

# Radical Perineal Prostatectomy: A More Optimal Treatment Approach Than Laparoscopic Radical Prostatectomy in Obese Patients?

Albert C. Leung, MD, Arnold Melman, MD

Department of Urology, Albert Einstein College of Medicine, Montefiore Medical Center, Bronx, NY

*In comparison with laparoscopic radical prostatectomy (LRP), the perineal approach to radical prostatectomy offers specific technical advantages related to obesity and its unique surgical challenges. Radical perineal prostatectomy (RPP) reduces operative time and its associated risk of complication, which may be more pronounced in obese men. It allows for low blood loss, low post-operative use of narcotics for pain, short hospital stays, and requires only 1 small perineal incision. With a proven history of success, RPP presents obese men with an advantageous surgical option.*

[Rev Urol. 2005;7(1):48-52]

© 2005 MedReviews, LLC

---

Key words: Radical perineal prostatectomy • Laparoscopy • Obesity

**O**besity affects approximately 1 of 3 adults and may be responsible for more than 300,000 deaths each year from associated health problems in the United States.<sup>1,2</sup> Body mass index (BMI) is the most widely accepted criterion for defining obesity. A normal BMI is 18.5 to 25 kg/m<sup>2</sup>; overweight is 25 to 29.9 kg/m<sup>2</sup>; obese is considered 30 to 39.9 kg/m<sup>2</sup>; and severely or morbidly obese is ≥40 kg/m<sup>2</sup>.

Obesity is associated with comorbidities such as hypertension, coronary artery disease, diabetes, pulmonary compromise, depression, cholelithiasis, osteoarthritis, and sleep apnea.<sup>3</sup> It is associated with a higher rate of postoperative complications, such as wound dehiscence and infection, hernia, cardiac arrhythmia, myocardial

aided by the Lowsley retractor to elevate the gland, the prostate is 2 to 5 inches from the perineum. This anatomical characteristic facilitates the extirpation of the prostate, even in men with an extremely large abdominal pannus. Control of prostatic arteries, transection of the bladder neck and urethra, and urethral anas-

in patients over approximately 250 lb or BMI > 40 kg/m<sup>2</sup> at our institution. These patients routinely undergo RPP.

### *Urinary Continence*

In RPP, the proximity of the prostate to the perineum allows for an easier vesicourethral anastomosis, as compared with any retropubic approach. A nationwide study by Bishoff and colleagues<sup>4</sup> demonstrated that 70% of RPP patients were able to regain full urinary continence. Other studies show continence rates of 85% to 97% and 93% to 95% in the laparoscopic and perineal groups, respectively.<sup>5</sup> The study at our institution with a total of 7 obese patients undergoing RPP revealed a 1-year full continence rate of 66%.<sup>6</sup>

### *Oncological Outcome*

A more precise dissection of the prostatic apex is possible via direct visualization through the perineal approach. The incidence of positive apical margins should therefore be minimized, in contrast to the laparoscopic approach. Although the perineal approach provides an optimal view of the posterior and apical aspects of the prostate, the anterior surface of the prostate cannot be directly visualized during dissection, as in LRP or radical retropubic prostatectomy (RRP). Consequently, a higher incidence of positive margins may be discovered in the anterior aspects and bladder neck during the perineal approach.<sup>5,7-8</sup>

Conversely, the site of positive margins in LRP is preferentially located at the posterolateral aspect,<sup>8</sup> possibly secondary to the instrument axis and at a shorter distance during prostatic pedicle dissection.<sup>5</sup> This geometrical restriction can be more pronounced in obese patients, given their thicker abdominal layers that instruments must transverse. A pathological review by Korman and colleagues<sup>9</sup> demonstrated the positive margin rate in RPP

---

### *Control of prostatic arteries, transection of the bladder neck and urethra, and urethral anastomosis are easily manageable for the experienced perineal surgeon.*

---

infarction, respiratory infection, and deep venous thrombosis, due to increased operative times and the technical difficulties that the large body mass presents in surgery.

