

Color image reconstruction of oral cavity for abnormal tissue detection

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Abstract

Early identification of high-risk disease could greatly reduce both mortality and morbidity due to pathological changes of oral tissue. We have shown that there is significant color difference between normal and abnormal tissue in the oral cavity, owing to difference in the spectrum of reflected with a special light emitting device. We describe an algorithm of color reconstruction, which preserves this color difference, enabling optimal delineation of normal and abnormal areas. With our method, we evaluate the perceived tissue reflectance in the each pixel of image and color reproduction with different illuminated spectra. Our approach to enhancement of visually perceived color difference between normal and abnormal oral tissue involves optimization of illumination and observation conditions by allowing a significant optical contrast of illuminated spectrum to reach the observer's eyes. For the observer, this method would involve using a light emitting diode with a color filter by the physician to observe tissue reflectance.

Keyword : Medical optics instrumentation, Optical diagnosis for medicine