Depth of invasion (Non-core)

Reason/Evidentiary Support

Depth of invasion is less well established as a staging and prognostic parameter for oropharyngeal tumours than for oral cavity carcinomas. The maximum depth of invasion should be recorded in millimetres from the normal surface epithelium to the deepest point of tumour invasion, but *only* for those tumours clearly arising from the surface epithelium. This does *not* apply for those arising submucosally from the tonsillar crypt epithelium which lack landmarks from which to measure "depth". For surface tumours, if the tumour is ulcerated, then the reconstructed surface should be used. Note that depth of invasion, defined in this way, is not the same as tumour thickness (measured from surface of tumour to deepest invasion) which will be larger than depth of invasion in exophytic tumours and smaller in ulcerated tumours.[1] The aim should be to provide a best estimate of tumour depth. A more detailed comment on the nature of the tissues invaded (mucosa, muscle, etc.) should occur in the 'comments' sections. Depth of invasion is significantly related to nodal metastasis for oropharyngeal carcinomas, although the optimal cut-off point for prognostic purposes is uncertain with 3 mm, 4 mm or 5 mm being suggested by different authors.[1-9] Depth of invasion is not clearly prognostic or clinically useful for nasopharyngeal carcinomas, but is a surrogate of tumour size in salvage nasopharyngectomy specimens, so reporting is encouraged (but not required) in these specimens. In addition, in centres that perform nasopharyngectomy procedures, additional information that should be provided would include the presence of sphenoid sinus or cavernous sinus invasion.[10,11]

References

1 Huang SH, Hwang D, Lockwood G, Goldstein DP and O'Sullivan B (2009). Predictive value of tumor thickness for cervical lymph-node involvement in squamous cell carcinoma of the oral cavity: a meta-analysis of reported studies. *Cancer* 115(7):1489-1497.

2 Woolgar JA (2006). Histopathological prognosticators in oral and oropharyngeal squamous cell carcinoma. *Oral Oncol* 42(3):229-239.

3 Gonzalez-Moles MA, Esteban F, Rodriguez-Archilla A, Ruiz-Avila I and Gonzalez-Moles S (2002). Importance of tumour thickness measurement in prognosis of tongue cancer. *Oral Oncol* 38(4):394-397.

4 O-charoenrat P, Pillai G, Patel S, Fisher C, Archer D, Eccles S and Rhys-Evans P (2003). Tumour thickness predicts cervical nodal metastases and survival in early oral tongue cancer. *Oral Oncol* 39(4):386-390.

5 Suzuki M, Suzuki T, Asai M, Ichimura K, Nibu K, Sugasawa M and Kaga K (2007). Clinicopathological factors related to cervical lymph node metastasis in a patient with carcinoma of the oral floor. *Acta Otolaryngol Suppl*(559):129-135.

6 Quaedvlieg PJ, Creytens DH, Epping GG, Peutz-Kootstra CJ, Nieman FH, Thissen MR and Krekels GA (2006). Histopathological characteristics of metastasizing squamous cell carcinoma of the skin and lips. *Histopathology* 49(3):256-264.

7 Pentenero M, Gandolfo S and Carrozzo M (2005). Importance of tumor thickness and depth of invasion in nodal involvement and prognosis of oral squamous cell carcinoma: a review of the literature. *Head Neck* 27(12):1080-1091.

8 Sparano A, Weinstein G, Chalian A, Yodul M and Weber R (2004). Multivariate predictors of occult neck metastasis in early oral tongue cancer. *Otolaryngol Head Neck Surg* 131(4):472-476.

9 Alkureishi LW, Ross GL, Shoaib T, Soutar DS, Robertson AG, Sorensen JA, Thomsen J, Krogdahl A, Alvarez J, Barbier L, Santamaria J, Poli T, Sesenna E, Kovacs AF, Grunwald F, Barzan L, Sulfaro S and Alberti F (2008). Does tumor depth affect nodal upstaging in squamous cell carcinoma of the head and neck? *Laryngoscope* 118(4):629-634.

10 Chan JY, To VS, Chow VL, Wong ST and Wei WI (2014). Multivariate analysis of prognostic factors for salvage nasopharyngectomy via the maxillary swing approach. *Head Neck* 36(7):1013-1017.

11 Chan JY and Wei WI (2016). Impact of resection margin status on outcome after salvage nasopharyngectomy for recurrent nasopharyngeal carcinoma. *Head Neck* 38 Suppl 1:E594-599.