Infected Vulvar Epidermoid Cyst Mimicking Bartholin and Perianal Pathology in a Young Woman: A Case Report

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Abstract

Background- Vulvar cystic lesions constitute a heterogeneous group of benign conditions that can pose diagnostic challenges in gynaecologic practice. Although Bartholin duct cysts and abscesses are the most common causes of unilateral labial swelling in reproductive-age women, other entities, such as epidermoid cysts, must be considered, particularly when clinical and imaging findings are atypical. Epidermoid cysts are benign, keratin-filled lesions that are relatively uncommon in the vulvar region and may clinically mimic Bartholin or perianal pathology.

Case Presentation- A 21-year-old unmarried woman presented with a progressively enlarging, painful swelling of the left labia majora of one month duration. Clinical examination revealed a tense, mobile cystic mass measuring approximately 5 × 6 cm without erythema or discharge. Ultrasonography suggested a chronic perianal abscess with labial extension. Magnetic resonance imaging demonstrated a welldefined heterogeneous cystic lesion with diffusion restriction in the left posterolateral vulvar region. Surgical excision was performed, and intraoperatively, thick keratinous material was evacuated following cyst rupture. Histopathological examination confirmed the diagnosis of an infected epidermoid cyst. The postoperative course was uneventful.

Conclusion- Vulvar epidermoid cysts, though uncommon, should be included in the differential diagnosis of unilateral labial swellings. Imaging findings may mimic an abscess, and definitive diagnosis relies on histopathological confirmation. Complete surgical excision provides excellent outcomes and prevents recurrence.

Keywords: Epidermoid Cyst, Vulva, Bartholin Gland Diseases, Magnetic Resonance Imaging, Surgical Excision

Introduction

Vulvar cystic lesions include a diverse array of benign disorders that often create diagnostic difficulties in gynaecological practice. While some vulvovaginal cysts are asymptomatic and identified accidentally, some may manifest with pain, rapid growth, or secondary infection, necessitating timely assessment. The differential diagnosis of unilateral labial swelling includes Bartholin duct cyst or abscess, epidermoid cyst, vestibular mucinous cyst, Skene duct cyst, Gartner duct cyst, Müllerian cyst, lipoma, and various other rare neoplastic or inflammatory disorders.

Bartholin gland cysts and abscesses are the most commonly observed lesions in women of reproductive age. The Bartholin glands are bilateral mucus-secreting glands situated at the 4 and 8 o'clock positions of the vaginal introitus. Obstruction of the duct results in cyst formation, while concurrent infection leads to abscess development. Symptomatic Bartholin lesions constitute roughly 2% of annual gynecologic outpatient consultations, mostly impacting sexually active women in their reproductive years.[1–4]

Epidermoid cysts, known as epidermal inclusion cysts or sebaceous cysts, are benign encapsulated lesions characterised by stratified squamous epithelium and filled with laminated keratinous substance. They are among the most prevalent cutaneous cysts generally, however, rather rare in the vulvar region. Although these cysts generally manifest in the third and fourth decades of life, vulvar involvement has been documented in various age groups, including adolescents. Vulvar epidermoid cysts may develop spontaneously or as a consequence of trauma, surgical intervention, or inflammatory processes that lead to the entrapment of epidermal components within the dermis.

Vulvar epidermoid cysts are typically characterized by gradual growth, well-defined borders, and a lack of pain. Nonetheless, upon secondary infection or inflammation, they may exhibit pain and fast expansion, so resembling a Bartholin abscess or perianal sepsis. Imaging methods including ultrasonography and magnetic resonance imaging (MRI) assist in lesion characterization; however, keratin-filled cysts may demonstrate diffusion limitation and diverse interior signals, occasionally resulting in diagnostic uncertainty. The conclusive diagnosis relies on histological analysis, which reveals an epithelial-lined cyst containing laminated keratin and a distinct granular layer.

In Indian literature, vulvar epidermoid cysts have been infrequently documented, frequently characterised as diagnostic challenges due to their clinical similarity to more prevalent vulvar conditions. Complete surgical excision, including the removal of the cyst wall, is the preferred treatment to prevent recurrence and achieve optimal cosmetic results. We report a case of an infected vulvar epidermoid cyst in a 21-yearold unmarried woman that clinically and radiologically resembled Bartholin or perianal disease, highlighting the necessity of comprehensive differential diagnosis and histological verification in vulvar cystic lesions.

