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ORIGINAL ARTICLE

A rare case of squamous cell carcinoma in an infected epidermoid cyst

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History and Examination: A 70-year man presented to the General Surgery OPD with the complaint of painless swelling on the right thigh since 2 months. On examination a solitary, round, 10 x 10 cm swelling was noted on the right upper thigh which is non-tender, firm in consistency and with restricted mobility.

Management: Ultra sonogram reveled a well-defined heterogeneous lesion of 8.2 × 7.3 cm on the medial aspect of right upper thigh which was suggestive of either infective etiology or a soft tissue neoplasm. Cytological features were suggestive of infected epidermoid cyst. Lesion was excised with clear margins and intact cyst wall.

Histopathology: Sections showed stratified squamous epithelium with full thickness anaplasia, islands of anaplastic tissue dipping down into the cyst cavity forming sheets of large pleomorphic cells with hyperchromatic nuclei. Well-formed malignant pearls were seen suggestive of squamous cell carcinoma.

Conclusion: Squamous cell carcinoma arising from the epidermal cyst can mimic that of an infected epidermal cyst. In a case of epidermoid cyst, comprehensive pathological search for malignancy is recommended when there is a rapid growth, rare site of origin, overlying skin changes and recurrent infection which is non responsive to medical therapy.

Keyword: Epidermoid cyst, epidermoid inclusion cyst, squamous cell carcinoma, malignant transformation

Introduction

An epidermoid cyst is a keratin-filled subepidermal nodule that is benign and encapsulated. Epidermoid cysts can be seen anywhere, including the scrotum, genitalia, fingers, and in some cases the buccal mucosa, despite being most frequently found on the face, neck, and trunk. The infundibulum of the hair follicle or a traumatic inclusion serves as the lining for cutaneous cysts. Epidermoid cysts may develop gradually and persist for years. Although these cysts are known as benign lesions, malignancy can very rarely develop. Epidermoid cysts undergo a malignant transition into squamous cell carcinoma (SCC) and basal cell carcinoma (BCC) in about 1% of cases respectively [1].

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Case Report

A 70-year man came with complaints of a large swelling on the right upper thigh for 2 months. The swelling was initially small and gradually increased in size with no pain or ulceration.

Occasional curdy discharge was noted from the swelling. There was no history of trauma or fever. Local examination revealed a single 10 × 10 cm, round, firm to hard in consistency, non- tender swelling with restricted mobility in the medial aspect of right upper thigh. A mild local rise in temperature was present over the swelling. Skin over the swelling was pinch able. Induration was noted surrounding the swelling. There was no clinically significant lymphadenopathy. The patient's systemic examination revealed no abnormality, and his routine investigations were within normal limits.

