6.3 Laparoscopic Radical Prostatectomy: The Transperitoneal Antegrade Approach

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Introduction

Laparoscopic radical prostatectomy (LRP) has gained increasing importance in the laparoscopic urologic oncology field and became an established treatment for organ-confined prostate cancer. The initial report of LRP by Schuessler was of nine cases treated through an intraperitoneal approach [1]. Shortly thereafter, a single case of a laparoscopic radical prostatectomy through an extraperitoneal approach was reported [2]. However, in the largest initial series from France, the transperitoneal approach was used [3–6]. With the accumulated experience and worldwide use, variations in the approach and the instrumentation used were introduced. Herein we will discuss the technique of an antegrade transperitoneal LRP as currently performed at the Memorial Sloan-Kettering Cancer Center (MSKCC).

Preoperative Care and Surgical Technique

Indications

LRP has the same indications and contraindications as its open counterpart. There are no specific contraindications to the laparoscopic approach. However, certain conditions such as extensive prior pelvic surgery, prior prostate surgery or pelvic radiation therapy can raise the difficulty level of the procedure.

Preoperative Patient Preparation

Patients receive an enema before surgery. Thromboprophylaxis is ensured with sequential compressive devices on both lower extremities and low-molecular-weight heparin administered prior to surgery, then daily afterwards until discharge from the hospital. Thromboprophylaxis is essential given the presence of three risk factors: cancer surgery, pelvic surgery and laparoscopy. Patients also receive antibiotic prophylaxis with a single preoperative dose of intravenous second-generation cephalosporin.

Patient Positioning

The operation is performed under general anesthesia. The patient is positioned in a low lithotomy position with both arms set along the body to avoid brachial plexus injuries. The shoulders are adequately padded,
and the patient is secured to the operating table with surgical tape. A voice-controlled camera holder is used. With both hands free, the assistant can concentrate and actively participate with total involvement in all the steps of the operation. A right-handed surgeon stands on the patient’s left with the assistant and the camera holder on the opposite side; the monitor is placed between the patient’s legs, at the surgeon’s eye level and as close as necessary.

Port Placement

The pneumoperitoneum is obtained through a Veress needle. A 10-mm trocar is inserted through the umbilicus for passage of the $0^\circ$ laparoscope. Upon entry in the peritoneal cavity, the abdomen and pelvis are explored and the pelvic anatomical landmarks are noted (Fig. 1). Four 5-mm working ports are inserted: in the left iliac fossa, the right iliac fossa, at McBurney’s point, and on the midline halfway between the umbilicus and the pubic symphysis. During the prostatectomy part of the operation, the surgeon uses the laparoscopic scissors and the bipolar cautery forceps; the assistant uses the laparoscopic suction device and the graspers.

The surgical technique of LRP includes, if indicated, a transperitoneal pelvic lymph node dissection as previously described [7] and the following standardized steps [4].

Surgical Technique

Approach to the Vesicular Complex

The surgeon incises the posterior vesical peritoneum transversally approximately 1–2 cm above the level of the Douglas cul-de-sac. This exposes the Denonvilliers fascia and the outlines of the seminal vesicles and vasa deferentia. The vasa deferentia are dissected and coagulated with bipolar forceps, then transected. One must be aware and carefully coagulate the deferential artery running along the opposite side. Division of the vasa deferentia allows access to the seminal vesicles. The latter should be dissected along their surface to individualize its vascular pedicle. These arteries are meticulously coagulated with the bipolar forceps facing the seminal vesicles to avoid any thermal injury to the neural plexus in close proximity. The seminal vesicles are then completely mobilized with the prostate as their sole attachment.

The assistant pulls the vasa deferentia upward; the Denonvilliers fascia is then incised medially and horizontally, bringing into view the prerectal fat (Fig. 2). Further dissection toward the prostatic apex or laterally is ill-advised at this time.

Approach to the Retzius Space and Control of the Dorsal Venous Complex

The bladder is filled with approximately 120 cc of saline, to help identify the contours and pull it posteriorly. The anterior parietal peritoneum is incised from

![Fig. 1. Transperitoneal view of the pelvic anatomy](image1)

![Fig. 2. Transperitoneal opening of Denonvilliers fascia](image2)