

Carbon dioxide laser microsurgery —Clinical applications in the aero-digestive tract

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Since the infrared beam of the carbon dioxide laser, due to its wave length, is well absorbed in water, biological tissues containing a large amount of water can be well machined (operated) with the CO₂ laser. With a specially developed microscopic instrumentation including a micromanipulator delivery mirror system, precision surgery can be performed. The first clinical work started in our department in 1971 in the larynx. Since then, several thousand operations have been performed in our department and many thousands around the world. The clinical indications are benign tumors especially papilloma of the larynx and small malignant tumors of the vocal cords. Since then, the applications expanded to premalignancies and small malignancies of the oral cavity, nasopharynx and hypopharynx. With special bronchoscopic attachment, tumors of the trachea can be approached. There are several other applications where this modality can be used in the field of the aero-digestive tract. In general, a five to twenty-five watt CW laser is used; the spot sizes, one to two millimeters. The instrumentation is manufactured in the United States and several other countries and used for routine clinical work in many medical centers. The application of this type of surgery has expanded to eight various surgical specialties in the past few years since our initial work in 1967.

CO₂ 激光显微外科手术 ——气-食道的临床应用

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由于CO₂激光的红外波长是被水吸收的, 而生物组织含大量的水, 故能用CO₂激光做手术。采用由镜片传光的显微操作系统的专用显微装置, 可以完成精密外科手术。我们的喉科在1971年开始进行临床研究。此后, 在我们科和全世界都作了几千例手术。临床适应症是良性肿瘤尤其是喉部乳头状瘤和声带上的小恶性肿瘤。以后应用范围又扩展到癌前期病变和口腔、鼻咽部和喉咽部小的恶性肿瘤。专用的气管镜也能治疗气管肿瘤。在气道和消化道范围内还有若干其他的应用。一般是用5至25瓦的连续波CO₂激光器, 光斑面积1~2毫米。这种器件是美国和若干其他国家制造的, 并在很多医学中心用于常规临床工作。自从1967年我们首先报导了这项工作后, 过去的几年里在八种不同的外科学中应用了这类外科手术。