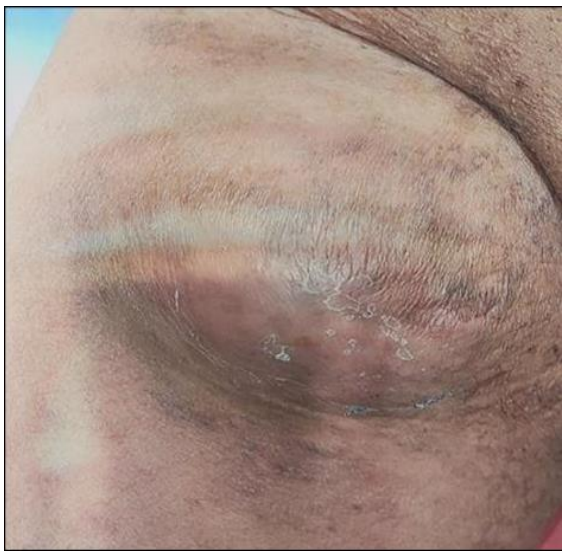


Fig 1: Pre-operative picture

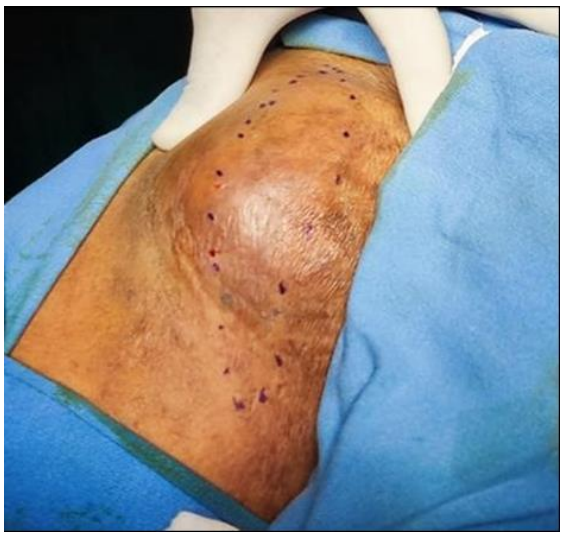


Fig 2: Elliptical incision marking

Ultrasonography showed well defined heterogeneous lesion of 8.2 × 7.3cm size in the medial aspect of right upper thigh with possibility of soft tissue neoplasm or infective etiology. However, this swelling was noted lying immediately over the femoral vessels without abutting or encasing them. Medially, the wall of the swelling was close to great saphenous vein.

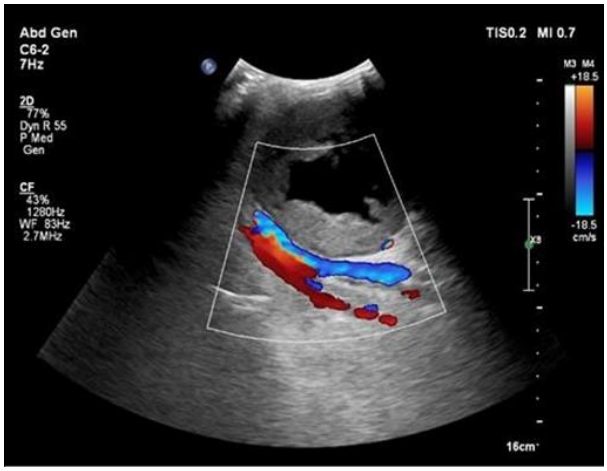


Fig 3: Ultrasound image showing relation to femoral vessels

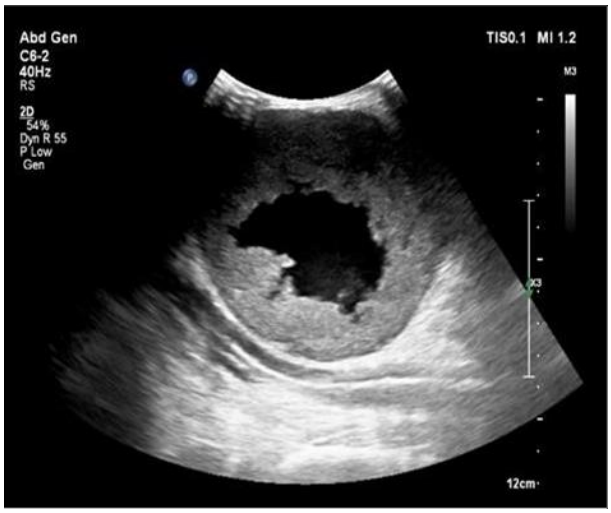


Fig 4: Ultrasound image of swelling

FNAC of the swelling showed pultaceous material with sheets of acute inflammatory cells, necrotic debris and anucleated squamous and occasional giant cells suggestive of infected epidermoid cyst.

The swelling being in close proximity to the vascular structures, vascular surgeon consultation was taken. Excision of the swelling was planned under spinal anesthesia. An elliptical incision was given, and the lesion was dissected carefully with an intact cyst wall. The intraoperative period was uneventful, without any injury to the surrounding vascular structures. Excised cyst was sent for histopathological examination.

