Clinicopathological features of usual ductal hyperplasia in the male breast. A case report

María Guadalupe Maciel García M.D.
Javier Constantino Lugo M.D.
Valeria Gómez Márquez M.D.
Sergio Miguel Suárez Fuentes M.D.
Mayra Alejandra Orozco Rodríguez M.D.
Mariana del Carmen Parra Becerra M.D.
María José Payan Aceves M.D.
Roberto Emmanuel Flores Manzo M.D.
Angela Marian Orozco Dueñas M.D.

Morelia, Mexico

Case Report

General Surgery

OPEN ACCESS

Background: Usual ductal hyperplasia (UDH) is a benign proliferative epithelial lesion frequently observed in female breast tissue but rarely reported in males. Due to its scarcity, the clinicopathological features and biological behavior of UDH in the male breast remain poorly defined.

Case Presentation: A 19-year-old male presented with progressive left retroareolar breast enlargement of two years' duration. Imaging revealed a well-circumscribed solid mass measuring 45 × 32 mm. A subcutaneous mastectomy was performed. Histopathological examination showed epithelial proliferation with micropapillary and cribriform architecture, preserved myoepithelial cells (p63 and smooth muscle actin positive), mosaic CK5/6 expression, diffuse estrogen receptor positivity, and a low Ki-67 index (<5%). These findings were consistent with usual ductal hyperplasia, without evidence of atypia or carcinoma.

Conclusion: UDH of the male breast is a rare benign lesion that may clinically resemble neoplastic processes. Accurate histopathological and immunohistochemical evaluation is essential to exclude premalignant or malignant entities.

Key Words:
Usual ductal hyperplasia; Male breast; Benign proliferative lesion.

Usual ductal hyperplasia (UDH) is a benign proliferative epithelial lesion of the breast characterized by an increased number of heterogeneous ductal epithelial cells forming irregular secondary lumina and maintaining an intact myoepithelial layer [1,2]. Unlike atypical ductal hyperplasia (ADH), UDH is considered a polyclonal proliferation and is not classified as a premalignant lesion [3]. In female breast pathology, UDH is a common incidental finding and is associated with only a slight increase in subsequent breast cancer risk compared with non-proliferative lesions [4].

Proliferative epithelial lesions in the male breast are rare due to the rudimentary ductal system and absence of terminal duct–lobular units [5]. Male breast tissue consists predominantly of ducts within fibrofatty stroma, limiting the spectrum of proliferative alterations compared with female breast anatomy [6]. The most frequent male breast condition is gynecomastia, a benign proliferation of ductal and stromal elements typically related to hormonal imbalance [7].

Reports of UDH in male patients are scarce and often identified incidentally during surgical management of gynecomastia or evaluation of palpable retroareolar masses [8,9]. Given that male breast cancer, although uncommon, accounts for approximately 1% of all breast carcinomas and carries significant morbidity, accurate histopathological differentiation of benign proliferative lesions from atypical hyperplasia and ductal carcinoma in situ (DCIS) is essential [10].

Histologically, UDH demonstrates a polymorphic epithelial proliferation with streaming architecture, micropapillary or irregular cribriform patterns, and cytologic heterogeneity [1,2]. Immunohistochemically, UDH exhibits a mosaic staining pattern for high-molecular-weight cytokeratins such as CK5/6 and preservation of the myoepithelial layer confirmed by p63 and smooth muscle actin [3,11]. The proliferative index is typically low [12]. Due to the limited literature addressing UDH in male patients, especially in young individuals, documentation of such cases contributes to a better understanding of its clinicopathological characteristics and biological behavior [9,13].

Case report

We present the case of a male patient aged 19 years, originally from Pátzcuaro, with incomplete secondary education, occupation not specified, single, Catholic, who presented to Hospital General Dr. Miguel Silva for medical care. Personal non-pathological history: He reported tobacco use beginning at 18 years of age, consuming 2 cigarettes

From the Department of Surgery. Hospital Civil de Morelia, "Dr Miguel Silva" Morelia, Mexico. Received on February 24, 2026. Accepted on February 28, 2026. Published on March 3, 2025.