CASE PRESENTATION

A 21-year-old unmarried woman presented to the Department of Obstetrics and Gynaecology with complaints of swelling over the left labia majora for one month. The swelling was initially small but gradually increased in size and was associated with pain for the preceding few days. There was no history of fever, purulent discharge, bleeding, urinary complaints, or bowel disturbances. The patient denied any history of local trauma, prior vulvar surgery, episiotomy, or similar swelling in the past.

Her menstrual history was unremarkable, with regular cycles and no dysmenorrhea. She had no significant medical comorbidities and was not on any long-term medications. There was no relevant family history.

Clinical Examination

On general examination, the patient was afebrile and hemodynamically stable. Local genital examination revealed a solitary, well-defined swelling over the left labia majora measuring approximately 5 × 6 cm. The mass was tense, cystic, and mobile, with smooth margins. The overlying skin appeared normal, without erythema, warmth, induration, or visible punctum. There was no spontaneous discharge or fluctuation suggestive of an acute abscess. The swelling extended posteriorly towards the perineal region but did not involve the vaginal introitus. There was no evidence of inguinal lymphadenopathy. Digital rectal examination revealed intact rectal mucosa without evidence of extension into the anal canal. Urethral involvement was not suspected clinically.

Based on clinical findings, provisional diagnoses included Bartholin duct cyst or abscess, chronic perianal abscess with labial extension, epidermoid cyst, and other benign vulvar cystic lesions.

Imaging Evaluation

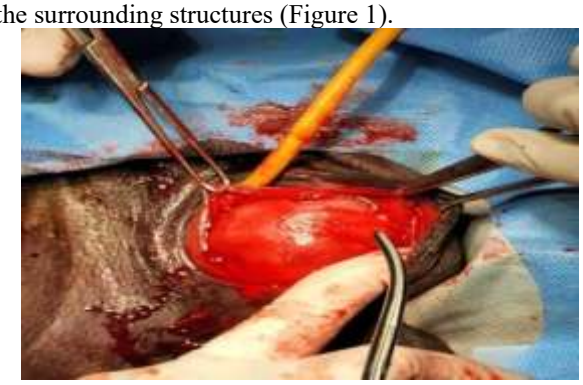
Perineal ultrasonography revealed features suggestive of a likely chronic perianal abscess measuring approximately 8.5 × 5.2 × 4.5 cm, with extension towards the labia majora. The lesion appeared heterogeneous, raising suspicion for an inflammatory or infective pathology.

To further characterize the lesion, contrast-enhanced magnetic resonance imaging (MRI) of the pelvis was performed. MRI demonstrated a well-defined, heterogeneous cystic lesion located in the left posterolateral aspect of the lower third of the vagina/vulva. The lesion exhibited diffusion restriction, suggestive of proteinaceous or keratinous contents rather than simple fluid. There was no definitive communication with the anal canal or rectum. These findings raised the differential of a complicated Bartholin cyst or other complex cystic lesion.

Surgical Management

The patient was planned for surgical excision of the cyst under spinal anesthesia. After appropriate aseptic preparation and draping, she was placed in the lithotomy position. A linear incision approximately 3 cm in length was made at the mucocutaneous
junction of the left labia majora.

Intraoperatively, a well-defined cystic mass was identified beneath the labial tissues, and careful dissection was initiated to separate it from the surrounding structures (Figure 1).



During dissection, there was accidental rupture of the cyst, resulting in the release of thick, putty-like keratinous material (Figure 2), which was completely evacuated.

The cyst wall was meticulously dissected free from adjacent structures to ensure complete removal.

The lesion was noted to extend posteriorly towards the perineal region, but without involvement of the rectal mucosa or urethra. Clear urine was observed throughout the procedure, and rectal integrity was preserved. The excised cyst wall was sent for histopathological examination.

The cavity was closed in layers using 2-0 chromic catgut sutures, and a gauze wick was placed in situ. Hemostasis was secured, and the postoperative course was uneventful.

Histopathological and Microbiological Findings

Histopathological examination of the excised specimen revealed a cyst lined by stratified squamous epithelium containing laminated keratinous material within the lumen. Features of secondary inflammation were noted, consistent with an infected epidermoid cyst.

