The status of the cervical lymph nodes is a crucial factor in determining the staging, management, and prognosis of oral cavity squamous cell carcinomas (OSCCs). The inaccuracy of clinical examination and imaging to reliably detect occult cervical lymph node metastasis along with the evolving evidence from randomized clinical trials has resulted in elective neck dissections (ENDs) becoming the standard of care for the vast majority of patients with early stage OSCC (cT1/2, N0).\[1\] However, close to 70% of the patients with early stage OSCC will not have cervical lymph nodal metastases and risk being subjected to overtreatment by an END.

Sentinel lymph node biopsy (SLNB) has over the years emerged as a powerful tool in the management of many cancers and the same experience has been applied to early stage OSCCs. A number of single-institution retrospective studies, a few prospective multi-institutional studies, and a few meta-analyses have clearly demonstrated the efficacy of SLNB in the detection of occult cervical lymph node metastases in OSCCs. The most recent meta-analysis of 66 studies comprising >3500 patients showed a pooled SLNB identification rate of 96.3%, a pooled sensitivity of 0.87, a pooled negative predictive value of 0.94, and an area under curve of 0.98.\[2\] A subgroup analysis from the meta-analysis had shown the application of immunohistochemistry to increase the sensitivity of sentinel lymph node (SLN) detection by 11%. Further analysis showed no significant difference between the “serial sectioning” subgroup and “no serial sectioning” subgroup.

However, despite the growing body of evidence favoring SLNB in OSCC, the concept has not found worldwide acceptance. Technical issues pertaining to the unpredictable watershed lymphatic pathways, multiple cervical nodal stations with close proximity to the primary tumors (as in floor of mouth cancers), and a lack of reliable real-time SLN guide had raised significant initial concerns among clinicians. It has been further found that additional non-SLN metastases are detected in up to a third of the neck dissections following a positive SLNB, the percentages being 13% for isolated tumor cells, 20% for micrometastasis, and up to 40% for macrometastasis in SLNs.\[3\] A few authors have suggested that any type of neoplastic spread to the SLN has an adverse impact on survival; a completion neck dissection is hence currently recommended in all the SLN-positive patients.\[4\] Although an intraoperative frozen section can identify a proportion of patients with a positive SLNB, there remains a group of patients with occult disease which will only become apparent on the postoperative histopathology. Apart from the physical and psychological concerns about the necessity for a completion surgery in patients with positive SLNs, questions were also raised from the health economics perspective despite a few studies suggesting that SLNB is in fact more cost-effective when compared to END.\[5\]

The proposed advantages of SLNB are its ability to identify skip metastases and metastases in unpredictable lymphatic basins (which would not have been otherwise dissected in a standard END), a focused histologic evaluation of the identified nodes at risk, a decreased morbidity and an improved health-related quality of life. A few studies have further suggested SLNB to be an oncological safe alternative to END given the lack of a significant survival difference between both the groups.\[6\] However, it must be noted that there exists no adequately powered randomized clinical trial comparing SLNB and END in the setting of N zero neck in OSCC.

Over the years, there have been many technical innovations aimed at improving the intraoperative SLN localization, and these advances can possibly help clear some of the hurdles to the widespread implementation of SLNB in OSCCs. The advances include the development of novel radiotracers (\(^{99}\)mTc-tilmanocept), near-infrared light tracers (indocyanine green), improved imaging techniques (freehand single photon emission computed tomography), molecular assays, and the use of sentinel node navigation surgery. In conclusion, given the potential for overtreatment by an END and the decreased survival of watchful waiting policy, clinicians must be aware of the growing body of evidence that suggests that adopting the philosophy of SLNB is a reasonable alternative to END in the management of N zero necks of early staged OSCCs provided it is performed by a dedicated multidisciplinary team. Although the routine use of SLNB over END may not be entirely justified in clinical practice as yet, the
future scope of SLNB in advancing the concept of surgical minimalism in OSCC is indeed promising and exciting.

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References

1. D’Cruz AK, Vaish R, Kapre N, Dandekar M, Gupta S, Hawaldar R, et al. Elective versus therapeutic neck dissection in node-negative oral cancer. N Engl J Med 2015;373:521-9.

2. Liu M, Wang SJ, Yang X, Peng H. Diagnostic efficacy of sentinel lymph node biopsy in early oral squamous cell carcinoma: A meta-analysis of 66 studies. PLoS One 2017;12:e0170322.

3. Den Toom JJ, Bloemena E, van Weert S, Karagozoglu KH, Hoekstra OS, de Bree R. Additional non-sentinel lymph node metastases in early oral cancer patients with positive sentinel lymph nodes. Eur Arch Otorhinolaryngol 2017;274:961-8.

4. Broglie MA, Haerle SK, Huber GF, Haile SR, Stoettli SJ. Occult metastases detected by sentinel node biopsy in patients with early oral and oropharyngeal squamous cell carcinomas: Impact on survival. Head Neck 2013;35:660-6.

5. Govers TM, Takes RP, Baris Karakullukçu M, Hannink G, Merkx MA, Grutters JP, et al. Management of the N0 neck in early stage oral squamous cell cancer: A modeling study of the cost-effectiveness. Oral Oncol 2013;49:771-7.

6. Chung MK, Lee GJ, Choi N, Cho JK, Jeong HS, Baek CH. Comparative study of sentinel lymph node biopsy in clinically N0 oral tongue squamous cell carcinoma: Long-term oncologic outcomes between validation and application phases. Oral Oncol 2015;51:914-20.

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