Case Reports: Two women, aged 28 years and 42 years, presented with firm, mobile breast lumps, that were subjected to FNAC. Cytologically both cases showed moderate cellularity with flat clusters of a biphasic cell population. Though myoepithelial cells were predominant, there were numerous benign epithelial cells, including bare nuclei and occasional fibrous stromal elements. Both cases were diagnosed as fibroadenoma and underwent lumpectomy.

Cytologic findings (on review): Moderately cellular smears showed clusters of polygonal to round ductal epithelial cells with uniform nuclei, abundant cytoplasm and inconspicuous nucleoli as well as abundant myoepithelial cells as bare oval nuclei in the background interspersed with fragments of myxoid stroma (Fig 1). Occasional intranuclear cytoplasmic inclusions were noted on review of the slides (Fig 2).

Pathologic findings: Lumpectomy specimen revealed a well-circumscribed, firm, globular mass with grey-white, solid appearance on cut section (Fig 3). On microscopy, both cases showed an encapsulated and highly cellular lesion consisting of tubules. The tubules were lined by an attenuated lining of bland ductal epithelial cells, surrounded by a prominent layer of clear cells with low N:C ratio and hyperchromatic nuclei. No atypical mitosis or necrosis was seen (Fig 4). Immunohistochemistry revealed epithelial cells positive for Epithelial Membrane Antigen (EMA) and calponin positive myoepithelial cells (Fig 5 & 6 respectively).

Discussion: Adenomyoepitheliomas are rare in the breast and usually present as a single circumscribed mobile mammary nodule in young women. The fine needle aspiration findings in adenomyoepitheliomas have been described in only a few reports (2 - 4). Cytologically they can be indistinguishable from fibroadenomas, though some authors have studied the subtle distinguishing characters (5). However in most instances, characteristic intranuclear inclusions may be appreciated only on careful review (6, 7). The differential diagnosis on fine-needle aspiration includes phylloides tumors, myoepithelioma, myofibroblastoma, fibroadenoma and tubular carcinoma.

Biopsy shows a biphasic pattern of tubules lined by cuboidal or columnar shaped epithelial cells surrounded by clear myoepithelial cells. Accurate identification of myoepithelial cells on biopsy is crucial to avoid misinterpretation of this lesion as malignancy, especially tubular or micropapillary carcinoma. Malignant adenomyoepitheliomas are usually characterized by cellular pleomorphism, necrosis, high mitotic activity and invasion of the surrounding tissue. IHC illustrates the biphasic nature of adenomyoepitheliomas with staining for low molecular weight cytokeratin and epithelial membrane antigen in the epithelial component and staining for smooth muscle actin, S-100 protein, calponin and p63 and in the myoepithelial cell component (8).

In conclusion, benign adenomyoepithelioma of breast is a rare lesion that mimics fibroadenomas clinically, radiologically and cytologically. Correct diagnosis is usually possible only on biopsy and confirmed by demonstrating the biphasic nature of the tumor by IHC. This is vital as incomplete excision may lead to late recurrences (9) and rarely metastasis to lungs especially if the lesion is large in size (10). Thus long-term follow-up and wide local excision have been recommended for adenomyoepitheliomas, as opposed to fibroadenomas.

References:

**Fig 1. FNAC, low power**

**Fig 2. FNAC, high power**

**Fig 3. Gross appearance**

**Fig 4. H&E stained section**

**Fig 5. EMA pos epithelial cells**

**Fig 6. Calponin pos ME cells**