Prepared by ASERNIP-S

NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE

INTERVENTIONAL PROCEDURES PROGRAMME

Laparoscopic Radical Prostatectomy

Introduction

This overview has been prepared to assist members of IPAC advise on the safety and efficacy of an interventional procedure previously reviewed by SERNIP. It is based on a rapid survey of published literature, review of the procedure by Specialist Advisors and review of the content of the SERNIP file. It should not be regarded as a definitive assessment of the procedure.

Procedure name

Laparoscopic radical prostatectomy

SERNIP procedure number

39

Specialty society

British Association of Urological Surgeons (BAUS)

Executive Summary

The current evidence base regarding the safety and efficacy of laparosopic radical prostatectomy largely consists of case series from a few specialised centres who have invested the considerable time and effort involved in mastering the required level of laparoscopic technical skill that is necessary to perform this procedure.

There is very little good quality comparative data currently available to compare the laparoscopic radical prostatectomy procedure to standard open retropublic radical prostatectomy. The early comparative results suggest that the laparoscopic technique may result in lower positive surgical margin rates which, in turn, could lead to a decreased rate of disease recurrence following surgery. Patients undergoing laparoscopic radical prostatectomies also appear to require less postoperative pain analgesia.

Surgical conversion rates were low, ranging from 0% to 3.7%. Two studies reported total postoperative complication rates of 17.1% (in which 20% of these complications were considered ‘major’) and 20% respectively.

In terms of urinary continence and erectile function, case series data report continence rates (defined as either no pads or one pad required daily) ranging from 78.4% at one year to 85% at 3 months.

In terms of erectile function, one study reported that 75% of patients (who were under 70 years of age and had bilateral nerve sparing) were potent at 6 months. Another study reported that only 11% of their sample reported spontaneous erections at 1 year and only 2% reported erectile function sufficient for penetrative intercourse at 1 year.

Indication(s)
Indications for laparoscopic radical prostatectomy are localised prostate carcinoma with little evidence of extraprostatic or systematic metastatic progression of disease (identical to those for the standard radical retropubic prostatectomy).

Summary of procedure
The Montsouris technique[1], as originally pioneered by Vallancien and Guillioneau is described here.

The patient is placed in the dorsal supine position with lower limbs in abduction to provide perineal access. Five trocars are inserted: A 10 mm trocar in the umbilicus, three 5 mm trocars sequentially inserted into the left iliac fossa, midway between the umbilicus and pubis and into the right pararectal fossa. A final 10 mm trocar is inserted into the right iliac fossa above McBurney's point.

The lymph nodes can be removed at this point for frozen section histological analysis. This is followed by the laparoscopic dissection of the vasa deferentia, seminal vesicles and prostatic specimen itself. Sparing of the two neurovascular pedicles is attempted, if oncologically and anatomically possible.

A water-tight anastomosis is then made and the prostatic specimen is extracted with a laparoscopy bag via the orifice located above McBurney's point.

<u>Advantages/ Disadvantages of Procedure</u>

The postulated advantages of laparoscopic radical prostatectomy over the traditional retropubic approach are:

- A reduction of abdominal wall morbidity
- Less blood loss
- Less postop pain
- Quicker convalescence
- Better cosmetic results
- Improved magnification and lighting which aids in the dissection of the narrow pelvis and suturing of the urethrovesical anastomosis, which could theoretically improve continence and faciliate an earlier catheter removal

In terms of disadvantages, Kavoussi *et al*.[2] have commented that the procedure requires a steep learning curve with an average 'learning curve of

60 cases' compared to other laparoscopic urological procedures, such as laparoscopic nephrectomy, where the learning curve typically is 20 cases for inexperienced laparoscopists. [3]

A recent development in laparoscopic radical prostatectomy has been the evolution of robotically assisted laparoscopic radical prostatectomies. The literatures searches yielded 13 references [4-16] on this particular topic.

