



Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.e-jds.com



Perspective article

Perspectives on oral tissue biopsy surgery for patients with oral premalignant and malignant lesions

Wei Liu ^{a,b,c}, Hongquan Li ^{d**}, Linjun Shi ^{c,e*}

^a Department of Oral and Maxillofacial-Head and Neck Oncology, Fengcheng Hospital of Fengxian District, Shanghai Ninth People's Hospital Fengcheng Branch Hospital, Shanghai, China

^b Department of Oral and Maxillofacial-Head and Neck Oncology, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

^c College of Stomatology, Shanghai Jiao Tong University, National Center for Stomatology, National Clinical Research Center for Oral Diseases, Shanghai Key Laboratory of Stomatology, Shanghai Research Institute of Stomatology, Shanghai, China

^d Department of Oral Surgery, Shanghai Xuhui District Dental Center, Shanghai, China

^e Department of Oral Mucosal Diseases, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Received 16 February 2024; Final revision received 17 February 2024

KEYWORDS

Oral biopsy;
Oral squamous cell carcinoma;
Local anesthesia;
Surgical excision;
Surgical wound closure;
Tissue stabilization methods

For oral soft tissue biopsy surgery, it is important that adequate biopsy technique, suitable selection of the location for biopsy, and appropriate tissue handling can effectively improve the biopsy procedures and obtain adequate tissues for histopathological examination and subsequent

issue of an accurate pathological report. We read with great interest a review article entitled "Oral soft tissue biopsy surgery: Current principles and key tissue stabilization techniques" newly published in this journal by Jeng et al.¹ They well elucidated the general principles of oral

* Corresponding author. Department of Oral Mucosal Diseases, Shanghai Ninth People's Hospital, 500 Quxi Road, Shanghai 200011, China.

** Corresponding author. Department of Oral Surgery, Shanghai Xuhui District Dental Center, 500 Fenglin Road, Shanghai 200031, China.
E-mail addresses: lihq8092@163.com (H. Li), shi-linjun@hotmail.com (L. Shi).

<https://doi.org/10.1016/j.jds.2024.02.017>

1991-7902/© 2024 Association for Dental Sciences of the Republic of China. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

biopsy and key tissue stabilization techniques. Through this article, clinicians, especially general dentists, will obtain more understanding of diagnosis accuracy and tissue stabilization methods of oral soft tissue biopsy. As oral medicine specialists and oral-maxillofacial surgeons, we focus far more on tissue biopsy of oral premalignant lesions (OPL) and oral cancer mainly oral squamous cell carcinoma (OSCC). Thus, this perspective article attempted to elucidate the important aspects of biopsies for oral premalignant and malignant lesions.

To begin with, it was necessary to distinguish the differences between microcarcinoma within an OPL and an OSCC de novo which was a frank carcinoma, owing to their different clinical behaviors. The former was often a microcarcinoma that was diagnosed as an OPL combined with a local microcarcinoma (Fig. 1A) under a clinical regular follow-up or at the first visit. The latter was a frank carcinoma (Fig. 1B) without a previously-known OPL

diagnosis. These patients were diagnosed as an OSCC for whom there was a lack of information in the medical records regarding either a previous OPL diagnosis or follow-up. They were considered as having an OSCC at the first diagnosis, without a known OPL or a follow-up strategy before the occurrence of the OSCC. The former was diagnosed at a significantly earlier stage and the patient had significantly higher survival rates compared with the latter.² For the diagnosis of the latter, there was usual no tissue sampling error or bias when the incisional biopsy at the tumor invasion front was performed by oral medicine specialists or by oral surgeons. However, there might be tissue sampling error or bias with an underdiagnosis when the incisional biopsy for the OPL, especially for the non-homogeneous large and multiple lesions.³ It was generally accepted that a histological diagnosis of an incisional biopsy, performed for diagnosis of an OPL, was a snapshot of the whole lesion, and sometimes might underestimate the

