

Pfannenstiel incision for radical retropubic prostatectomy as a surgical and cosmetic alternative to the midline or laparoscopic approach: A single center study

Andreas Lunacek¹, Christian Radmayr², Wolfgang Horninger², Eugen Plas¹

¹Department of Urology, Hanusch Krankenhaus, Vienna, Austria

²Department of Urology, Medical University of Innsbruck, Innsbruck, Austria

Article history

Submitted: Oct. 21, 2013

Accepted: March 3, 2014

Correspondence

Christian Radmayr
Department of Urology
Medical University of
Innsbruck
35, Anichstr.
6020 Innsbruck, Austria
phone: +43 512 504 246 05
christian.radmayr@i-med.
ac.at

Objectives The Pfannenstiel incision is not a very common approach for radical retropubic prostatectomy (RPE). This study is primarily dealing with the approach to the prostate.

Material and methods A 10–12 cm Pfannenstiel incision was made 2 fingers above the pubic bone. The rectus sheath was opened transversally and dissected from the rectus muscle. The muscle was further on divided in the midline; otherwise, the operation was performed the same way as the retropubic radical prostatectomy described by Walsh [1]. The wound closure was performed in several layers, and the skin was stapled.

Results In a series of 163 RPEs, we achieved excellent cosmetic results. Four patients developed subcutaneous hematomas, two of them required surgical intervention, and 3 patients developed infections that were effectively treated with antibiotics.

Conclusions Our experience with the Pfannenstiel incision approach for radical retropubic prostatectomy was very positive. The approach provides good exposure, heals well with a cosmetic scar, and facilitates hernia repair through the same approach if needed.

Key Words: Pfannenstiel incision ◊ radical prostatectomy ◊ surgical approach

INTRODUCTION

Prostate cancer (PCa) is one of the most common cancers in Austria, accounting for 4,402 new cases in 2008 [2] and 1,184 deaths among Austrian men (16.4% age specific standardized rate/100,000 men) [2]. The standard treatment is retropubic radical prostatectomy (RPE) for localized prostate cancer. Traditionally, the most common approach for open RPE is a midline incision with standard laparoscopic and robotic assisted prostatectomy. Aim of this study was to describe the conventional Pfannenstiel approach because of its excellent exposure for pelvic procedures as well as good cosmesis and wound healing [3].

METHODS

The patient is placed in a slightly hyperextended supine position. A 10–12-cm transverse incision 2 fingers above the pubic symphysis is carried out. The anterior rectus sheath is exposed, dividing the subcutaneous fatty tissue [4, 5, 6]. After the fat is retracted and the adminiculum of the linea alba is dissected, the sheath of the rectus muscle is raised with 3 Kocher clamps (Figure 1). By applying tension on the clamps and pressure on the rectus muscle with a sponge stick, the anterior rectus sheath is easily separated by blunt dissection, from the rectus muscle upward to the umbilicus and downward, where the pyramidalis muscles are dissected from

both rectus muscles until the inferior portion of the rectus is freed [7, 8].

Branches of the inferior epigastric artery supplying the rectus muscle and the anterior sheath have to be identified carefully and clipped or cauterized to prevent hematomas. The V-shaped incision published by Manoharan et al. is not performed in case of absence of any comprehensible advantage after insertion of a self-retaining ring retractor [5, 8].

After division of the transversalis fascia, the prevesical space is dissected. The paravesical space is exposed and the peritoneum is dissected laterally from the external iliac vein, artery, and lateral abdominal wall. The spermatic cord is dissected and the vas deferens is separated from the pampiniform plexus and testicular artery. The ductus deferens is clipped with 5-mm titan clips and dissected. The peritoneum can then be mobilized on the testicular vessels and a self-retaining ring retractor can be easily inserted. The blades are placed over the rectus muscle at 1, 5, 7, and 11 o'clock positions to provide excellent exposure.

Subsequently a standard retropubic radical prostatectomy can be performed as described by Walsh [1]. After completion of the RPE, drainages can be placed. Lymphadenectomy is usually performed in patients with PSA ≥ 10 ng/ml, after positive results in frozen section or in cases of suspicious lymph nodes and high risk carcinomas. Patients who undergo bilateral lymphadenectomy receive 2 Jackson

drainages; patients without lymphadenectomy obtained one, respectively.

The rectus muscle is approximated and the rectus sheath is closed. The subcutaneous layers are closed and staples are used for skin closure. Postoperatively a intravenous pain medication including: 500 mg Tramadol, 5 mg Metamizole, 25 mg ketamine, 400 mg Magnesium sulfate in 500 ml sodium chloride 0.9% solution, is applied with a perfusor depending 20–25 ml/h. After 24 hours postoperatively, the perfusor is replaced by four paracetamol 500 mg tablets per day for three days. From day four after RPE the patients receive painkillers as required. On day one after RPE, the patients have active exercise therapy. On day two, they are completely mobile. The drains are removed usually on day 2 or 3 depending if one or two drains were used, the staples between days 8 and 10 postoperatively. The check up of the urethrovesical anastomosis is on day seven by a cystography, and if the anastomosis is sufficient, the catheter is removed. The patients are dismissed between day seven and ten after the RPE.