DOI 10.5281/zenodo.18857246

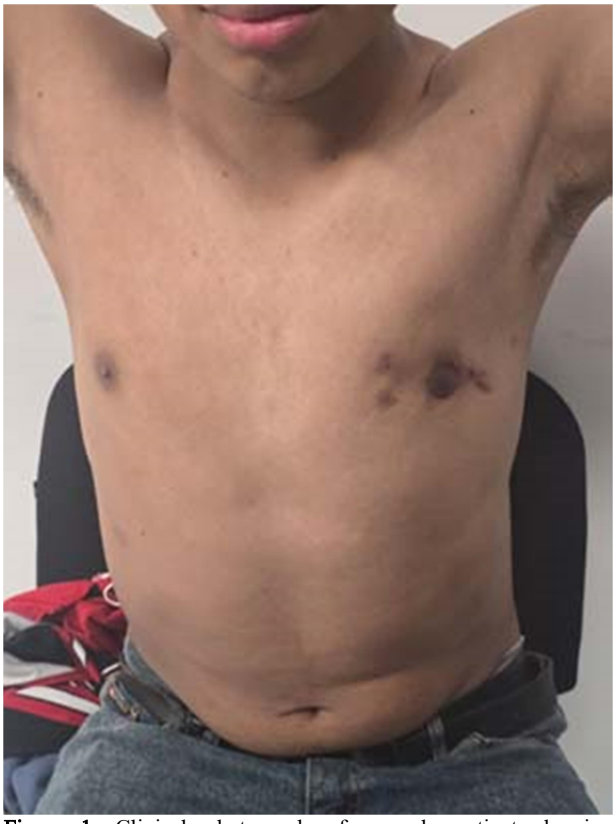

Figure 1. Clinical photograph of a male patient showing asymmetry of the nipple–areolar complexes. The right nipple–areolar complex demonstrates a localized hyperpigmented nodular lesion with slight lateral extension and post-procedural changes, consistent with the site of biopsy corresponding to usual ductal hyperplasia

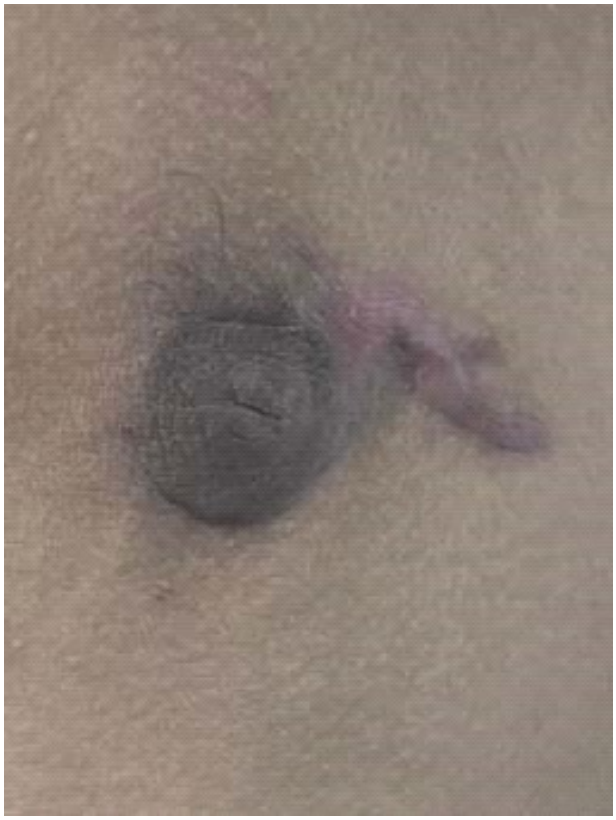

Figure 2. Well-circumscribed, exophytic hyperpigmented nodular lesion involving the nipple–areolar complex, with a dark brown to black color and verrucous, fissured surface.
It shows a lobulated contour with a slight lateral pedunculated extension and adjacent pinkish scar-like tissue.

per day, which had been discontinued at the time of evaluation. He also reported alcohol consumption starting at 18 years of age, with a pattern of abuse and episodes of intoxication; his last intake occurred prior to hospitalization. He admitted to methamphetamine ("crystal") use beginning at age 18, which had also been discontinued. Past medical history: He had a history of congenital clubfoot. He denied chronic degenerative diseases, previous surgical procedures, drug allergies, prior blood transfusions, and traumatic injuries.