For patients of appropriate age diagnosed with localized prostatic adenocarcinoma, radical prostatectomy is the treatment of choice. The current trend toward minimally invasive surgeries includes laparoscopic radical prostatectomy (LRP). In this article, we describe the advantages and disadvantages of

tomosis are easily manageable for the experienced perineal surgeon. In obese patients, retrieval of bigger prostate specimens requires larger extension of the abdominal trocar incision in LRP.<sup>4</sup> The risks of fascial dehiscence, wound infection, abdominal hernia, and fat necrosis are minimized in RPP because only a small perineal incision is incurred without violating the rectus fascia.

LRP can be approached transperitoneally or extraperitoneally. Because of the additional thickness of the

---

### *The risks of fascial dehiscence, wound infection, abdominal hernia, and fat necrosis are minimized in RPP because only a small perineal incision is incurred without violating the rectus fascia.*

---

radical perineal prostatectomy (RPP) in the treatment of prostatic diseases in obese men, as compared with LRP.

### **Advantages of Radical Perineal Prostatectomy**

#### *Route of Access and Wound*

#### *Complications*

The prostate is most easily accessed through the perineum, which is quite advantageous for physicians when performing the operation in extremely obese men. With the patient in exaggerated lithotomy position,

abdominal pannus, either route can be technically challenging in obese patients. In the transperitoneal approach, the abundant intraabdominal adipose tissues will render the operation difficult. Similarly, the thick abdominal layer that the preperitoneal balloon dissector must transverse in the extraperitoneal approach can pose a challenge. Furthermore, the limited space of Retzius, along with the surrounding fat tissues, can also create a restricted operative field. Consequently, LRP is not performed

to be 22%. Our institutional analysis revealed a positive margin rate of 29% in obese patients.<sup>6</sup> The laparoscopic approach yields a margin positivity of 19% to 26%.<sup>5</sup> With the short follow-up for LRP patients, the overall 3-year progression-free survival rate was similar between RPP and LRP.<sup>10,11</sup>

### *Intraoperative Hemorrhage and Operative Time*

The operative time is universally less for RPP than for LRP. Comparative studies yield a mean operative time of 120 to 203 minutes for RPP and 266 to 348 minutes for LRP.<sup>4,10,12-14</sup> In our published report with obese patients undergoing RPP, a mean operative time of 142 minutes was measured.<sup>6</sup> Although LRP also induces less blood loss, relative to the retropubic approach, transfusion rates of up to 31% have been reported.<sup>15</sup>

### *Potency*

The neurovascular bundles are directly visualized on the posterolateral aspect of the prostate in the perineal approach. Laparoscopic dissection of the bundles is aided by magnification. Potency rates in RPP and LRP range from 41% to 77% and from 41% to 59%, respectively.<sup>5,16-18</sup> Retraction of the nerve bundles during the perineal surgeries is a reason for low postoperative potency rates in the perineal approach.

### *Postoperative Pain and Hospital Stay*

Patients generally tolerate RPP well with low nursing maintenance postoperatively, short hospital stays, and minimal pain management requirements. Our RPP patients are allowed a full diet and ambulate immediately after the operation, and they are discharged home on postoperative day 2. The need for narcotics for suppression of respiration and cough is minimal.

### *Postoperative Complications*

Cardiac, pulmonary, and vascular complications are well-recognized sequelae from any open surgery and may be more pronounced in obese patients. A procedure such as RPP that can decrease operative time and blood loss is invaluable in minimizing these potentially fatal complications. There have been no serious complications in our small series of massively obese patients.

---

*A more precise dissection of the prostatic apex is possible via direct visualization through the perineal approach.*

---

### *Previous Abdominal Surgeries*

Patients who have undergone previous abdominal surgeries pose a surgical challenge in the laparoscopic approach secondary to altered anatomy, abdominal scars, and adhesions. Trocar placement in these patients can be treacherous, with increased risk of epigastric vessel and bowel injuries. RPP is more feasible in men after kidney transplant and colon surgery.<sup>19</sup> In the hands of surgeons familiar with perineal anatomy, RPP can serve as a therapeutic option for patients who

perineum as parallel to the floor as possible, the operative table must be further flexed, precluding patients with adverse back conditions. Temporary postoperative paresthesia may also be caused by nerve stretching or tension. Moreover, rhabdomyolysis and renal failure following RPP have been reported, possibly resulting from lower extremity compartment syndrome or muscle breakdown in the back and gluteal regions while the

patient is in the exaggerated lithotomy position.<sup>20</sup> To reduce these neurological and vascular complications, the foot pieces should be placed as distal as possible to minimize generating an acute angle of the knees when the legs are flexed.