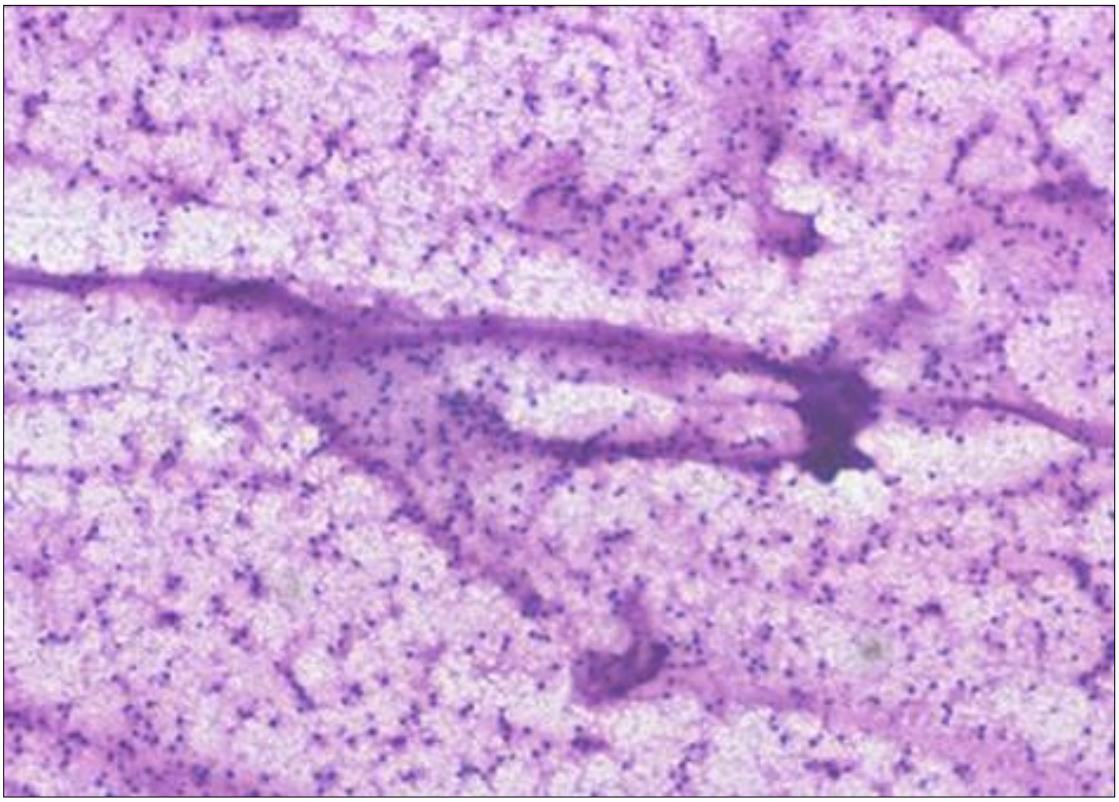
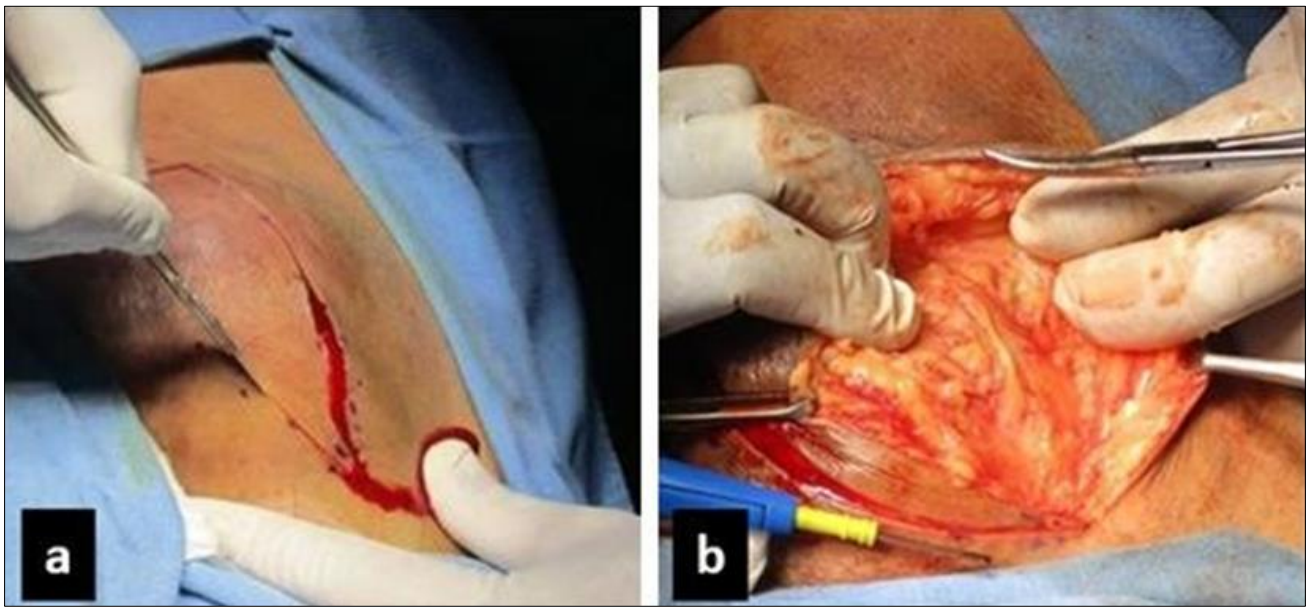