An 18-year-old male initially developed symptoms approximately two years prior to his first evaluation.

The condition was characterized by a progressive increase in volume of the left breast, predominantly in the retroareolar region. The mass was described as non-painful, without skin changes, nipple discharge, or associated systemic symptoms. He denied fever, weight loss, or palpable lymphadenopathy.

On directed physical examination, the left breast showed retroareolar enlargement with a well-defined, solid nodular lesion. Mild pain was elicited upon mobilization. There were no skin changes and no palpable axillary lymphadenopathy. (Figure 1, 2)

Breast ultrasound: Imaging revealed a well-defined, solid echogenic lesion measuring approximately 45 × 32 mm, located within the fatty plane of the left pectoral region at the retroareolar level, with associated glandular tissue.

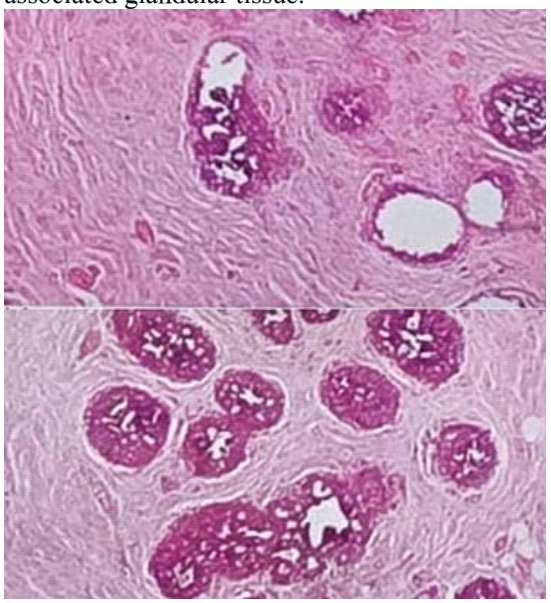

Figure 3. Hematoxylin–eosin stain showing ductal epithelial proliferation within fibromyxoid and focally hyalinized stroma,

DOI 10.5281/zenodo.18857246

Figure 3. Contd. with micropapillary and partial cribriform architecture. The epithelial cells are cytologically bland, with preserved myoepithelial layer and no atypia, necrosis, or mitotic activity. Immunohistochemistry demonstrated mosaic CK5/6 expression, p63 and SMA-positive myoepithelial cells, diffuse ER positivity, and low Ki-67 (<5%), consistent with usual ductal hyperplasia.

A left subcutaneous mastectomy was performed on 09/17/2025 on an outpatient basis without complications. In the immediate postoperative period, the patient presented with a hematic crust, without signs of surgical site infection. The surgical wound was in the early healing phase, closed, with mild local depression and no palpable lymphadenopathy.

The histological and immunohistochemical findings were consistent with an epithelial proliferation composed of ductal and myoepithelial-type cells. Architectural features demonstrated epithelial hyperplasia with micropapillary and cribriform patterns. Preservation of the myoepithelial cell layer was confirmed by positive immunostaining for p63 and smooth muscle actin. Cytokeratin 5/6 (CK5/6) showed a mosaic staining pattern, and there was diffuse positivity for estrogen receptors. (Table 1) The proliferative index (Ki-67 <5%) was low. This immunophenotypic profile supported the diagnosis of Usual Ductal Hyperplasia (UDH).

Overall, the immunohistochemical findings were consistent with a benign lesion, with no evidence of carcinoma. (Figure 3, 4)

Discussion

Proliferative lesions of the male breast represent a diagnostic challenge because of their rarity and limited representation in large pathological series [8,9]. The majority of male breast enlargements correspond to gynecomastia, whereas epithelial proliferative lesions such as UDH are uncommon findings [7].