### *Rectal Injury*

Rectal injury has been reported to be more frequent in RPP than with the retropubic approach. Rectal laceration or intraoperative injury has been reported in up to 11% of RPP

---

*A procedure such as RPP that can decrease operative time and blood loss is invaluable in minimizing potentially fatal complications.*

---

have undergone salvage prostatectomy for postradiation failures, periprosthetic fibrosis after transurethral resection of the prostate, previous abdominal and pelvic surgeries, and previous vascular bypass surgeries.<sup>12</sup>

### **Limitations of Radical Perineal Prostatectomy**

#### *Intraoperative Positioning*

The exaggerated lithotomy position required during RPP may not be feasible in all patients. To position the

cases.<sup>21</sup> Rassweiler and colleagues<sup>22</sup> reported a rectal injury rate of 3.2% in their early LRP series versus 1.4% in their later experience. Abscess or rectocutaneous fistula formation can result if the injury is not recognized and repaired properly.

#### *Pelvic Lymphadenectomy*

With the emphasis on pelvic lymph node sampling in the 1970s, the retropubic approach was popularized because a separate incision for the

lymphadenectomy can be spared. The recent utilization of nomograms to predict pathological stage, along with prostate-specific antigen (PSA)-induced downward stage migration, has obviated the need for pelvic lymph node dissection in many cases unless the PSA level is more than 20 ng/mL and histological Gleason

similar to that of RPP: less blood loss, short hospital stay, and rapid convalescence. Lymphadenectomy can also be performed in the same setting. To date, there are no studies that compare the surgical outcomes of the 3 techniques in obese patients. Despite the numerous studies reporting the higher rate of complications

morbidity obese patients remains to be proven, and it is not certain whether LRP possesses an economic advantage over RPP because the perineal approach contributes to short hospital stays and minimal blood loss without the costs of disposable laparoscopic instruments. ■

*The perineal approach contributes to short hospital stays and minimal blood loss without the costs of disposable laparoscopic instruments.*

score is more than 8. Patients who need lymphadenectomy will obviously benefit from the laparoscopic approach through the same trocar incisions.

**Comments**

Comparative studies demonstrate similar postsurgical outcome, margin positivity rates, disease-specific survival, and continence rates among RRP, RPP, and LRP.<sup>5</sup> The potency rates postoperatively vary widely, possibly secondary to difficult assessment of erectile function, such as lack of consensus definitions, variable follow-up, and inconsistent disclosure of erectile dysfunction therapies. The advantages of LRP are

in obese patients undergoing surgery, obese men with localized prostate cancer along with other comorbidities should not be dissuaded from radical prostatectomy.

**Conclusion**

Obese patients are generally perceived to be poor surgical candidates. Conflicting reports exist regarding rates of complications and surgical outcome. It is undoubtedly challenging to extirpate the prostate in obese men with prostatic cancer. RPP is particularly appealing because of its proven history of success, single small perineal incision, low blood loss, minimal pain management, and short hospital stay. The feasibility of LRP in

