

Case report

Pseudodysplastic artefacts of the oral mucosa created by the electrotome

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Abstract – Aim: To report the case of an oral biopsy specimen showing pseudodysplastic (dysplasia-like) artefacts of the epithelium produced by an electrosurgical device.

Case report: A 31-year-old woman underwent the removal of a papillomatous-appearing lesion of the soft palate. The histopathological examination of the specimen showed abnormal changes of the epithelium in some areas. After discussion with the surgeon who revealed the use of an electrotome, the conclusion was that these changes were pseudodysplastic.

Conclusion: The use of electrosurgery to remove oral mucosa tissues may create epithelial pseudoneoplastic artefacts that could lead to inappropriate aggressive treatments.

Mots clés :
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Résumé – Pseudodysplasie artefactuelle de la muqueuse buccale due à l'utilisation du bistouri électrique.

But : Présenter un cas où le prélèvement biopsique de la muqueuse buccale montrait un aspect de dysplasie induit par l'utilisation du bistouri électrique.

Observation : Une femme de 31 ans a consulté pour l'exérèse d'une lésion papillomateuse du voile du palais. L'examen histopathologique de la pièce d'exérèse a montré des modifications de l'épithélium dans certaines zones. Avec les précisions apportées par le chirurgien, il paraissait évident que ces modifications étaient dues à l'utilisation du bistouri électrique.

Conclusion : L'utilisation du bistouri électrique pour l'exérèse de lésions de la muqueuse buccale peut induire un aspect de pseudodysplasie pouvant faire proposer un traitement agressif.

Oral mucosa biopsy may show numerous artefacts resulting from various causes such as surgical technique, inappropriate fixation, etc. [1–3]. Electrosurgical and laser devices, tools used by some surgeons to biopsy or remove oral mucosa lesions, may produce some thermal artefacts due to the energy released to the tissues during incision or excision techniques, including pseudodysplastic epithelial artefacts (dysplasia-like) [4–6].

We report the case of an oral mucosa specimen showing features of cytological atypia interpreted as pseudodysplastic after reviewing the case with the surgeon who stated the use of an electrosurgical device. These artefacts are particularly important because their misinterpretation could lead to an inappropriate excessive and aggressive treatment.

Case report

A 31-year-old woman presented with a pedunculated papillomatous lesion of the soft palate, which had been present since some months. At clinical examination the lesion clinically-benign appearing was then removed for histopathological analysis. The specimen measuring 5 × 5 × 2 mm showed a white irregular wrinkled surface. Microscopic examination showed a fragment of mucosa with a papillary architecture and an irregular epithelium covered by an orthokeratotic layer (Fig. 1). The corium devoid of inflammatory infiltrate contained an accessory salivary gland of serous type. It was noticed that in places the epithelium of the basal and parabasal layers featured abnormal changes namely columnar cells with

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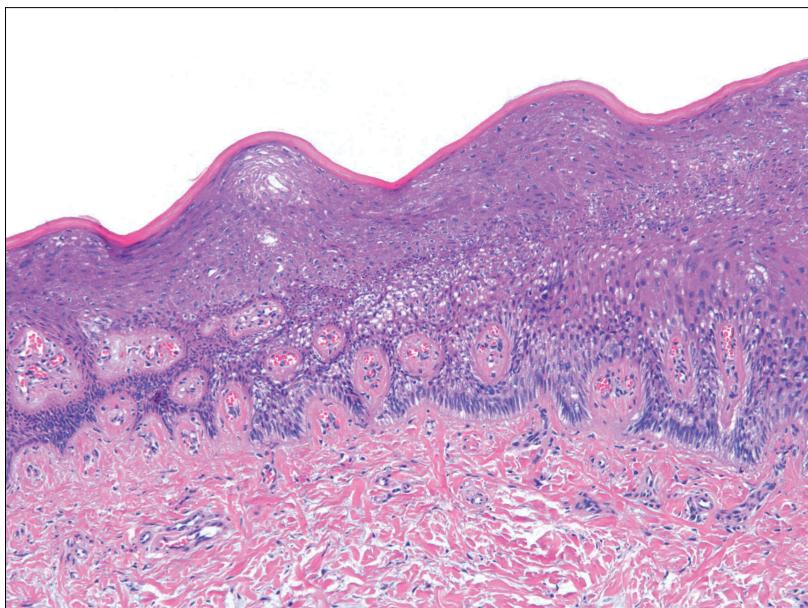


Fig. 1. Low-power view of the specimen showing an irregular surface, orthokeratinization and abnormal basal and parabasal cell layers (HE, $\times 10$).