Fig 4: Cytology showing anuceated squamous cells



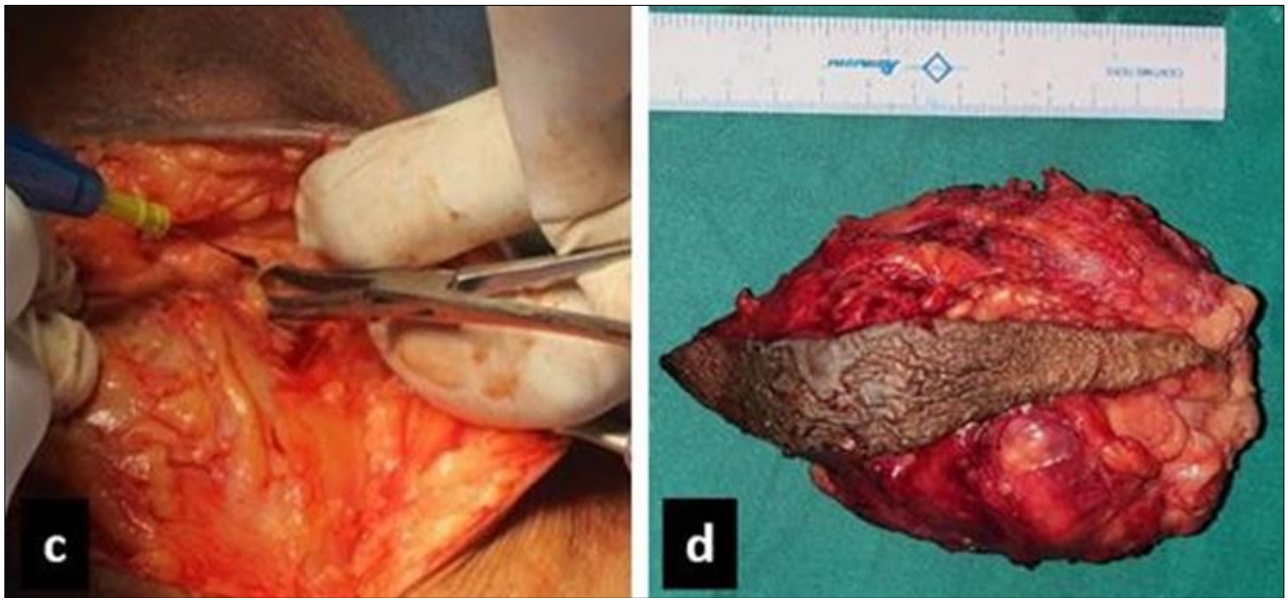


Fig 4 (a, b, c, d): Intraoperative images

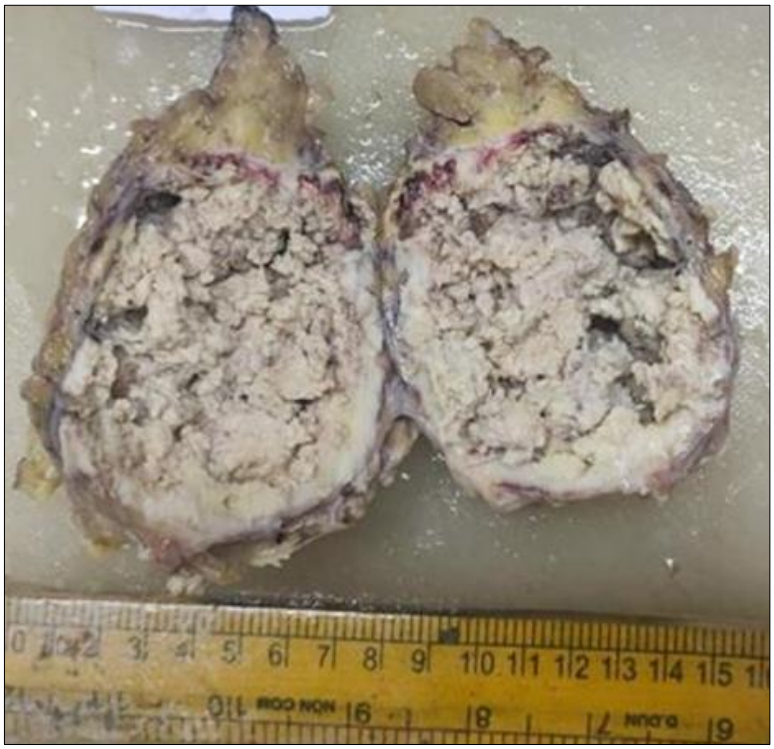


Fig 5: Gross specimen picture

On gross examination of the specimen (10 × 6 × 4 cm), a soft tissue mass covered with skin noted with nodular grey, white external surface, studded with fat. Cut section showed pultaceous material.

Histopathological examination showed skin lined by cornified stratified squamous epithelium. A large cystic mass consisting of solid