Anatomic Differences Found After Robotic-Assisted Radical Prostatectomy

Researchers from Boston University School of Medicine (BUSM) have concluded that the anatomy of the pelvis following robotic-assisted radical prostatectomy

(RARP) is considerably different when compared to the anatomy of the pelvis following an open prostatectomy (OP). These findings, which are the first to ever compare pelvic anatomy following RARP and OP surgery, may have implications for patients requiring post-operative radiation. The study currently appears on-line in Practical Radiation Oncology.

Prostate cancer is the most common non-cutaneous cancer diagnosed in men globally. In 2009, there were 192,280 new cases diagnosed, and 27,360 deaths from prostate cancer in the U.S. The surgical approaches to prostatectomy include open (OP), laparoscopic, and robot-assisted prostatectomy. In particular, robot-assisted prostatectomy has rapidly gained acceptance in the urologic community and is now in widespread and rapidly expanding use. Currently it is estimated that nearly 60 percent of all prostatectomies in the United States are performed using the robotic technique.

The role of postoperative radiation therapy has been well established. A 1992 randomized, multicenter phase III study by the European Organization for Research and Treatment of Cancer indicated biochemical progression-free survival was statistically significantly improved in the patients treated with adjuvant radiation therapy (74 percent) versus patients treated by radical prostatectomy alone (52.6 percent).

The researchers compared post-operative pelvic MRI scans on consecutive prostatectomy patients (15 RARP and 10 OP) measuring 13 distinct anatomic distances to determine differences in each of the parameters between RARP and OP.

According to the researchers the pelvic anatomy post-RARP is considerably different from the pelvic anatomy post-OP.

"The most clinically relevant differences observed in the current study were the superior mediolateral separation of the levator ani and the trend toward statistical significance in the separation of the bladder from the rectum, representing the anterior, posterior, and lateral borders of treatment volumes," explained lead author Ariel Hirsch, MD, an assistant professor of radiation oncology at BUSM "Thus, careful attention must be paid in planning the posterior and lateral margins to ensure that coverage is sufficient in men who have undergone RARP. To that end, our data support that the CTV borders as suggested by the Radiation Therapy

Oncology Group guidelines be expanded five mm beyond the anterior rectal wall posteriorly and five mm beyond the levator ani muscles laterally in men who have undergone RARP," she added.

The researchers believe that as RARP continues to become a more widespread surgical option for the management of localized prostate cancer, the radiation field design may need to be further adjusted.

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