ROBOTIC TRAINING FOR UROLOGY RESIDENTS

The purpose is to set out an organized approach to teaching complex urologic robot assisted laparoscopic surgery to residents.

Goals

1. To train residents in the safe operation of the Da Vinci Robot.
2. To improve resident comfort and knowledge of the Da Vinci Robot.
3. To train residents in the steps of robot assisted laparoscopic pyeloplasty.
4. To train residents in the steps of robot assisted laparoscopic radical prostatectomy (RARP).

Background

There are currently 11 Da Vinci robots in Canada. These are all located at training centres. Currently at UWO, urology residents gain exposure to cases by attending cases being performed. Initial involvement has included first assisting in cases as the bed-side surgeon. Dr. Pautler has run a urologic laparoscopy course with live porcine laparoscopic surgery at CSTAR (2008) and prior to that at SJHC (2004). Dr. Sener has run a laparoscopy and Single-port access course at CSTAR (2009).

The use of the Da Vinci robot has increased in Canada with >1000 RARP having been performed. This surgery is very complicated and is difficult to teach within the current constraints of the health care system. Major issues include:

1. The increased operative time required for trainees to become proficient in the use of the robot for the procedure.
2. The long waiting lists for prostate cancer surgery and provincial reporting necessitate proficiency in the operating room.
3. The relatively low number of robot assisted pyeloplasties, limits the ability of residents to get experience with a relatively safe operation.
4. The lack of available jobs at centres with surgical robots limits the interest of trainees in becoming proficient.
5. The patient safety concerns with the increased risks of complications observed in the learning curve for RARP.
6. The current Da Vinci robots at the two London hospitals do not support a teaching console. The newest version of the robot has a teaching console and should be considered a priority from a teaching perspective.
7. The commercially available simulator for robotic urologic surgery is not compatible with the models in London.

Robotics Training Curriculum in Urology at Western

To overcome these issues, we have developed a step-wise approach to teaching surgical robotics to the UWO urology residents.

This approach includes 3 phases:

1. Didactic teaching, hands-on dry lab experience.

During this time the residents will come familiar with the robot and it's components.

a. Read the *AUA Handbook of Laparoscopic and Robotic Fundamentals* available:
   https://university.auanet.org/core/makepdf.cfm?sectionid=129

b. Read the attached documents on the steps of the procedure for the Laparoscopic Nephrectomy and Laparoscopic Suturing and Knot Tying.

c. Complete the online training model provided by Intuitive Surgical.

daVinci Standard System Online Material:

daVinci Standard Online Module:
http://www.intuitivesurgical.com/assets/training_materials/dV_Standard/Fundamentals_Standard/Fundamentals_Standard.htm

daVinci Standard Module Exam:
http://www.intuitivesurgical.com/assets/training_materials/dV_Standard/Fundamentals_Exam_Standard/Fundamentals_Exam_Standard.htm

A passing mark of 80% must be obtained from the online exam. The certificate of completion must be printed off and copies given to the program director for your training file.

d. The resident will demonstrate proficiency in robot set, handling, instrument changes, suturing, and troubleshooting. The residents will be required to attend the didactic experience (ideally, the Intuitive surgery course at an approved training centre). Thereafter, the residents will work in pairs. Two hours per session (ideally weekly), for a total of 10 hours of dry lab experience. The residents will need to be proficient with tasks including suturing (continuous and interrupted, knot tying, passing rings, pattern cutting, and vesico-urethral anastamosis on a model as assessed by one of the attending surgeons and the program director.

2. Animal lab component.

During this phase, the residents will operate on live pigs. As an animal model for prostatectomy is not available, porcine pyeloplasty and partial nephrectomy will be used for training purposes. The residents will be required to perform the surgery and be judged as proficient by the evaluators (a robotic surgeon and the program director).

3. Transfer to the operating room phase.

During this time the residents will be required to be first assistant on 10 cases of RARP. If they are deemed proficient, they will then begin console surgery. The console surgery may be either RARP or RA pyeloplasty. For RA pyeloplasty, the residents will sequentially complete the following steps:

    a. Mobilization of the lower pole and pelvis
    b. Dissection of the UPJ
    c. Pyelotomy
    d. Spatulation
    e. Reanastamosis

For RARP, there are 9 steps that will be mastered sequentially starting with the easiest steps of the procedure. In order of ease:

    a. Dropping of the bladder
    b. Opening endopelvic fascia
    c. Control of the dorsal venous complex
    d. Node dissection
    e. Dividing the bladder neck
    f. Apical dissection
    g. Dissection of the seminal vesicles
    h. Pedicle and nerve sparing
    i. Anastamosis

During the RARP cases, the ideal situation is to have a resident or fellow who has prior experience with robotic surgery (at a higher level of training) at the bedside as well during the case. The novice resident will start with second assisting, then progress to first assist. With a second resident/fellow present, this will allow transition to the console for the novice resident.

The Residents will track the number of cases they are involved in and the capacity (ie: bedside assist, console including which steps). The case log should be initialed by the attending robotic surgeon at the completion of the day. This will aid in potential future credentialing scenarios.

Future Plans

As new procedures and/or robots become available, this curriculum for teaching robotic surgery will be re-evaluated. In the future, the robotic surgeons will advocate for the purchase of a DaVinci Si robot with a teaching console. This will greatly enhance teaching of surgical procedures in urology.

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