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## Original Article

# Contact Endoscopy of mucosal lesions of oral cavity – Preliminary experience



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## ABSTRACT

**Background:** Contact Endoscopy is a non invasive tool to visualise alterations in cell architecture in vivo. In this study we investigated the diagnostic accuracy of Contact Endoscopy in detecting malignancy in oral mucosal lesions.

**Methods:** 76 patients with oral mucosal lesions requiring biopsy were included. Contact Endoscopy was performed by Otolaryngologist before biopsy and findings recorded. The lesion was then biopsied and sent for histopathological examination by Pathologist who was blinded to Contact Endoscopy findings. Findings of Contact Endoscopy were compared with histopathological findings taking the latter as the gold standard. Two biopsies were reported as 'inconclusive' on histopathological examination and hence excluded from the final analysis. Data of the remaining 74 patients is presented here.

**Results:** Clinically lesions were diagnosed as ulcero-proliferative lesions in 34 patients, Leukoplakia in 19, Erythroplakia in 9, Lichen planus in 5 and Submucous fibrosis in 7 patients. Histopathological examination revealed presence of malignancy in 97.06% of ulcero-proliferative mucosal lesions, 10.53% of leukoplakia and 33.33% of erythroplakia while corresponding figures on Contact Endoscopy were 94.12%, 5.26% and 11.11% respectively. No malignancy was detected in lichen planus and submucous fibrosis by either technique. When compared with histopathological examination, CE showed sensitivity of 84.21%, specificity of 94.44% and accuracy of 89.19%. No adverse effects on the patients were seen due to the procedure or stain.

**Conclusion:** Contact Endoscopy may be useful in determining cellular structure in vivo without biopsy to detect oral malignancy early. Further studies are suggested.

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## Introduction

Oral carcinoma is a major health problem in India as it is the commonest cancer among males and the third commonest among females in India. In fact, India accounts for 86% of the total oral cancer figure across the globe according to National Institute of Health and Family Welfare (NIHFW). It has also been shown that successful treatment of this condition depends on the T stage of the tumour at presentation. It is therefore of paramount importance to diagnose this condition early.

Almost 90% of oral tumours are squamous cell carcinoma (SCC) and arise from the oral mucosal lining.<sup>1</sup> Apart from frank ulcero-proliferative growths in oral cavity, we also encounter many other mucosal lesions like leukoplakia, erythroplakia etc which may harbour malignancy. To detect the presence of malignancy in these lesions surgical biopsy for histopathological examination (HPE) is the gold standard. However, this procedure is invasive and has many other disadvantages like delay in getting the report, local scarring, bleeding and difficulty in interpretation in post radiation cases. This has led to the quest for a non invasive technique capable of showing histopathological picture *in vivo*. Consequently, many non invasive techniques have been tried like 5-aminolevulinic acid induced protoporphyrin IX fluorescence,<sup>2</sup> autofluorescence using helium cadmium laser,<sup>3</sup> Indirect fluorescence,<sup>4</sup> Spectrometric measurement,<sup>5</sup> Narrow Band Imaging,<sup>6</sup> Optical Coherence Tomography<sup>7,8</sup> etc. A detailed review of such techniques has been given by Hughes et al.<sup>9</sup>

Contact Endoscopy (CE) is one of these techniques which additionally has a unique capability of demonstrating actual cellular architecture *in vivo* and provide instantaneous diagnosis. This technique was described by Hamou in 1979 for visualization of cervical and uterine epithelial cells for screening and diagnosis of cervical and uterine pathology.<sup>10</sup> Andrea et al used CE as a diagnostic tool in the evaluation of various pathologies in the larynx in 1995.<sup>11,12</sup> Since then CE has been used for *in vivo* diagnosis of lesions of many sites in head and neck as well as other regions.<sup>13-20</sup>

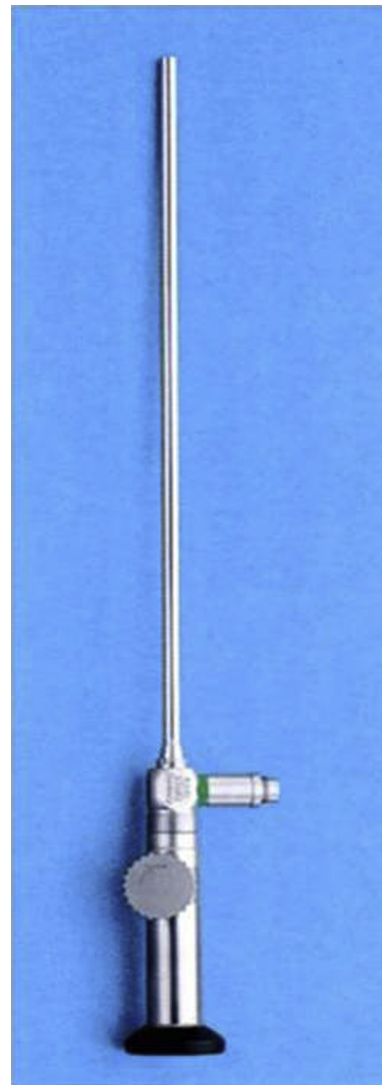
Even though limited research does show a benefit of using CE in diagnosis of dysplastic lesions in the oral cavity, there is a need for more studies. This is especially important in the Indian context where oral squamous carcinoma is widely prevalent and no previous study using CE has been reported.

## Material and methods

The study was carried out in a tertiary level hospital on consecutive patients presenting to the hospital with a mucosal lesion in the oral cavity requiring surgical biopsy as per the current medical practice and guidelines from Jan 2012 to July 2013. Any lesion not meriting surgical biopsy as per current medical practice was excluded. Informed consent for CE as well as surgical biopsy was taken. CE was employed to study the lesion first followed by surgical biopsy in the same sitting.

## The technique of CE

CE was performed by one of the Otolaryngologists. No anaesthesia was required. After sucking out the secretions and wiping off saliva, a zero degree contact endoscope (model: Andrea-Dias Contact Micro Laryngoscope with HOPKINS Straight Forward Telescope 0°, diameter 5.5 mm, length 23 cm manufactured by Karl Storz) (Fig. 1) was gently placed over the mucosa and moved slowly over the area of interest. The procedure was performed at 60× and 150× magnifications. Images were digitally captured by the camera and were stored both as photograph and video. Vascular patterns were studied without staining as the stain prevents penetration of light into submucosal plane where the blood vessels lie. Thereafter, the lesion was stained by placing cottonoids soaked in 1% Methylene blue against it for five minutes (or more if the staining was inadequate). The stained area was then studied by repeating the procedure mentioned above. Cellular architecture was now seen clearly – nuclei appearing as dark blue structures while cytoplasm was light blue. The images were



**Fig. 1 – Zero degree contact micro laryngoscope (Karl Storz).**

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