

### Seeing is believing: Image guided therapy in Urology

**T**he conceptual shift to laparoscopy is largely complete. For renal, adrenal, and ureteral surgery, there is a consensus that the laparoscopic approach should replace the open approach once the technical skills have been mastered. For radical prostatectomy, the jury remains out, although many urologists who have mastered the laparoscopic approach seem to prefer it. The Da Vinci robot is diffusing rapidly through the US, driven primarily by market forces. Canada is lagging behind in the acquisition of robots; but it seems likely to be only a matter of time before this trend is adopted.

This shift has been relatively straight forward. Laparoscopic surgery is, essentially, another way to perform standard open operations. It is done in the operating room, by surgeons, with the objective being to mimic the results of open surgery (with lower morbidity).

In contrast, image guided therapy (IGT) represents a substantial shift in thinking and practice. IGT involves the use of various types of energy and targeting methods to ablate lesions instead of resecting them. The original IGT in the current era was ESWL, followed shortly afterwards by TRUS guided cryosurgical prostate ablation. Both have become primarily the domain of urology, rather than interventional radiology, although it was not obvious at the start that urology would prevail in these areas. Current applications of image guided therapy currently being investigated include renal cryosurgical and radiofrequency ablation, MRI guided prostate phototherapy and microwave ablation, use of TRUS during laparoscopic prostatectomy, and ultrasound guided laparoscopic partial nephrectomy. Enhanced diagnostics including virtual cystoscopy represent another possible area of progress.

In contrast to laparoscopy, the advent of image guided therapy represents a more complex, multi-layered development which is fraught with barriers. These include resource issues, interdisciplinary barriers, and turf battles.

Urologists need to move into this area with confidence. Prostate ultrasound has been widely adopted by urologists, and is increasingly viewed as an extension of the DRE in some centres. Ultrasound is also widely used by infertility specialists. In one German centre, abdominal ultrasound is available to urologists and residents. They learn the technique by imaging each other, and achieve expertise during their residency. At the very least, incorporating abdominal ultrasound as an enhanced version of the physical exam is a concept worth exploring. The size and cost of ultrasound and CT units has dropped considerably, and it has become quite feasible for small groups to purchase this equipment. Several US urology practices own and operate CT scanners.

This shift to IGT will not come easily. Our radiology colleagues will view urology involvement in imaging as infringement on their turf. There are crucial issues of quality assurance and training. Residency program directors would be well advised to think about how to integrate image guided approaches into residency training. Patient care will be improved by the routine incorporation of sophisticated imaging into minimally invasive treatments, performed by those practitioners who manage not just the specific lesion, but the whole patient.

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