Fig. 1. Biopsie au faible grossissement montrant un épithélium orthokératinisé, à surface irrégulière, avec des altérations des assises basale et parabasales (HE, $\times 10$).

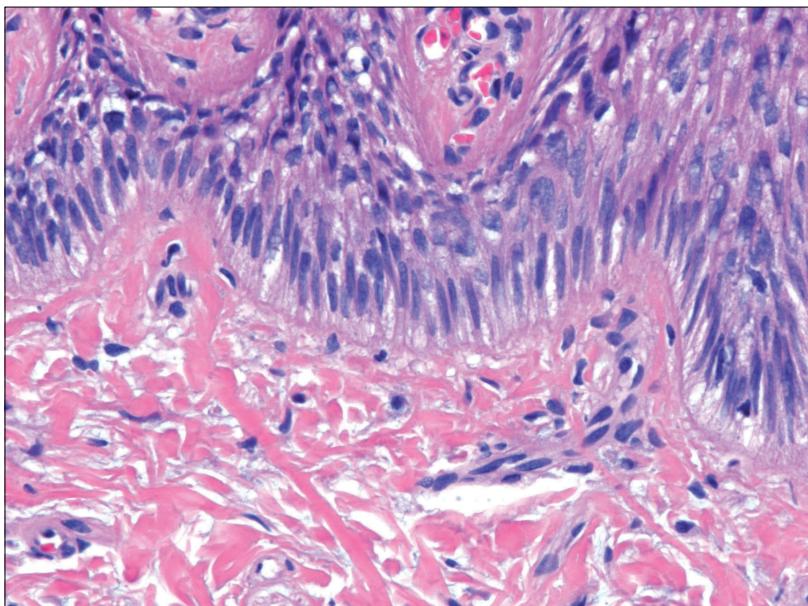


Fig. 2. Detail showing hyperchromatism, nuclear elongation, and reverse polarity of the basal cells (HE, $\times 40$).

Fig. 2. Vue de détail qui montre l'hyperchromatisme, l'allongement des noyaux et la polarité inversée des cellules basales (HE, $\times 40$).

elongated hyperchromatic nuclei (Fig. 2), evocating cytological atypia of dysplastic type. After discussion with the surgeon who revealed the use of an electrosurgical device (Surgitron, Ellman International, Inc.), it was concluded that these changes were of pseudodysplastic nature. Follow-up at 3 years showed no evidence of recurrence of the lesion.

Discussion

Electrotome and CO₂ laser devices are used for biopsy or excision of oral mucosa lesions because of ease of use and

effective coagulation [7, 8]. It is known that such devices induce histological artefacts represented by carbonization of the margins, vacuolar degeneration and nuclear elongation of the deep cell layers. These changes results from heat produced by the device, evenly and in all directions when an electrotome is used, and in a concentrated area near the incision when a CO₂ laser is used. Matsumoto et al. [6] reported that electrotome and CO₂ laser induced similar thermal changes of tongue tissue, such as carbonization, vacuolar degeneration and elongated nuclei at the excision margins of the specimens. Pulse wave made CO₂ laser produced less thermal artefacts than

