

## INTRAOPERATIVE EVALUATION OF HEAD AND NECK SPECIMENS BY IMPRINT CYTOLOGY

Stela Bulimbašić<sup>1</sup>, Melita Perić-Balja<sup>2</sup>, Gabrijela Krajačić-Jagarčec<sup>3</sup>, Hrvoje Čupić<sup>4</sup>, Majda Vučić<sup>4</sup>, Marina Kos<sup>4</sup>, Davor Tomas<sup>4</sup>, Drinko Baličević<sup>4</sup>, Božo Krušlin<sup>4</sup>

<sup>1</sup>Department of Pathology, University Hospital *Dubrava*, Zagreb, Croatia, <sup>2</sup>Department of Pathology, University Hospital for *Tumors*, Zagreb, Croatia, <sup>3</sup>Department of Pathology, General Hospital *Zabok*, Zabok, Croatia, <sup>4</sup>*Ljudevit Jurak* University Department of Pathology, *Sestre milosrdnice* University Hospital, Zagreb, Croatia

### Introduction

Intraoperative examination plays an important role in the diagnostic algorithm of head and neck tumors/lesions, results of which have direct implications on further therapeutic decisions. While use of frozen section for intraoperative evaluation is well-accepted and performed in most institutions, there were a few reports regarding use of imprint cytology in the diagnosis of these lesions.

### Materials and methods

We retrospectively reviewed intraoperative imprint cytology of 160 head and neck specimens that had been obtained from 131 patients between April 1st 2005 and February 28th 2006 at the *Ljudevit Jurak* University Department of Pathology.

Immediately after obtaining a biopsy specimen, each of them was imprinted on several glass slides, fixed and stained with rapid Hemacolor method according to manufacturer instructions. Imprints and frozen sections were prepared simultaneously and imprints were analyzed before examination of the frozen sections. Intraoperative interpretations were performed by a senior pathology resident and pathologist with informal cytology training.

Cytological results were reported as: a) malignant; b) suspicious for malignancy; c) negative for malignancy; d) unsatisfactory specimens. The accuracy of the imprint method was assessed by comparing the imprint diagnosis with corresponding frozen and paraffin section diagnosis.

### Results

Material examined by imprint cytology included 97 thyroid, 26 parathyroid, 9 lymph node, 4 salivary and soft tissue specimens, as well as 15 oral/pharyngeal/laryngeal tumors and five other lesions. The cytological evaluation revealed 96, 36 and 20 specimens as benign, malignant and suspicious for malignancy, respectively. The last eight specimens were reported as unsatisfactory, due to scant cellularity, distortion artifacts or inadequate staining procedure.

Overall, the concordance between touch imprint and histological diagnosis was 80% (129 of 160). Accurate cytological diagnosis of malignancy was made in 81% (21/26) of thyroid tumors; 83% (10/12) of oral/pharyngeal/laryngeal squamous cell carcinoma; 50% (1/2) soft tissue tumors and in 100% (4/4) of nodal metastatic carcinoma cases. In the cytological «suspicious for malignancy» group, histological analysis confirmed additional five cases of thyroid papillary carcinoma, two cases of oral squamous cell carcinoma, one low-grade sarcoma and one low-grade NHL. In one case of intraoperatively both cytological and frozen section negative thyroid specimen, additional paraffin sections revealed an occult papillary carcinoma. Imprint cytology properly identified 96% (25/26) of parathyroid tissue in cases of normal and parathyroid hyperplasia/adenoma. There were no false positive results.

### Conclusion

Imprint cytology is a relatively simple, fast and cheap method for obtaining diagnostic material of high quali-

ty. In the intraoperative evaluation of head and neck lesions, imprints and frozen sections complement each other. In certain cases of thyroid, parathyroid and lymph node lesions, well preserved morphological details of

imprints can be superior to the analysis of frozen sections. Routine use and correlation of these methods provides valuable educational data and ensure higher accuracy of intraoperative tissue diagnosis.