerable, fast, practical and without the need for hospitalization. The fragment is fixed in formalin and processed for histopathological and immunohistochemical diagnosis for diagnostic conclusion and/or study of prognostic factors in breast cancer (estrogen and progesterone receptors, human epidermal growth factor receptor type 2 (HER- 2) and cell proliferation markers (Ki-67), which enables the correct treatment of benign and malignant breast diseases such as Paget's cancer and inflammatory carcinoma<sup>9-10</sup>.

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