

Narrow Band Imaging and its Importance in Early Diagnosis of Oral and Laryngeal Carcinoma

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Head and neck tumours are a major cause of mortality and morbidity in Indian sub continent. India shares the burden of nearly 60% of all head and neck cancers of Southeast Asia. More than 250000 cases are diagnosed every year in India. Heavy use of Bidi, Tobacco and Betelnut (supari) has rendered a major portion of population high risk for head and neck tumors. Squamous cell carcinoma is reported in over 90% such cases.

Patients usually remain in denial due to fear and social stigma attached with carcinoma for a prolonged period of time until their life is hampered by the aggravated symptoms. They usually try self medications or treatment from quacks and present for medical examination only after the problem increases to an exponential size. Many a times they present when it is too late to treat. The patient initially presents with non specific symptoms which may mimic pharyngitis, gastro esophageal reflux disease or other non ominous oral problems.

Conventional investigations to detect head neck carcinoma have been direct laryngoscopy for visualization, fine needle aspiration cytology (FNAC) to detect malignant cells in cervical lymph nodes or biopsies from frank growths or suspected areas. Biopsy remains the gold standard diagnostic test. Endoscopy, biopsy and FNAC are all invasive tests which have their own limitations in detecting early neoplastic changes.

Previously most of laryngeal lesions needed direct laryngoscopy and biopsy but in last 15-20 years with the advent of better imaging and endoscopic techniques like white light fiber optic endoscopy, it has become possible to visualize, examine and even get histopathological samples for testing. This has helped in diagnos-

ing the oral and laryngeal lesions earlier than before. The head and Neck tumours are notorious for early spread due to rich vasculature and lymphatics leaving desire for even earlier detection. Many times a suspected lesion is overlooked as mucosal lesion or just as mechanical effects of using tobacco or betelnut.

Narrow band imaging (NBI) has recently emerged as a promising modality which uses a narrow band of light spectrum and enhances the image visualizing blood vessels below the epithelium. It was discovered by Dr. Kazuhiro Gono [1] in Japan. Though the sensitivity and specificity of this technique is 70-90%, it is a hope for visualizing suspicious areas long before the conventional investigations can pick them up. It uses a green (540nm), blue (415nm) filter with xenon light source. The blue light has shallow penetration. It gets absorbed by mucosal surface capillaries and appears as brown colour when reflected back. The green light penetrates deeper and reaches submucosal veins and appears blue cyan after reflection.

A proper examination of head neck examination using NBI helps in very early detection of suspicious region of carcinoma. This needs proper knowledge and visualization of tissue vasculature. The normal vessels have regular branching pattern. Increase in angiogenesis denotes preneoplastic conditions. It may vary from well circumferential pattern in well differentiated squamous cell carcinoma to increased tortuous capillaries in poorly differentiated squamous cell carcinoma.

Ni., *et al.* in 2011 described various lesions of larynx in 2011. They divided benign and malignant lesions according to intra-

papillary capillary loops (IPCL). These patterns are divided in five groups. These patterns take some learning curve to understand but once known, they help detect suspicious lesion very early [2].

In oral lesions, NBI helps in early detection of malignant changes in premalignant lesions like leukoplakia, erythroplakia and oral lichen planus. NBI cannot distinguish between verrucous leukoplakia and verrucous carcinoma. NBI is a useful entity for diagnosis of unknown primary cases when routine investigations have not given any clear finding. NBI has shown to be even comparable to MRI in detecting suspicious lesions by some authors [3].

Keeping in view all the benefits NBI has to offer, it is a good investment in centres which have high volume cases of head and neck cancers. Its role in detecting early lesions outweighs the higher cost of the setup.

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