

PENETRATION DEPTH AS A SOLUTION TO THE OPTIMAL TREATMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH): SIGNIFICANT IMPROVEMENTS IN PATIENT OUTCOME USING MULTI-DISCIPLINARY LASER DIOLAS LFD 3000

Introduction

One major topic regarding the laser therapy of BPH is the issue of penetration depth, referring to the zone of thermal damage as created by the induction of laser energy below the tissue vaporized. Patients treated e.g. by green or regular diode lasers often suffer from inflammation, swelling, pain, necrosis and further post-operative problems. This clinical study aimed at understanding better the physics and reasons for such negative side-effects, and compare the new laser DIOLAS LFD 3000 using the LFD (Leveled Field Density) Therapy to other available devices.

Design

Our comparative study included a total of 60 patients (n=30 with DIOLAS LFD 3000; n=30 with two green lasers) suffering from BPH, where 49 patients took blood thinning drugs. Important indicators of the pre-, intra- and postoperative settings were evaluated during and after treatment for comparison with two green KTP lasers designed for BPH treatment. All patients were evaluated regarding IPSS, QoL, PSA, maximal flow rate (Qmax) and post-voiding residual volume (Vres). Various TURP resections were taken immediately after the laser procedure. Ultrasound 12 Mhz (B&K) was used before, immediately after and in various follow-up sessions to examine the tissue conditions.

Results

Our findings show that there indeed is a correlation between the zone of thermal damage (also referred to as the penetration depth, or coagulation zone) and the post-operative outcome of BPH patients. The group treated by the LFD Therapy suffered from much less complications such as residual urine or inflammation than the comparative group of patients. The need for a permanent catheter placement went down by a mean of 1.8 days, and intake of anti-inflammatory drugs was reduced from 5 to 2 days on average. The treatment time was slightly reduced, more importantly the LFD mode reduced penetration depth to only 1 mm compared to about 3 mm or more with green lasers. We also saw improvements in IPSS scores by 9%, had no intra- or post-operative bleedings and a better feeling of complete bladder emptying.

Conclusion

The LFD Therapy enabled us reaching a minimum penetration depth at excellent coagulation and haemostasis, with significant improvements in comparison to known alternatives. Even older (e.g. 96 years old) and high-risk patients were successfully treated. The less tissue is thermally influenced at deeper layers in the prostate, the less post-operative complications appeared. The human body needs to absorb less dead tissue and reacts with less inflammation, swelling and necrosis. The convincing results gave reason to extend this study to a multicenter trial.

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Is this a clinical trial?	Yes
Is this study registered in a public clinical trials registry?	Yes
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Is this a Randomised Controlled Trial (RCT)?	Yes
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
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Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes