

CAUSES OF SURGICAL FAILURE FOR PROSTATE CANCER

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While many have considered radical prostatectomy the "gold standard" for prostate cancer, it is clear that there are many treatment failures despite surgery. Patients most likely to experience recurrent cancer despite radical prostatectomy include those with elevation of Prostatic Specific Antigen (PSA), a higher Gleason score or a larger size prostate cancer.

A recent fascinating study by Oefelein et al from Northwestern University has evaluated the potential causes of surgical failure. The main question is how can the cancer recur if the prostate is totally removed.

Of course, there are multiple theories including those that metastases (spread of cancer) may be present but not clinically recognized at diagnosis. A second is if surgery can actually spread the cancer. Other theories include whether the pathologist (a physician examining the removed gland) is able to detect persistent cancer after surgical removal. The authors note that "Cytological studies of radical prostatectomy specimens have demonstrated a 14% to 32% incidence of malignant cells on the surface of the prostatectomy specimen."

To further define the possibility of spreading cancer cells at the time of radical prostatectomy, these researchers performed specific tests to determine whether malignant-appearing cells were in the operative area or in blood flowing away from the operative site during surgery.

Studied were 22 men with biopsy-proven adenocarcinoma of the prostate undergoing radical prostatectomy. Pathologic evaluation of the resected cancer was studied in detail. Blood was taken from draining veins to search for evidence of cancer. Eloquently described is the RNA isolation technique.

Of the men operated upon, eight had T1C stage, eight T2A stage and six T2B stage cancer. These stages indicate relatively early localized cancer. One patient had prior hormonal therapy because of a large cancer. Gleason score ranged from 5 to 9. The PSA range of the men was 3.8 to 22, with a mean of 9.5 ng/ml.

At pathologic review of specimens, no cancer was seen at the edge of the specimen in 14 patients; was focally-positive in six patients and extensively positive in two patients.

As a control, three men with benign prostatic hypertrophy underwent surgery for simple prostatectomy - and one with a suprapubic prostatectomy. Those operations did not remove the entire prostate but in fact, opened the prostatic capsule to remove the obstructing lesion. The four patients with benign disease had blood samples not suggestive of tumor cells present.

Of great interest were the results in the cancer patients. Of 22 men with prostate cancer, the test was positive in 10 using this reverse transcriptase-polymerase chain reaction analysis. Pre-operatively blood was analyzed for these suspicious cells. Of 22 men with prostate cancer, 16 were negative and 6 were positive. At the time of operation, the positive results in the peripheral blood (the blood circulating around the body) increased to 10 patients.

Most surprising was the fact that in the operative field, 20 of the 22 men had cells consistent with malignancy spread. The authors believe that the "prevalence of local recurrence in men with organ-confined prostate cancer has historically been underestimated." They quote autopsy data showing 50% of men in a small autopsy series having local recurrence after prostatectomy.

Prior cytologic studies have shown cancer cells on the surface of a great number of prostate specimens removed at time of radical prostatectomies. The greater the stage of cancer, the higher the incidence of cancer cells on the surface.

It was suggested by the authors that "The detection of peripheral venous micrometastases during radical retropubic prostatectomy may implicate operative manipulation of the prostate gland in the systemic dissemination of prostate cancer."

The researchers were especially concerned about 4 men who had negative pre-operative evidence of cells in the circulation but developed it during manipulation of the malignant prostate gland.

Concluded was "In 91% of men undergoing radical retropubic prostatectomy, there was reverse transcriptase-polymerase chain reaction evidence of prostate cells in the operative field and 25% had positive result in the peripheral circulation sample interoperatively despite a negative pre-operative assessment."

They summarize their results: "Our results suggests that tumor spillage may occur in a large proportion of radical retropubic prostatectomy procedures."

Thus, research suggests a mechanism for patients undergoing radical prostatectomy having treatment failure after surgery. This information is necessary to evaluate current techniques and to propose new treatment methods that would minimize manipulation of the malignant prostate gland, if indeed it is a source of treatment failure. Radiation seems a rational alternative.

Since our data using seed implant brachytherapy followed by radiosurgery produces better 5 and 10 year survival, it should be obvious that tumor spillage during surgery must play an important factor. Otherwise surgery would produce better results – which it doesn't – and apparently can't. Our seed plus body radiosurgery has better cancer-free survival, avoids the big operation and has a better chance to maintain urinary and sexual function. It's certainly worth exploring.

Knowing all this makes most men want to know more about our program - prostate brachytherapy plus/minus seed implantation. For those with questions about prostate cancer, we have free seminars open to the public on a monthly basis. We also have a hot line at 212-CHOICES and you can e-mail question to gil.lederman@rsny.org. We also have panels of experts to evaluate each case. We believe that each man should investigate all treatment options before proceeding with cancer treatment – especially for prostate cancer where results can be so different and the side effects so vast.