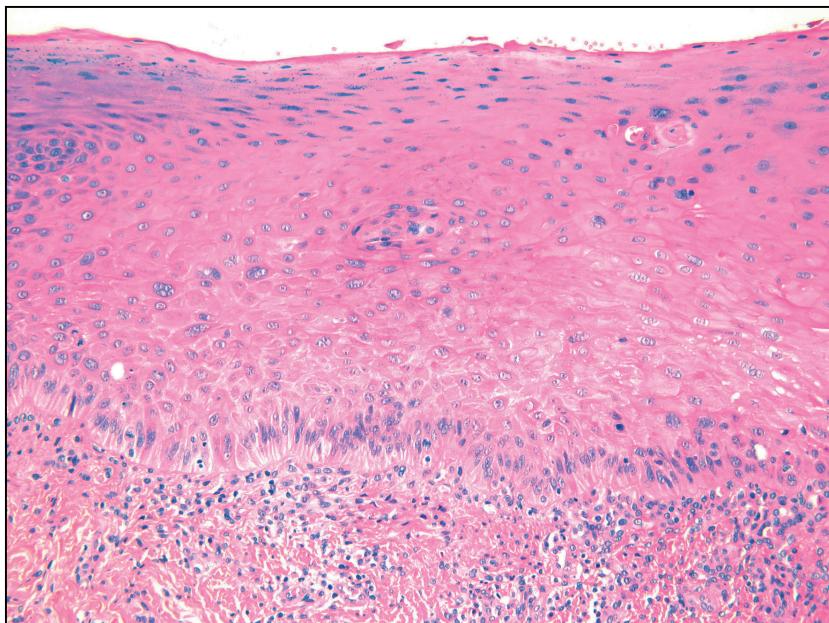


Fig. 3. Genuine dysplasia in a patient with multiple recurrent oral intraepithelial neoplasia (OIN) lesions. Basal and parabasal cells shows histological similarities with Figures 1 and 2 (HES, x 20).

Fig. 3. Vraie lésion dysplasique chez un patient ayant présenté de multiples récidives de son OIN. Les cellules basales et parabasales montrent un aspect analogue à celui des Figures 1 et 2 (HE, x 20).

electrotome. With both devices the distance seen from the border of the fragment and the artefacts was lesser than 500 µm. The authors suggested that CO₂ was better than electrotome for excision of specimen for pathological diagnosis.

In a recent study, Seoane et al. [9] examined wounds of rat tongue mucosa caused by a CO₂ laser evaluating size and histological features. They found artefacts situated in basal and suprabasal epithelial layers. The changes included cellular and nuclear pleomorphism, nuclear hyperchromatism and loss of intercellular attachment. The number of artefacts did not differ between lasers using low (3 W) and high (6, 9 or 12 W) wattage and the width of epithelial damages near the incision ranged from 100 to 750 µm. The authors concluded that CO₂ laser epithelial artefacts can simulate light dysplasia. In this context it should be kept in mind that epithelial dysplasia (intraepithelial neoplasia) is commonly observed adjacent to oral carcinoma and the presence of mild to moderate dysplasia at the surgical margins of a squamous cell carcinoma are associated with a risk of recurrence [10].

Genuine epithelial dysplasia results from a combination of architectural and cytological changes [11]. In the present case there were no typical dysplastic features such as drop-shaped rete pegs or increased mitotic activity or presence of bizarre mitoses. This prompted us to review the case with the surgeon who revealed the use of an electrotome and therefore allowing considering the cell abnormalities as thermal artefacts.

Going further in the discussion, another possible pathological misinterpretation of epithelial cells at basal and parabasal level showing palissaded columnar morphology with elongated nuclei and reverse polarity could be peripheral

ameloblastoma in situ. In fact it was recently reported a case of a small polypoid lesion of the maxillary gingiva in which the basal cells layer featured ameloblastic changes without any epithelial nests of ameloblastoma in the submucosa. In this case, a pathologist should pay attention to the presence of bulbous parts with bud-shaped enamel organ, in order to make such diagnosis [12].

In conclusion oral surgeons should be aware of the possible thermal pseudodysplastic epithelial artefacts associated with electrosurgery or laser devices. These artefacts could cause diagnostic errors with genuine epithelial dysplasia and engender an unnecessary aggressive treatment of the patient.

Competing interests: none

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