and cystic areas noted in sub epithelium. The tissue showed stratified squamous epithelium with full thickness

anaplasia, islands of anaplastic tissue dipping down into the cyst cavity forming sheets of large pleomorphic cells with hyperchromatic nuclei and well-formed malignant pearls. Histological features were suggestive of squamous cell carcinoma in an epidermal inclusion cyst. The surgical margins were free of neoplastic involvement.

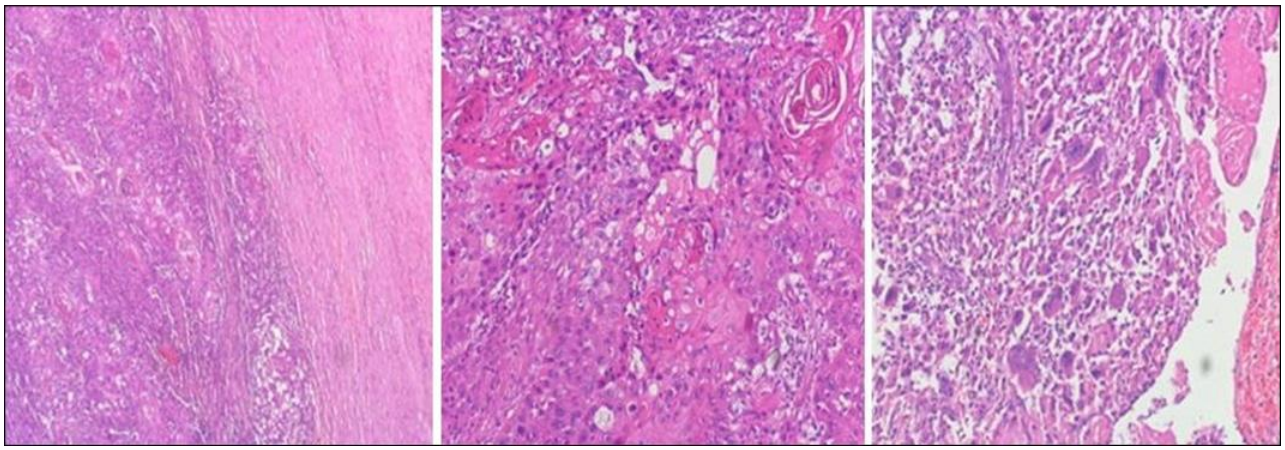


Fig 6: Histology showing keratin pearls (H&E X20)