RESULTS

In a time period of 4 years (from 2010 to 2013) a series of more than 163 radical prostatectomies have been done with the Pfannenstiel approach. The total time for prostatectomy was between 90 and 210 min (median 145 min). This technique presents excellent wound healing and good cosmetic results. In 2.4% ($n = 4$) of all cases there were postoperative subcutaneous hematomas, in which 1.2% ($n = 2$) led to a wound dehiscence followed by wound revision six and eight days after RPE, and the other 1.2% ($n = 2$) developed a slight wound dehiscence without requiring surgical intervention. Furthermore, 1.8% ($n = 3$) of the patients had wound infections that were effectively treated with antibiotics.

DISCUSSION

In 1900, Hermann Johannes Pfannenstiel, a German gynecologist, modified the transverse cesarean section by opening the rectus sheath transversally in addition to longitudinally [6]. This approach divides the subcutaneous tissue and the rectus sheath in the line of the skin incision. Furthermore, the rectus muscle is divided vertically along the midline. There are well known disadvantages to this technique, such as the lower rectus leaflet flap and subcutaneous tissue not impeding the exposure of the prostate gland.

The most commonly used approach for a retropubic radical prostatectomy is the midline incision.



Figure 1. After the skin incision, exposing and open the rectus fascia, the fascia is grabbed with three Kocher clamps, to prepare the fascia from the rectus muscle.



Figure 2. Five scars (arrows) after a da Vinci radical prostatectomy, distributed on the abdominal wall. In the middle the enlarged for organ entrapment and further four trocar incisions.



Figure 3. A barely visible scar after Pfannenstiel incision (3 arrows). Additionally, if the patients wear underpants or bathing trunks, it is completely hidden.

This approach offers excellent exposure of the surgical field. The obtained surgical field enables an excellent exposure for the prostatectomy procedure, independent if either nerve sparing or a lymphadenectomy is performed (Figure 1). Another further advantage is, that the incision can be extended in length if necessary in case of the patients body weight, without scarring the abdominal wall above the belt line. The time for surgery is comparable with any other approaches, depending on the experience of the surgeon. Blood loss and surgical margins were not examined, because we described the approach and the method of the prostatectomy according to the technique by Walsh [1]. Healing and cosmetic results are superior using the Pfannenstiel approach [9]. Furthermore, the laparoscopic and robotic-assisted radical prostatectomy

produced surgical scars, (Figure 2) which could not be hidden as easily as those produced by the Pfannenstiel incision (Figure 3).

Additionally, an increased rate of incisional hernias is combined with minimally invasive radical prostatectomies compared to an open approach [10]. In our series, we had no hernias.

In our series of 163 radical prostatectomies with the Pfannenstiel approach, the patients had good wound healing and outstanding cosmetic results.

CONCLUSIONS

The Pfannenstiel approach for retropubic radical prostatectomy provides excellent surgical exposure, good wound healing, and superior cosmetic results. In addition, it is technically a simple approach, adaptable for almost every surgeon.

References

- Walsh PC. Partin. Anatomical Radical retropubic prostatectomy. In, Walsh PC, Retik AB, Vaughan ED Jr, et al (Eds). Campbell-Walsh Urology, 9th edition. Philadelphia, WB Saunders, 2007; pp. 2847-2851.
- Statistik.at. [Internet] Vienna: Statistik Austria Bundesanstalt Statistik Österreich [updated 2011 October 13]. Available from http://www.statistik.at/web_de/statistiken/gesundheit/krebserkrankungen/prostata/index.html
- Levy DA. Transverse lower abdominal incision. Hinman's Atlas of Urologic Surgery 3rd Edition, 2012 Section XI, Chapter 63; pp. 385-391.
- Bhanot SM, and Gopalakrishnan R. Smiley incision: a direct surgical approach for retropubic radical prostatectomy. Urology 2002; 60: 149-151.
- Manoharan M, Ayyathurai R, Nieder AM and Soloway MS. Modified Pfannenstiel approach for radical retropubic prostatec-

- tomy: a 3-year experience. *Prostate Cancer Prostatic Dis.* 2008; 11: 74-78.
6. Pfannenstiel HP. Über die Vortheile des suprasymphysären Fascienquerschnitts für die gynakologischen Koliotomien, zugleich ein Beitrag zu der Indikationsstellung der Operationswege. *Sammlung Klinischer Vorträge, Gynakologie* 1900; 97: 1735–1756; *Classic pages in obstetrics and gynecology. Am J Obstet Gynecol* 1974; 118: 427.
7. Bartsch G, Poisl S: Suprapubic approach. In, Bartsch G, Poisl S (Eds.) *Approaches in urologic surgery.* Stuttgart, Georg Thieme Verlag, 1994; pp. 215-235
8. M. Manoharan, Gomez P, Sved P, Soloway MS. Modified pfannenstiel approach for radical Retropubic prostatectomy. *Urology* 2004; 64: 369-371.
9. Grantcharov TP, and Rosenberg J. Vertical compared with transverse incisions in abdominal surgery. *Eur J Surg* 2001; 167: 260–267.
10. Carlsson SV, Ehdai B, Atonia CL, Elkin EB, Eastham JA. Risk of incisional hernia after minimally invasive and open radical prostatectomy. *J Urol.* 2013; 190: 1757-17562. ■