

# Pilomatrixoma: A Diagnostic Dilemma on FNAC

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## Case Report

**Abstract:** Pilomatrixoma is a benign skin adnexal tumour commonly seen in the head and neck region and upper extremities of children and young adults. It is under-recognized on cytology, resulting in the over diagnosis of malignancy, and in our case, suspicious of malignancy. We bring forth a case report of a slow growing nodular swelling in a 27-year-old adult male, which was, on fine needle aspiration cytology (FNAC), found to be a suspicious malignant lesion but subsequently, on histopathological examination, found to be pilomatrixoma. Nodular lesions of pilomatrixoma, which are predominantly composed of basaloid cells and pleomorphic cells and devoid of other diagnostic features, lead to a false diagnosis of malignancy. To avoid misdiagnosis, pilomatrixoma should be considered in differential diagnosis when such type of cells are aspirated in slow growing subcutaneous nodules. We discuss here cytomorphological characteristics of pilomatrixoma and its diagnostic dilemma on FNAC.

**Keywords:** Pilomatrixoma, fine needle aspiration cytology.

## Introduction

Pilomatrixoma, also known as calcifying epithelioma of malhebre, is a skin appendage tumour of hair matrix origin which usually occurs on face, head & neck region and upper extremities. It presents as a solitary, slow growing dermal or subcutaneous nodule and is rarely clinically diagnosed (1,2). Occurrence of this case in the thigh is unusual and has been described in few reports in available literature(3). Although histologic diagnosis of pilomatrixoma is straight forward, but diagnosis on aspiration cytology is by no means a straightforward one. There have been quite a few reports of misdiagnosis of pilomatrixoma on aspiration smears as other benign as well as malignant lesions resulting in overdiagnosis of malignancy (4). An accurate diagnosis of this benign lesion on cytology is necessary, considering that excision is curative. We describe the clinical, cytological and histopathological features of a case of pilomatrixoma in the thigh of an adult male patient in his third decade of life.

## Case Report

The patient was 27 year old male who presented with a slow growing hard to firm sub-cutaneous nodule, of two months duration, on the posterior aspect of left thigh at the lower end (fig.1). There was no associated inguinal lymphadenopathy. The swelling was 3×2 cm in

dimensions. FNAC was performed using 23 gauge needle attached to a 20 ml disposable syringe and smears were made and then stained with May-Grunwald-Giemsa stain (MGG stain) and examined under a microscope. On microscopic examination, the smears were moderately cellular and showing basaloid cells, atypical cells having round to oval nuclei with mild pleomorphism, reticulogranular chromatin and scanty to moderate amount of cytoplasm and with many cells showing 1-2 prominent nucleoli (fig 2a, fig 2b). Accordingly, the diagnosis of neoplastic lesion, possibly malignant, was made and excisional biopsy was advised. General physical examination and all other relevant investigations including haematological parameters, chest radiograph and abdominal ultrasound findings of the patient were normal. The thigh nodule was excised. The excised mass was encapsulated and round to oval and the cut surface of mass was grey white and chalky (fig.3). Histopathological examination of haematoxylin and eosin (H&E) stained sections showed typical histology of pilomatrixoma comprising mainly of nests of basaloid cells, many islands of ghost cells along with many foreign body giant cells and areas of calcification(fig 4a, fig4b).

## Discussion

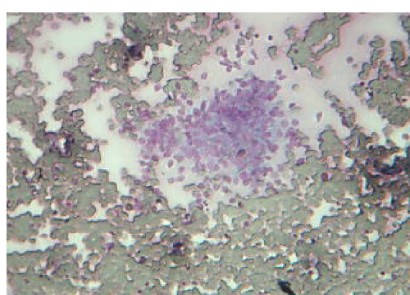
Pilomatrixoma is a benign, subcutaneous appendageal tumour with differentiation towards matrix and inner sheath of normal hair follicle and cortex. It occurs in hair bearing areas with a predilection for the head and neck region and upper extremities (5). Clinically it presents as a solitary slow growing dermal or subcutaneous nodule and majority of these lesions arise in the first two decades of life, but can also occur in elderly individuals. Familial occurrence is rarely reported, particularly associated with myasthenia gravis and gardeners syndrome (6). The presence of shadow cells with characteristic central pale nuclear zone has been repeatedly reported in the literature as the most important cytological feature for diagnosis of pilomatrixoma. However despite their abundance in the histological sections, their detection was reported to be difficult in the cytological smears and they may not be present at all. This is probably due to difficulty in

detaching these cells during aspiration (7). Ghost cells, basaloid cells and calcium deposits, when present, are found to be most characteristic of pilomatrixoma and generally aid in correctly diagnosing this lesion cytologically. However when these features are not present concurrently diagnosis of pilomatrixoma is almost unlikely. (8). In our case, patient's age, clinical history of two months duration, indolent course of development of nodule and lack of significant pleomorphism cytologically, resisted us to definitely conclude the

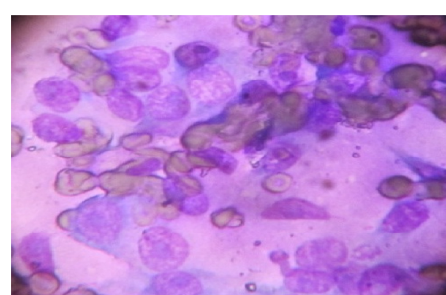
possibility of malignancy and surgical biopsy was advised. It is to be further added that all the diagnostic features may not necessarily be present in every case, especially, when the aspirate is from periphery of lesion. In such cases, the spectrum of characteristic cellular components and predominance of one component over the other leading to the diagnostic trap should always be considered and help the pathologist to avoid incorrect diagnosis on cytology.



**Figure 1:** Pilomatrixoma. Erythematous firm nodule on the posterior aspect of right thigh.



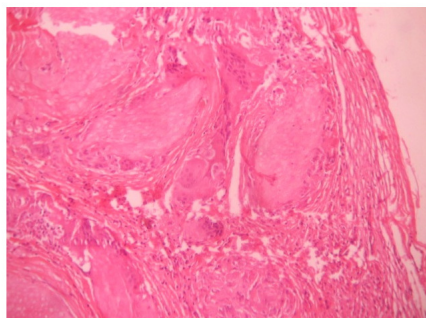
**Figure 2a:** Cytology smear showing basaloid cells scattered singly and in clusters (100x, MGG stain)



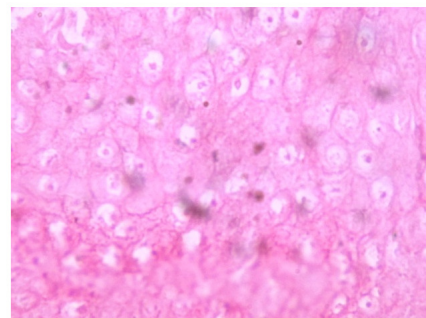
**Figure 2b:** Cytology smear showing pleomorphic cells with round to ovoid nuclei, 1-2 prominent nucleoli (400x, MGG stain)



**Figure 3:** Gross specimen of pilomatrixoma showing capsule and thickened area on cut section.



**Figure 4a:** Histological section showing many sheets of ghost cells with dense cytoplasmic outline and unstained central nuclear shadow (100x H&E stain)



**Figure 4b:** Histological section showing islands of ghost cells along with stroma containing many multinucleated giant cells (400x, H&E stain)

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