

Holmium Laser Enucleation of the Prostate—If Not Now, When?

HOLMIUM laser enucleation of the prostate (HoLEP) is the most rigorously studied current option for the surgical management of benign prostatic hyperplasia (BPH). In randomized controlled trials HoLEP has been compared to transurethral resection of the prostate (TURP), open simple prostatectomy and photoselective vaporization ablation, and in all studies has been found to be associated with superior outcomes.^{1–4} Furthermore, HoLEP may be safely used for prostates that are too large for TURP. Indeed, HoLEP outcomes are independent of the size of the gland treated.⁵

This issue of *The Journal* features 2 important articles by Elmansy et al. In 1 study (page 1972) the authors look at outcomes after more than 10 years of almost 1,000 men treated with HoLEP. Their findings confirm those from a number of institutions around the world that HoLEP is associated with improvement in flow rates and symptom scores typical of that which we would expect from a debulking BPH procedure such as TURP or open simple prostatectomy. These outcomes were produced with remarkably little morbidity, which is again a common theme with HoLEP.⁶ In another article (page 1977) Elmansy et al evaluate the factors associated with persistent stress incontinence following HoLEP. They found that the presence of diabetes and the treatment of larger prostates predicted an increased risk of postoperative incontinence. Fortunately these complications are uncommon and are considered no greater than those associated with other surgical therapies for BPH. Nonetheless, this information is certainly of value in counseling patients before HoLEP.

Elmansy et al also confirm that HoLEP is associated with a dramatic and sustained decrease in prostate specific antigen comparable to that seen after open simple prostatectomy. This finding is entirely consistent with the nature of the HoLEP procedure, which involves removal of the entire transition zone and represents anatomically the same degree of tissue removal as open surgery. Not surprisingly, maximal debulking of the transition zone is associated in the experience of Elmansy et al with salutary long-term outcomes with low rates of secondary procedures, regrowth of BPH etc. HoLEP is

also a cost-effective technology in that there are no expensive disposables associated with the procedure. Furthermore, the holmium laser is a multipurpose laser with the capability of fragmenting any urinary calculus in addition to its soft tissue applications in the areas of BPH, endoscopic incisions etc.

Given the many attractive features of the HoLEP technique, its slow adoption in the United States is perplexing and disappointing. There are a number of potential explanations for its lack of widespread availability. HoLEP involves a significant learning curve and currently only a few academic institutions have faculty who are able to expose residents in training to this elegant technique. The learning curve is daunting for physicians who have already completed their training to become comfortable with the technique of enucleation. At our institution the majority of residents become comfortable with HoLEP after participating in 20 to 30 cases, a learning curve experience similar to other reports in the literature. This learning curve is comparable to that of TURP and would certainly not seem insurmountable for the trainee if the technique were more prevalent at training institutions.

Another significant factor in the slow promulgation of HoLEP is the poor track record for training urologists of Lumenis, the laser company which helped originate the technique in a partnership with Drs. Gilling and Fraundorfer in New Zealand in the mid 1990s. Unfortunately because the HoLEP procedure is not associated with the consumption of expensive disposables (the business model for all other new BPH techniques), there has not been an income stream to support adequate training for physicians who have already completed residency. One might look at the parallel circumstance with Intuitive Surgical and the daVinci® Surgical System. In the case of the robot, while the initial cost of the system is high, there is also substantial ongoing income related to expensive disposables associated with the use of this remarkable technology. Intuitive has become one of the fastest growing and wealthiest medical technology companies in the United States, allowing them to institute robust training programs, thereby rapidly adding to the number of

practitioners using the robot. Our health care system in the United States is far more tolerant of expensive technologies (as well as expensive disposables) than other health care systems. This explains the more rapid dissemination of the robot in the United States and of competing but less effective BPH technologies such as photoselective vaporization of the prostate (or green light laser), which requires the use of at least 1 expensive disposable laser fiber per case. Despite the challenges of training urologists, it is my hope that because HoLEP holds the “moral high ground” associated with its superior outcomes that there will be gradual but steady dissemination of this approach to BPH.

Ultimately, however, the boost that HoLEP needs to become a commonly performed procedure may lie in a promising but revolutionary new technique called NOTES (Natural Orifice Transluminal Endoscopic Surgery) radical prostatectomy (RP). NOTES RP is an extension of enucleation which accom-

plishes complete endoscopic removal of the prostate for malignancy. NOTES RP has been carefully examined in cadaveric and animal studies, and has now been reported clinically from 2 institutions.^{7–10} The concept that radical prostatectomy could be accomplished without an incision is revolutionary and, more importantly, appears to be feasible. Should this development prove to have legs, it will undoubtedly be a powerful stimulus for urologists to work their way through the learning curve associated with the technique of enucleation.

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