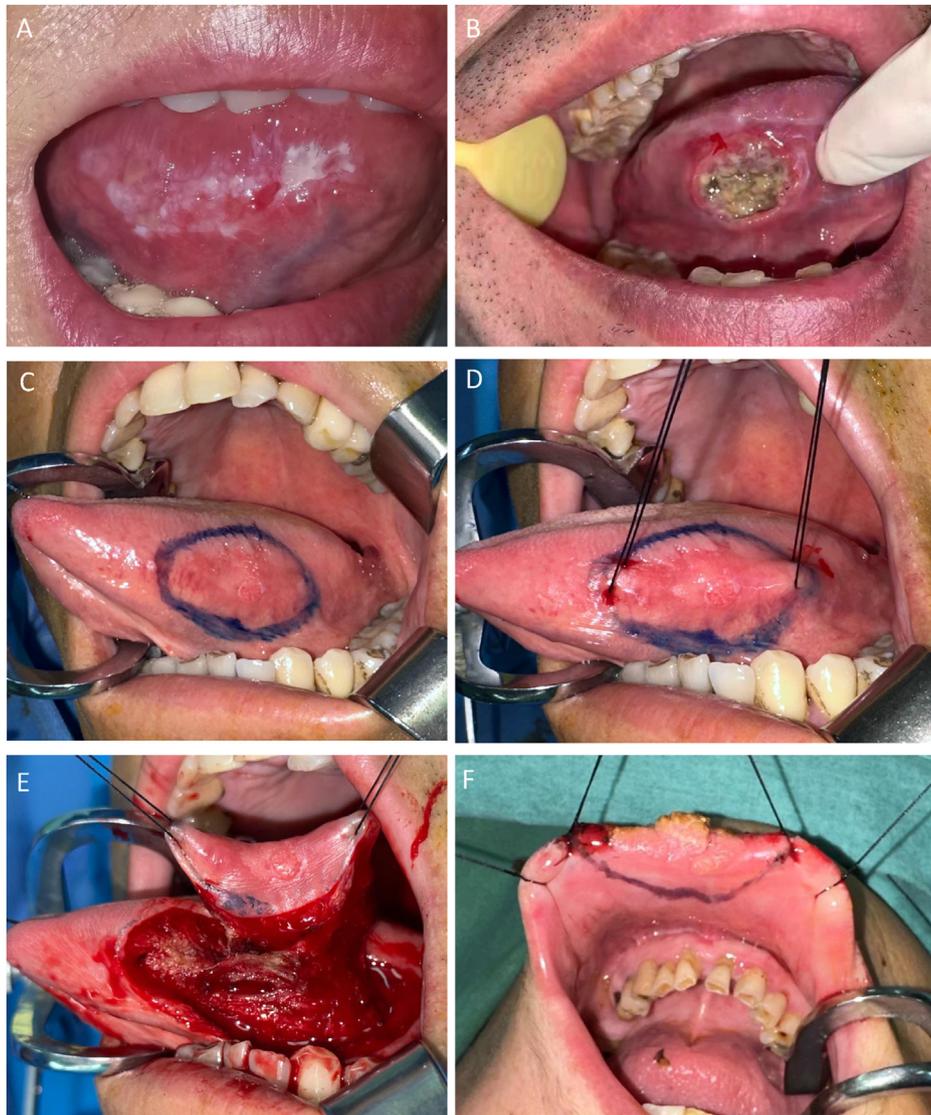


Figure 1 Clinical impression of (A) a microcarcinoma within an oral premalignant lesion and (B) an oral squamous cell carcinoma de novo which was a frank carcinoma. Tissue stabilization using the two retraction sutures simultaneously when performing the surgical excision of (C, D, E) a tongue lesion and (F) a lip lesion.

true nature of the whole lesion.^{3–5} To diagnose local microcarcinomas when they were present within the OPLs, excisional biopsy was necessarily used to obtain adequate tissues for the histopathological examination and for the subsequent accurate pathological report. Nonetheless, excisional biopsy should be avoided if a frank carcinoma was the possible concern, to preserve the border of malignant lesion for a definite extirpation by the oral and maxillofacial surgeon.¹

Secondly, we discussed whether an incisional biopsy under local anesthesia would stimulate malignant progression of an OSCC. Jeng et al. mentioned that the agent of local anesthesia should not be injected directly into the lesional tissues, mainly because this injection may result in separation of connective tissue bundles particularly for the immune mediated mucocutaneous disorders.¹ For oral premalignant and malignant lesions, the agent could be injected into the normal tissue adjacent to the lesions. Notably, currently available preclinical studies suggest that local anesthetics such as lidocaine can suppress proliferation of several cancer cell types and increase natural killer (NK) cell activity.⁶ Lidocaine can possess an antitumor effect via the inhibition of epidermal growth factor receptor pathway in human tongue cancer cells.⁷ These findings suggest that an incisional biopsy under local anesthesia may not stimulate malignant progression of an OSCC. On the other side, it was worth noting that surgery-induced stress responses and surgical manipulation might enhance tumor angiogenesis and metastasis via the release of angiogenic factors and suppression of NK cells and cell-mediated immunity.^{6–10} According to analogy principle of estimation, the biopsy wound of possible malignancy can not be closed up with sutures after oral biopsy owing to the surgical stress. The hemostasis of the wound can be administered by using the hemostatic agents or soft compression with the gauze.