Culture and sensitivity analysis of the evacuated cyst contents showed no bacterial growth.

The final diagnosis was confirmed as **infected epidermoid cyst of the left labia majora**.

Discussion

Vulvar cystic lesions constitute a common yet diagnostically challenging entity in gynecologic practice. Although Bartholin duct cysts and abscesses remain the most frequent causes of unilateral labial swelling in women of reproductive age, alternative diagnoses must always be considered, particularly when clinical findings are atypical.[1–4]

In the present case, the patient was a young unmarried woman presenting with a progressively enlarging painful labial swelling without discharge, erythema, or obvious signs of acute infection. The absence of fluctuation, warmth, and a typical inferoposterior location adjacent to the introitus raised suspicion for alternative etiologies beyond classical Bartholin pathology.

Bartholin duct cysts arise due to obstruction of the glandular duct, most commonly secondary to inflammation, trauma, or idiopathic causes.[1,2] They are typically located at the 4 and 8 o'clock positions of the introitus and may become acutely tender when infected. Symptomatic Bartholin lesions account for approximately 2% of gynecologic outpatient visits annually.[3,4] However, their clinical presentation may overlap with other vulvar cysts, particularly when inflammation is present.

Epidermoid cysts, also termed epidermal inclusion cysts, are benign lesions lined by stratified squamous epithelium and filled with laminated keratin.[5,11] They commonly occur on the scalp, face, neck, and trunk, but vulvar involvement is relatively rare.

When present in the vulva, they are frequently misdiagnosed as Bartholin cysts, particularly if located laterally within the labia majora.

In contrast to Bartholin cysts, epidermoid cysts may occur without preceding trauma or surgical intervention. While some cases have been associated with episiotomy, female genital mutilation, or other procedures, spontaneous occurrence has also been documented.[9] In Indian literature, vulvar epidermoid cysts have been described as diagnostic dilemmas due to their rarity and atypical clinical features.[6]

Imaging can further complicate the diagnostic process. In this case, ultrasonography suggested a chronic perianal abscess with labial extension. However, MRI demonstrated a well-defined heterogeneous cystic lesion with diffusion restriction. Keratinous material within epidermoid cysts often produces restricted diffusion and heterogeneous internal signals, mimicking abscesses or complicated Bartholin cysts.[10] Thus, while imaging is valuable for defining anatomical extent and ruling out deeper extension, it cannot reliably distinguish between these entities without histopathological confirmation.

Histologically, epidermoid cysts are characterized by a cyst wall lined with stratified squamous epithelium containing a well-developed granular layer and filled with laminated keratin debris.[5,11] Secondary inflammatory infiltrates may be present when the cyst becomes infected, as seen in the present case. Rare malignant transformation has been reported in epidermoid cysts at various anatomical sites, further underscoring the importance of excision and histopathological examination.[8]

Complete surgical excision, including removal of the cyst wall, is the definitive treatment and essential to prevent recurrence.[8,12] Incomplete removal may result in persistent inflammation or reaccumulation of keratinous material. Careful dissection and tension-free closure are particularly important in vulvar lesions to achieve favourable cosmetic outcomes and preserve anatomical integrity.[12] This case reinforces three important clinical lessons:

1. Not all unilateral labial swellings represent Bartholin pathology.
2. Imaging findings, including diffusion restriction, may mimic an abscess.
3. Histopathological confirmation remains the gold standard for definitive diagnosis.

In young women, especially those without sexual activity or a history of trauma, a broad differential diagnosis should be maintained when evaluating vulvar cystic lesions.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying intraoperative images.

Ethical Approval

Ethical approval was not required for publication of a single case report as per institutional policy.

Conflict of Interest

The authors declare no conflict of interest.

Conclusion

Vulvar epidermoid cysts, though uncommon, should be considered in the differential diagnosis of unilateral labial swellings in reproductive-age women. Clinical examination and imaging may suggest Bartholin or perianal pathology; however, definitive diagnosis requires histopathological confirmation. Complete surgical excision of the cyst wall provides excellent outcomes and minimizes recurrence.

This case highlights the importance of maintaining diagnostic vigilance and reinforces that not every labial cyst is a Bartholin cyst.

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