Literature review

A systematic search of MEDLINE, PREMEDLINE, EMBASE, Current Contents, PubMed, Cochrane Library and Science Citation Index using Boolean search terms was conducted, from the inception of the databases until November 2002. The York Centre for Reviews and Dissemination, Clinicaltrials.gov, National Research Register, SIGLE, Grey Literature Reports, relevant online journals and the Internet were also searched in November 2002. Searches were conducted without language restriction.

Articles were obtained on the basis of the abstract containing safety and efficacy data on the laparoscopic radical prostatectomy procedure in the form of randomised controlled trials (RCTs), other controlled or comparative studies, case series and case reports. Conference abstracts and manufacturer's information were retrieved if they contained relevant safety and efficacy data. The English abstracts from foreign language papers were also retrieved if they contained safety and efficacy data. In the case of duplicate publications, publications with the most safety and efficacy data were retrieved.

List of Studies Included

Total number of studies: 36

Randomised controlled trials	0
Non-randomised comparative studies	1
Case series	33
Case reports	2

The references for the five papers considered to be most useful are highlighted in bold in the reference list. The one available comparative study was included as well as a series of papers from the Institut Mutualiste Montsouris (pioneers of the Montsouris technique) which contains their most recent data on positive surgical margins, learning curve effect, perioperative complications and postoperative results. One other well-reported series from the USA from a centre reporting upon its initial 70 cases was also included along with two other large case series which focussed upon the quality of life outcomes of postoperative erectile function and continence respectively.

Proposal for a Randomised Controlled Trial in the UK

A randomised controlled trial comparing open retropubic versus laparoscopic radical prostatectomy has been proposed. All the laparoscopic radical prostatectomy procedures would be performed at the North Hampshire Hospital in Basingstoke whilst all the open procedures for the trial would be conducted at the Bristol Royal Infirmary. Start and completion dates for this trial were not known at the time of report writing.

Summary of key efficacy and safety findings

See following tables;

Abbreviations

Lap RP	Laparoscopic radical prostatectomy
MI	Myocardial infarction
pT	Pathological stage
RRP	Radical retropubic prostatectomy

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings				Key safety findings	Appraisal/Comments
Non Randomised Comparative Studies						
Fromont *et al.*[17] 2002 FRANCE Total N: 278 139 Lap RP pts 139 RRP pts Follow-up not reported <u>Selection Criteria</u> Localised prostate cancer amenable to surgery. Pts receiving neoadjuvant therapy were excluded *Both groups similarly matched for age, PSA, number of positive biopsies, prostate weight, number of positive lymph nodes, pathological stage and distribution of intraprostatic (pT2) versus extraprostatic cancer (pT3)*		**Lap RP**	**RRP**	**P value**	None reported	*Potential for bias*: Lap RP and RRP procedures performed at differing time periods (but by the same two surgeons when both were experienced in either technique). It is not clear whether they had 100% compliance at follow-up or whether there were losses to follow-up. Although no statistical difference measured, the number of Gleason scores of 8 or 9 were higher in the RRP group than the Lap RP group (8.6% vs 4.3%) at baseline. ***Outcome Measures:*** Specimens were processed using a standardised pathologic method (Stanford procedure) Positive surgical margins were carefully defined ('extension of tumour to the inked surface of the specimen') and all assessments were carried out by the same two pathologists Gleason score is a standardised, well accepted method of assessing the histological grade of the cancer.
	Positive surgical margins	13.7%	25.9%	<0.02		
	No. of positive margins in organ confined cancers only	10%	20.9%	<0.05		
	Median length of margins (mm)	3 +/- 2.2	3 +/- 3.1	NS		
	Number of surgically induced margins	2.1%	2.9%			
	Apical positive margin	7.2%	15.5%	<0.05		
	Level of positive apical margins in localised cancers (pT2)	7%	18%	<0.05		
	% Positive Margins - Stratified by Gleason Score **Gleason Score** / **Lap RP** / **RRP** 5 or 6 / 7.8 / 24.3 7 / 18.8 / 20.7 8 or 9 / 16.7 / 58.3					

