



Fine needle aspiration cytology of Jaw bone lesions emphasis on utility and pitfalls

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Abstract

FNAC (Fine Needle Aspiration Cytology) of head and neck region was pioneered by Martin in the early 1930s. FNAC is a frequently used for diagnosis of abnormal masses. FNAC is minimally invasive first line investigation which can render an accurate preoperative diagnosis of intraosseous jaw lesions, especially the malignant ones in the enigmatic circle of clinic-radiological differentials.

Although FNAC of intraosseous lesions is difficult to perform compared with soft tissue lesions, it still can be used for preoperative diagnosis in selected cases. Biopsy being gold standard of preoperative diagnosis would be cumbersome and traumatic when surgery is mainstay of treatment. Still, diagnostic evaluation of neoplastic and non-neoplastic lesions has increased dramatically when it comes to jaw lesions and surgery. For the diagnosis of lymph nodes, salivary glands, and thyroid and parathyroid gland diseases, FNAC have proven to be boon. It's apt to mention that FNAC is a simple, rapid, and minimally invasive procedure in contrast to biopsy, its use in the diagnosis of odontogenic tumors including ameloblastomas. But role of FNAC in respect to typing of odontogenic tumors has not been explored much.

Various early reported data in literature also has supported the sensitivity, specificity and diagnostic accuracy of FNAC in jaw lesions where 94.7% to 100% diagnosis was found to be similar. This safe, reliable, cost-effective and easy procedure can eliminate the need for open biopsy procedure, with its potential untoward effects. FNAC shall be well adapted in hands of oral surgeons and clinicians as the routine diagnostic tool to evaluate differential diagnosis of benign and malignant lesions of jaws. Where FNAC of jaw lesions is rapid and relatively non-invasive procedure for the initial evaluation of following lesions:-

- Malignant Tumor- SCC, Lymphoma, small cell carcinoma, Adenocarcinoma
- Benign Tumor- pleomorphic adenoma, ameloblastoma, warthin's tumor
- Inflammatory lesion- tuberculosis, Giant cell reparative granuloma
- Cystic- KCOT, Epidermal inclusion cyst

The disadvantage on contrary in relation to certain pathosis is due to lack of architectural context of the FNAC material, non-representative sampling, nonspecific morphological features on cytosmears. These limitations in definitive diagnosis are challenges that are encountered in discrepant cases like dentigerous cyst from an odontogenic keratocyst, it is not feasible to evaluate the characteristics of the lining cells on FNAC. Still, FNAC is proven as useful first line investigation for diagnosis & typing malignant lytic jaw bone lesions. Like, the case showing eosinophils with Charcot-Leyden crystals, convoluted histocytes with longitudinal grooves in a child with solitary radiolucent intraosseous lesion is to be considered for diagnosis of eosinophilic granuloma. Also another example like radiologically presenting osteomyelitis as an ill-defined osteolytic lesion with periosteal reaction, sclerosis mimics Ewing's tumor or a dento-alveolar abscess with bone destruction. In such scenario ideal diagnosis is important in proceeding with the desired therapeutic regimen. We can also not deny that FNAC has valuable role in the preoperative diagnosis and management of extremely vascular lesions like hemangiomas. Use of techniques like immunocytochemistry on cytosmears is source to unravel the further subtyping of tumors. For example, Non Hodgkin Lymphoma (NHL) that needs further categorization into B/T cell type affecting jaw region. It will be incomplete without mentioning the important role of subtyping metastasis to jaw lesion through cytosmears which have allowed the practitioners to improve disease free survival rate in malignancy and also allowed to predict the tumor behaviour.

Thus, this is an easier way to establish management of jaw lesions in relation to prognostic and predictive refractory rates with associated aggressive lesions. Aim is to revisit and elucidate boons with challenges understanding the efficacy of FNAC as diagnostic tool in jaw bone lesions.. Although such procedures has not yet been incorporated in routine investigations in the jaw region which shall be considered strictly.

Biography

Dr. Meenakshi Chowdhary has completed her MDS in (oral and maxillofacial pathology and microbiology) in 2014 from CCS University, India. She is the oral pathologist with practice in Cosmetic dentistry, Researcher. She is Ex scientist A at centre of molecular diagnostics from RGCI RC New Delhi India (special interest in molecular oncology). She has both national and international publications that have been cited in PubMed. Her thesis was first study to be reported on pre and post evaluation of predictive maker in recurrent cases of oral cancer. Thesis topic: clinicopathological correlation and immunoscoreing of EGFR in recurrent cases of OSCC which is published in pubmed journal(J Oral Pathol Med (2015) 44:818–822).

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