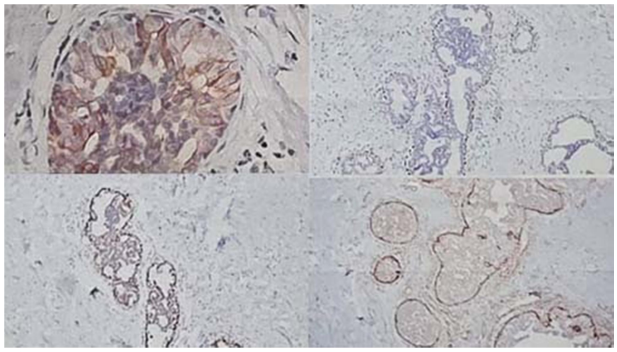

Figure 4. Immunohistochemical staining demonstrating epithelial proliferation with ductal and myoepithelial components. The lesion shows micropapillary and cribriform architecture with preserved myoepithelial layer highlighted by p63 and smooth muscle actin, mosaic CK5/6 expression, diffuse estrogen receptor positivity, and low proliferative index (Ki-67 <5%). Findings are consistent with usual ductal hyperplasia and support a benign lesion without evidence of carcinoma.

In female breast pathology, UDH is regarded as a benign, polyclonal epithelial proliferation characterized by architectural irregularity and cellular heterogeneity [1]. Epidemiologic studies have demonstrated that UDH confers only a mildly increased relative risk of breast carcinoma (approximately 1.5–2 times that of the general population), significantly lower than the four- to five-fold increased risk associated with ADH [4,12]. In male patients, however, the natural history and long-term risk associated with UDH remain poorly defined due to the scarcity of longitudinal data [9,13].

In the present case, histopathological evaluation demonstrated epithelial hyperplasia with micropapillary and cribriform patterns, preserved myoepithelial cells, mosaic CK5/6 expression, diffuse estrogen receptor positivity, and a low proliferative index (Ki-67 <5%). The mosaic cytokeratin staining pattern supports the polyclonal nature of the lesion and serves as a key distinguishing feature from ADH, which typically shows loss of high-molecular-weight cytokeratin expression and more uniform cytology [3,11].

Antibody	Clone	Result	Positive Control
Cytokeratin 5/6 (CK5/6)	D5/16B4	Positive, mosaic staining pattern	Adequate
p63	4A4	Continuous nuclear positivity in myoepithelial cells	Adequate
Smooth Muscle Actin (SMA)	1A4	Positive in myoepithelial cells	Adequate
Estrogen Receptor (ER)	6F11	Diffuse nuclear positivity	Adequate
Ki-67	SP6	Low proliferative index (<5%)	Adequate

Table 1. Immunohistochemical panel.

DOI 10.5281/zenodo.18857246

The principal differential diagnoses include ADH and low-grade DCIS. Preservation of the myoepithelial layer, demonstrated by p63 and smooth muscle actin immunostaining, effectively excludes in situ carcinoma [2,3]. Accurate immunohistochemical assessment is therefore crucial to avoid overdiagnosis and unnecessary aggressive treatment, particularly in male patients, where surgical management may already be definitive.

The young age of the patient is noteworthy, as most reported cases of male breast proliferative lesions occur in middle-aged or older individuals [9]. Hormonal influences have been implicated in ductal epithelial proliferation in male breast tissue, particularly in the context of gynecomastia or endocrine imbalance [7]. However, in the absence of atypia or high proliferative activity, UDH appears to behave as a benign process.

Although current evidence suggests that UDH in male breast tissue lacks established malignant potential, the limited number of documented cases underscores the need for further studies to clarify its biological behavior and long-term clinical implications [13].

Conclusion

Usual ductal hyperplasia of the male breast is a rare benign proliferative lesion that may clinically mimic neoplastic processes. Precise histopathological and immunohistochemical evaluation is essential to distinguish UDH from atypical ductal hyperplasia and ductal carcinoma in situ, as these entities have markedly different prognostic and therapeutic implications.

This case highlights the characteristic immunophenotypic features of UDH, including mosaic CK5/6 expression, preservation of the myoepithelial layer, and low proliferative activity. Based on current evidence, UDH in male patients appears to represent a benign condition without clearly established premalignant potential. Continued reporting and long-term follow-up studies are necessary to better define its risk profile and clinical significance.

Conflicts of interests

The authors declare that there are no financial, personal, or institutional conflicts of interest that could have influenced the work reported in this manuscript.

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 DOI 10.5281/zenodo.18857246