Nd: YAG LASER IN ENDOSCOPIC UROLOGY
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Nd:YAG LASER IN ENDOSCOPIC UROLOGY

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Since the first use of Nd: YAG laser for treatment of bladder tumors (Hofsetter and Staehler 1977)(1), the indications for utilisation of laser in urology and particularly in endo-urology have been significantly widened.

Among different lasers available Nd: YAG is certainly the most useful in endo-urology (2), mainly for its characteristics of deep tissue penetration and possibility to use it in a water medium; furthermore the adaptability of fibers to as well rigid as flexible endoscopes makes this laser a very versatile device.

Indications for laser treatment in endoscopic urology have been basically restricted to superficial bladder tumors; nevertheless its application has been recently proposed in various other pathologies. Present main applications for laser in endo-urology are summarized in table I. Quite a large experience has been achieved for treatment of superficial transitional bladder tumors (3). Laser, allowing a "no touch" technique for tumor destruction, should reduce the very high recurrence rate observed after endoscopic resection alone (TUR); tissue penetration should also provide a "transmural sterilisation". Only tumors sized less then 2.5 cm are actually suitable for a laser monotherapy; routine practice should combine TUR for tumor debulking and staging, and laser irradiation to minimize the risk of incomplete tumor excision. Despite a large number of patients treated no definitive results are available yet; however preliminary results seem to confirm an advantage for patients treated with laser (3). Recently laser has also been proposed for treatment of invasive bladder cancer (4); possibility to obtain a transmural coagulation and a lymphatic sealing appears to be of interest in patients not suitable for open surgery.

The introduction of endoscopic therapy of upper urinary tract superficial tumors has extended the use of laser to the kidney and the ureter (5).

Laser has also been used for endoscopic treatment of ureteral strictures or UPJ stenosis with a very good control of tissue section and hemostasis.

Laser utilization has also been proposed for lower urinary tract obstructive pathology (BPH - urethral strictures); preliminary results do not show any advantage in comparison to conventional electrocautery.
Last application of laser energy to urology concerns stone fragmentation (6); it has recently become apparent that it may be possible to fragment ureteral caluli via an ureteroscope using either a Q - Switched Nd: YAG laser or a turnable pulsed - dye laser energy passed down a fiber.

In conclusion laser and particularly Nd: YAG has proven to be an effective and versatile device in endo-urology; larger experience and longer follow-up are necessary to demonstrate its real effectiveness.

REFERENCES
1) HOFSETTER A. et coll: "Experimental erzengung von maligne tumoren an der Kaninchen. Harnblase fortschr Med., 95; 346; 1977

TABLE I

CLINICAL LASER APPLICATIONS IN ENDOUROLOGY

<table>
<thead>
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<th>BLADDER:</th>
<th>- Malignant lesions —— TCC</th>
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STONE FRAGMENTATION