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ABSTRACT OF PHD THESIS
Fine-needle Aspiration Cytology in Maxillo-facial Tumors

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Background

The utility of fine needle aspiration cytology for pre-operative assessment of tumor and tumor-like lesions increased in recent years. The technical advantages (simplicity, safety, good ratio cost/efficiency) places it before surgical biopsy, in the preoperative management of patients with head and neck tumors. The necessity of surgical biopsy procedure may even be eliminated in some situations.

Fine needle aspiration technique was initially described by Kun in 1847, and then adopted by Martin and Elis in the early 30s, to assess tumor pathology in head and neck area. Since then, the interest in this simple and effective procedure increased progressively and the European authors have made substantial improvements which are still valid.

Most of the neck tumors, facial and oral cavity lesions can be prick and aspirated under visual control, but, however, surprisingly little data have been reported in the literature on the use of fine needle aspiration for intraoral lesions assessment. The diversity of tumors in the head and neck area with heterogeneity of cellular populations encountered, and the rarity of tumor entities make the cytological diagnosis to be difficult in some cases.

The thesis aims to assess the efficacy of fine needle aspiration cytology in the preoperative management of tumors from maxillo-facial area, by comparing its results to those of histopathology and by measuring its diagnostic accuracy.

In order to evaluate the performance of fine-needle aspiration procedure as a diagnostic test for maxillo-facial area masses, indicators of sensitivity (Se), specificity (Sp), positive predictive value (PPV) and negative predictive value were calculated for 95% confidence intervals.

The thesis is structured in four studies and case presentations of rare maxillo-facial tumors which presented difficulties of surprises in preoperative cytological evaluation.

The **first study** entitled *Fine Needle Aspiration Cytology of Non-Thyroid Neck Masses: Clinical Aspects and Histological Correlations* tried to assess the efficacy of fine-needle aspiration procedure as a diagnostic test for non-thyroidal lateral cervical masses. The examined lesions involved lymph nodes in the majority of cases, submandibulary gland pathology and other cervical tumors. Both cytological and histologic examination indicated that the majority of lesions (62.07%) were malignant,

but cytology was less effective in differentiating between benign and non-tumor (inflammatory) lesions. It was also found a predominance of squamous cell carcinoma lymph node metastases; this was shown by both cytology and histology.

The **second study** named *Efficacy of Fine Needle Aspiration Cytology in Diagnosis of Salivary Gland Tumors,* was aimed to assess the importance of fine-needle aspiration procedure performed preoperative in order to evaluate patients with salivary gland tumors and to identify the specific lesions in which cytological examination can be use as a diagnostic tool. Salivary gland tumors involved mainly the parotid gland and most of them were benign. Of the benign salivary gland lesions, cytological features were concordant with histological result in 72.73% of cases. For the remaining 27.27% of cases cytological smears could only describe the cellular populations which were suggestive of benign entities. Cytological examination had a sensitivity of 100% and a specificity of 97.73 % for diagnosis of malignant salivary gland lesions.

The aim of the **third study**, named *Fine Needle Aspiration Cytology in Preoperative Assessment of Tumors Located in Maxillo-Facial Area,* was to determine the value of aspirative cytology in the diagnosis of maxillo-facial lesions. This study was carried out to evaluate the diagnostic accuracy and limitations of fine needle aspiration cytology in palpable lesions of head and neck along with histopathological correlation.

The **fourth study,** *Difficulties in Preoperative Diagnosis of Rare Malignant Tumors of the Parotid*, presents several special rare cases of tumours located on parotid gland which could not be properly diagnosed by aspirative cytology due to many histological overlapping of different parotid entities and the existence of malignant counterparts of the benign tumors.

Conclusion

Fine-needle aspiration cytology is an inexpensive, quick and efficient diagnostic procedure that is well tolerated by patients and reliable for the preoperative assessment of tumour lesions of the maxillo-facial area. In our series of patients we found that fine-needle aspiration cytology can efficiently differentiate malignancies from benign lesions, with similar results to the histopathological examination. A good concordance was found between the information provided by the cytological examination and histopathology for the investigated lateral cervical masses, especially for squamous cell carcinoma metastases and benign salivary gland tumours, as well as other benign lesions.

Fine-needle aspiration was found also useful for clinical management of patients with salivary glands tumors. Preoperative cytological assessment could differentiate in most cases benign versus malignant tumors, thus surgeon being able to prepare the appropriate treatment.

The technique can be performed in outpatient department without requiring special equipment, having virtually no major contraindications.

In some rare situations, due to the large variety of salivary glands entities and morphological overlaps, cytological features could not provide sufficient evidence for correct tumor characterization, the final diagnosis being established after histological studies.

Keywords: fine needle aspiration cytology, maxillo-facial tumors, cervical masses, salivary gland tumors