Discussion

Epidermal cysts are elevated, spherical, firm, intradermal or subcutaneous tumours that are slow-growing and most frequently found on the face, scalp, neck, and trunk. These cysts are believed to be connected to follicular infundibulum and develop spontaneously in parts of the body that grow hair. The unusual occurrence of these cysts in atypical non-follicular areas like the palms or soles is documented in a few case reports and is believed to be a result of traumatic implantation of epidermis into the dermis or subcutis. When an epidermal cyst ruptures, its contents are released into the dermis, triggering a significant foreign-body response with plenty of multinucleated large cells. As a result, the cyst wall disintegrates, and a keratin granuloma develops. In contrary, it may also lead to pseudo-carcinomatous growth in cyst wall remnants, which may resemble squamous cell carcinoma [2]. Despite the fact that cutaneous epidermal inclusion cysts are a common condition, it is unusual for squamous cell carcinoma to develop from the cyst wall. According to literature, the risk of squamous cell carcinoma arising from an epidermal inclusion cyst range from 0.011 to 0.045% [3, 4]. Squamous cell carcinoma arising in an epidermoid cyst is rarely suspected in routine clinical practice [4].

The clinical course and ideal way of management are not well defined because of the disease rarity. In our assessment of the literature, we identified several warning signs that would indicate the possibility of underlying malignancy in an epidermal inclusion cyst. These cysts had pain, were expanding quickly, or had overlying skin abnormalities including ulceration or chronic discharge [5]. Though there aren't many papers that specify precise and trustworthy clinical patterns that point to malignancy, these symptoms frequently point to cyst infection. When suspected infected cysts don't improve after receiving treatment with antibiotics, the index of suspicion of malignant transformation should be increased. Furthermore, although obvious symptoms like rapid enlargement may be sensitive indications of a malignant transformation, the absence of such symptoms does not rule out the diagnosis.

The likelihood of an epidermal inclusion cyst developing into malignancy is low, however wide excision with appropriate margin of 4 mm - 6 mm should be done in suspicious malignant epidermal inclusion cyst [5, 7]. Given the low likelihood of

squamous cell carcinoma in an epidermal inclusion cyst, many of these cancers are incidentally discovered during histological examination. Epidermal inclusion cysts are currently not subjected to a standardized pathological evaluation protocol.

A simple bisection of a cyst that is deemed to be benign may overlook malignant degeneration in the walls of the cyst. Hence, uncertainty persists regarding the most economical technique to section these cysts. In cases where neoplastic transformation is suspected [Fibrosed cyst or cyst attached to adjacent tissues], the surgeon may need to guide the specimen sectioning.

This report describes the case of a 70-year-old man with a 2 month history of an asymptomatic right thigh mass. The preoperative diagnosis was an infected epidermal cyst based upon clinical appearance and radiological findings. Colour Doppler was used for assessing the tumour relation with the neighbouring vascular structures. The pre-operative FNAC was suggestive of infected epidermoid cyst, confirming the clinical suspicion. The cyst was excised considering it to be an infected epidermoid cyst. Routine histopathological examination revealed it to be an epidermal inclusion cyst harboring well-differentiated squamous cell carcinoma. A PET CT was suggested to look for metastatic or residual lesions and assess the need for further exploration. The patient was referred to oncology institute for adjuvant radiotherapy. However, patient noticed a swelling at the surgical site 6 months post radiotherapy. Following evaluation, it was confirmed to be recurrence and surgical excision was planned. Surgery was deferred due to inoperable circumstances, and radiotherapy course was resumed. Eventually, patient succumbed to death.

Conclusion

Epidermoid transformation into squamous cell carcinoma is a rare condition. Although a few instances with a similar presentation have been documented, the location of swelling in this case is highly unusual. The current report helps spread awareness of this condition. We recommend a low threshold for a comprehensive pathological search for malignancy in cysts when there is a rapid growth or pain, rare site of origin, overlying skin change or recurrent infection in an epidermoid cyst which does not respond to medical therapy.

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