**References**

- Hedley AA, Ogden CL, Johnson CL, et al. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *JAMA*. 2004;291:2847-2850.
- Dindo D, Muller MK, Weber M, et al. Obesity in general elective surgery. *Lancet*. 2003;361:2032-2035.
- Derksen JE, Carson CC. Obese patients and the problems they present to urologists. *AUA Update*. 2002;21:90-95.
- Bishoff JT, Motley G, Optenberg SA, et al. Incidence of fecal and urinary incontinence following radical perineal and retropubic prostatectomy in a national population. *J Urol*. 1998;160:454-458.
- Salomon L, Sebe P, de la Taille A, et al. Open versus laparoscopic radical prostatectomy: Part I. *BJU Int*. 2004;94:238-243.
- Boczko J, Melman A. Radical perineal prostatectomy in obese patients. *Urology*. 2003;62:467-469.
- Weldon VE, Tavel FR, Neuwirth H, et al. Patterns of positive specimen margins and detectable prostatic specific antigen after radical perineal prostatectomy. *J Urol*. 1995;153:1565-1569.
- Salomon L, Levrel O, de la Taille A, et al. Localization of positive surgical margins after retropubic, perineal and laparoscopic radical prostatectomy. *Prog Urol*. 2002;12:628-634.
- Korman HJ, Leu PB, Huang RR, et al. A centralized comparison of radical perineal and retropubic prostatectomy specimens: is there a difference according to the surgical approach? *J Urol*. 2002;168:991-994.
- Salomon L, Levrel O, Anastasiadis AG, et al. Outcome and complications of patients with PSA

**Main Points**

- Obesity is associated with comorbidities and higher rates of postoperative complications, due to increased operative times and the technical difficulties that obesity presents in surgery.
- Radical peritoneal prostatectomy (RPP) is particularly appealing because of its specific technical advantages, reduced operative times, low blood loss, minimal pain management, and short hospital stays without the cost of disposable laparoscopic instruments.
- The experienced perineal surgeon can easily manage control of the prostatic arteries, transection of the bladder neck and urethra, urethral anastomosis, and a more precise dissection of the prostatic apex with only a small perineal incision in even the most obese men.
- In the hands of surgeons familiar with perineal anatomy, RPP can serve as a therapeutic option for patients who have undergone previous abdominal surgeries.
- Despite the numerous studies reporting the higher rate of complications in obese patients undergoing surgery, obese men with localized prostate cancer along with other comorbidities should not be dissuaded from radical prostatectomy.

- < 10 ng/mL: comparison between retropubic, perineal and laparoscopic approach. *Prostate Cancer Prostatic Dis.* 2002;5:285-290.
11. Rassweiler J, Schulze M, Teber D, et al. Laparoscopic radical prostatectomy: functional and oncological outcomes. *Curr Opin Urol.* 2004;14:75-82.
  12. Sullivan LD, Weir MJ, Kinahan JF, et al. A comparison of the relative merits of radical perineal and radical retropubic prostatectomy. *BJU Int.* 2000;85:95-100.
  13. Frazier HA, Robertson JE, Paulson DF. Radical prostatectomy: the pros and cons of the perineal versus retropubic approach. *J Urol.* 1992;147:888-890.
  14. Bhayani SB, Pavlovich CP, Hsu TS, et al. Prospective comparison of short-term convalescence: laparoscopic radical prostatectomy versus open radical retropubic prostatectomy. *Urology.* 2003;61:612-616.
  15. Rassweiler J, Sentker L, Seemann O, et al. Laparoscopic radical prostatectomy with the Heilbronn technique: an analysis of the first 180 cases. *J Urol.* 2001;166:2101-2108.
  16. Gillitzer R, Thuroff JW. Relative advantages and disadvantages of radical perineal prostatectomy versus radical retropubic prostatectomy. *Crit Rev Oncol/Hematol.* 2002;43:167-190.
  17. Anastasiadis AG, Salomon L, Katz R, et al. Radical retropubic versus laparoscopic prostatectomy: a prospective comparison of functional outcome. *Urology.* 2003;62:292-297.
  18. Tse E, Knaus R. Laparoscopic radical prostatectomy—results of 200 consecutive cases in a Canadian medical institution. *Can J Urol.* 2004;11:2172-2185.
  19. Melman A, Boczeko J, Figueroa J, et al. Critical surgical techniques for radical perineal prostatectomy. *J Urol.* 2004;171:786-790.
  20. Bruce RG, Kim FH, McRoberts JW. Rhabdomyolysis and acute renal failure following radical perineal prostatectomy. *Urology.* 1996;47:427-430.
  21. Lassen PM, Kearsse WS Jr. Rectal injuries during radical perineal prostatectomy. *Urology.* 1995;45:266-269.
  22. Rassweiler J, Seemann O, Schulze M, et al. Laparoscopic versus open radical prostatectomy: a comparative study at a single institution. *J Urol.* 2003;169:1689-1693.