Surgical Treatment for Localized Prostate Cancer

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Radical prostatectomy has been used to effectively treat localized prostate cancer for over a century and remains one of the most complex operations performed by urologists. Surgeons are charged with both removing the cancer completely and ensuring negative surgical margins, minimal blood loss, no serious perioperative complications, and complete recovery of continence and potency. This lecture will provide urologists with details about our approach to this operation, which we have modified continually to improve results. The technique will be presented as one successful approach among many. By learning our approach, participants will be able to discern the important anatomical and surgical principles that will allow for improved technique and better outcomes.

First performed by Billroth in 1867 at the Zurich clinic, the technique was largely unpopular because of its high associated morbidity. The retroperitoneal approach introduced by Millin during the 1960s has rekindled interest in the surgery and is now being commonly used: the wide exposure allows for control of bleeding, flexibility to adapt the operation to individual patient anatomy, complete resection of the cancer in almost all patients, and preserving the surrounding periprostatic tissue essential for the recovery of urinary and sexual function. Compared to other treatment modalities, radical prostatectomy offers a high level of confidence in eradicating cancer over the long term and easy detection of disease recurrence. Disadvantages include the risks associated with any major surgical procedure, temporary urinary and sexual dysfunction, and time lost from work. With the technical refinements made in the last two decades and available treatments for complications that affect quality of life (e.g., urinary incontinence and erectile dysfunction), the morbidity of the operation continues to decrease.

For radical prostatectomy to be successful, the cancer must be completely removed. Cancer present at the margin of resection (a positive surgical margin) after radical prostatectomy is associated with an increased risk of recurrence. Of all prognostic factors, only the status of the surgical margins may be influenced by surgical technique. Key steps to reduce the rate of positive margins will be discussed.

The “trifecta” outcome (cancer control, continence, and potency) remains the most favorable long-term result after radical prostatectomy. This lecture will cover the range of continence symptoms, including irritative symptoms and symptoms of urinary obstruction that also affect urinary function. The presentation will detail techniques based on identifying the anatomic structures surrounding the prostate to preserve erectile function, pioneered by Walsh and colleagues in the 1980s. Identifying and preserving the neurovascular bundles must be balanced with completely resecting the cancer. This lecture will also present a technique for placing interposition grafts from the sural nerve when resection of one or both neurovascular bundles is necessary. Strategies to improve sexual function after radical prostatectomy will also be discussed.

Laparoscopic radical prostatectomy with and without robotic assistance will be discussed. This technically demanding procedure requires a significant learning curve, longer operative time, expanded operating room teams, and is expensive. Outcomes such as the rate of positive surgical margins, recovery of continence and potency, and postoperative pain will be examined.