Thirdly, we proposed a tissue stabilization technique using the two retraction sutures simultaneously when performing an excisional biopsy or a surgical excision. Jeng et al. commendably raised three tissue stabilization methods including fingers and gauze stabilization, stabilization with chalazion forceps and adapted instruments, and stabilization with single retraction suture.¹ As shown in Fig. 1C, D and E, the tongue lesion was stabilized with two retraction sutures without knots. Both sutures were placed at the two sites of the normal tissue adjacent (>5 mm) to the lesion and pierced the mucosal surfaces of the tongue. These sutures were then pulled concomitantly to orientate and stabilize the tongue tissue, as it was highly related to the visibility and accessibility of the surgical field. Likewise, the lip lesion was stabilized with the two retraction sutures (Fig. 1F), while the sutures were pierced deeply into the labial tissues and the knots were tied to temporarily block the labial artery. A good tissue stabilization kept the targeted tissue in place and prevented it from shifting or moving during the biopsy procedure. Thus, tissue stabilization increased the accuracy of incision, facilitated suturing, and shortened the duration of the biopsy procedure.¹ More importantly, this technique could decrease or avoid stimulation to the lesion and fitted the principles

of an-neoplasia surgical operation and an-touch radical excision of the carcinoma.

Collectively, we commended the general principles of oral biopsy and key tissue stabilization techniques described by Jeng and his colleagues.¹ The current paper can consummate some important aspects for biopsies of the oral premalignant and malignant lesions, including different clinical behaviors of microcarcinoma within an OPL and a frank OSCC, local anesthesia and wound closure of incisional biopsy aspects, and tissue stabilization using the two retraction sutures simultaneously.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

Acknowledgments

This work was supported by Two Hundred Talent Project of Shanghai Jiao Tong University School of Medicine and Fengxian District Clinical Diagnosis & Treatment Center of Oral and Maxillofacial-Head and Neck Oncology (fxlczlx-a-201705).

References

- Jeng PY, Chang MC, Chiang CP, Lee CF, Chen CF, Jeng JH. Oral soft tissue biopsy surgery: current principles and key tissue stabilization techniques. *J Dent Sci* 2024;19:11–20.
- Jäwert F, Nyman J, Olsson E, Adok C, Helmersson M, Öhman J. Regular clinical follow-up of oral potentially malignant disorders results in improved survival for patients who develop oral cancer. *Oral Oncol* 2021;121:105469.
- Tilakaratne WM, Jayasooriya PR, Jayasuriya NS, De Silva RK. Oral epithelial dysplasia: causes, quantification, prognosis, and management challenges. *Periodontol* 2019;80:126–47. 2000.
- Lee JJ, Hung HC, Cheng SJ, et al. Factors associated with underdiagnosis from incisional biopsy of oral leukoplakic lesions. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2007;104:217–25.
- Pentenero M, Carrozzo M, Pagano M, et al. Oral mucosal dysplastic lesions and early squamous cell carcinomas: underdiagnosis from incisional biopsy. *Oral Dis* 2003;9:68–72.
- Kim R. Effects of surgery and anesthetic choice on immunosuppression and cancer recurrence. *J Transl Med* 2018;16:8.
- Sakaguchi M, Kuroda Y, Hirose M. The antiproliferative effect of lidocaine on human tongue cancer cells with inhibition of the activity of epidermal growth factor receptor. *Anesth Analg* 2006;102:1103–7.
- Sekaran S, Selvaraj V, Ganapathy D, Rajamani Sekar SK. Can surgery induce cancer recurrence or metastasis? Revisiting the relationship between anesthetic selection and outcomes in cancer surgery. *Int J Surg* 2023;109:2878–9.
- Selvaraj V, Sekaran S, Rajamani Sekar SK. Surgical intervention as a driver of new angiogenesis in tumors-time to consider minimally invasive surgeries? *Int J Surg* 2023;109:3222–3.
- Selvaraj V, Sekaran S, Rajamani Sekar SK. Surgical intervention paradoxically enhances micrometastasis - targeting perioperative variables. *Int J Surg* 2023;109:3226–7.