

# Clinical experience of transbronchial laser ablation for central airway stenosis using high-power diode laser

Top Author: **KAZUHISA TANAKA**

*Department of General Thoracic Surgery, Department of General Thoracic Surgery  
Graduate School of Medicine, Chiba University/Japan  
Japan*

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## 【Background】

High power diode (GaAlAs) laser system has been used for the endobronchial laser ablation for central airway stenosis. Compared with the conventional Nd-YAG laser, diode laser system showed equal clinical effect for ablation and the instrument is compact and easier handling. We use high power diode laser system (ULD-60,Olympus) with non-contact probe for the transbronchial treatment.

## 【Purpose】

The purpose of this study is to review our experience of transbronchial laser ablation to explore the better clinical approach for central airway stenosis.

## 【Method】

We retrospectively reviewed the patients who were treated for central airway stenosis by transbronchial laser ablation using noncontact-type probe from January 2005 to November 2013 at Chiba University Hospital. The cases are treated by high power diode laser (GaAlAs) system which generates laser light (wavelength  $810\pm 20\text{nm}$ ) with a maximum power of 60W. We investigated the cause of stenosis, the number of treatment, laser setting, total amount of energy, complication, and simultaneously performed modality.

## 【Result】

31 patients underwent 66 times of the treatment in total. There were 21 males with an average age of 60.3 years-old. The primary cause of airway stenosis are 20 neoplastic diseases (13 malignant tumors, 7 benign tumors) and 11 non-neoplastic diseases. Within the malignant tumors, there were 8 tracheal cancer or lung cancer patients and 5 patients with metastatic tumor. As for the benign tumors, there were 3 hamartoma and each one patient with polymorphic adenoma, papilloma, smooth muscle tumor, and glomus tumor. The non-neoplastic causes of airways stenosis were 4 intubation or tracheotomy patients, each 2 patients with trauma, surgery, and tuberculosis and one another cause. The numbers of treatment were 26 times (1.3 times/patient) for neoplastic diseases and 40 times (3.64 times/patient) for non-neoplastic disease. In non-neoplastic diseases, we did more treatments per case. The total amount of energy was 1870.1J on average (1760.7J for neoplastic diseases and 1979.6J for non-neoplastic disease. For the neoplastic disease, 18 out of 21 patients were treated with other modality such as snaring, ethanol injection and stent insertion. Four out of 11 non-neoplastic patients were treated with balloon dilatation. There was no major complication related with transbronchial laser ablation.

## 【Conclusion】

Transbronchial laser ablation using diode laser system with non-contact probe can be safely performed and useful for transbronchial treatment for the central airway stenosis.