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
Comparative Studies/ Case Series			
Dahl *et al.*[18] 2002 USA 70 patients, Minimum 3 months follow-up Case series with a comparison of analgesia use of this lap RP series with the previous 40 RRP patients for the two surgeons involved in the study Selection criteria: Patients who would be appropriate for RRP	Mean length of stay: 2.5 days (range 1-6) Mean operating time: 274 min (range 165-495) Positive surgical margins: 11.4% (8/70) of patients: 4 – apical 4 – lateral margin 1- at the bladder neck Patient reported continence (minimum of 3 months follow-up) 85% of patients used no or only 1 pad per day Physician reported continence (At 3 months n=51) 70.6% of patients – used no pads 13.7% of patients – used one (or fewer) pads per day 15.7% of patients – used two or more pads per day Mean Analgesia Use **Average Dose of Analgesic** / **Lap RP** / **RRP** / **P value** Ketorolac / 86 mg / 123 mg / <0.0007 Morphine sulfate / 14 mg / 34 mg / <0.0005 Oral hydrocodone acetaminophen / 3.7 mg / 6.5 mg / <0.003	Surgical conversion rate: 1.4% (1/70) due to a rectal injury Mean estimated blood loss: 449 ml (50-2750) Blood transfusion rate: 5.7% (4/70) Intraoperative or immediate postop complication rate: 2.9% 1 small bowel enterotomy 1 rectal injury Overall postop complications: 20% (14/70) **Postop Complications** / **n(%)** Transient urine leak/ileus / 6 (8.6) Flank haematoma / 1 (1.4) MI / 1 (1.4) Urinary retention / 2 (2.9) Bacterial cystitis / 2 (2.9) Cervical plexus injury / 1 (1.4) Bladder stone / 1 (1.4)	*Potential for Bias:* Not clear if Lap RP patients are consecutive. Also, the historical comparison is limited in its usefulness. There is also a lack of longer follow-up. *Outcomes:* Patient and physician reported continence rates give similar results *Other comments:* Authors note that 'operating times, blood loss and complication rates all decrease with experience'.

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
Comparative Studies/ Case Series			
Institut Mutualiste Montsouris Case Series (FRANCE) **Guillonneau *et al.*** [19] **2000** (n=120) *Comparative study- 120 lap RP (compares three consecutive groups of first, second and third set of 40 patients- Groups 1, 2 and 3) and also compares the 120 patients to the last 100 patients who underwent RRP at Institut Montsouris* **Guillonneau *et al.*** [20] **2002** (n=567) *Documents perioperative complications* **Vallancien *et al.*** [21] **2002** (n=841) *Provides longest follow-up for this case series of patients (January 1998 to April 2001)* (Overlap of patients in these three studies)	Positive surgical margins (n=120) pT2a 5% pT2b 22.5% pT3a 22.7% pT3b 30% Continence Since 1999, 89.2% of all patients (n=841) had regained their continence at 1 year 0.3% required an artificial urinary sphincter (n=841) Erectile Function 75% of patients < 70 years of age who had bilateral nerve sparing were potent at 6 months (n= 77 of 120 pts in series) Mean operating time: 2 hrs 40 minutes (range: 1hr 30 min to 6 hrs 30 mins) (n=841)	Postoperative deaths: 0 (n=841) Pulmonary emboli: 0 (n=841) Re-operation rate: 3.7% (n=567) Surgical conversion rate: 0.9% (n=841) **Group 1** / **Group 2** / **Group 3** Mean operating time (min): 282 / 247 / 231 Mean intraop bleeding (ml): 534 / 517 / 277 Transfusion rate (%): 15 / 12.5 / 2.5 Mean bleeding overall (ml): 402 +/- 293 (range: 50 to 1500 ml) (n=567) Overall cost of procedures: (in US dollars) RRP was $1237 more on average than the lap RP Lap RP series - Complications Perioperative and Short-term (30 days post-op) Complications : Overall rate: 17.1 %	***Potential for Bias:*** Case series. Methods for selecting patients not stated Limited historical comparison data In the Guilloneau 2002 series, 11/579 potential patients for the case series were excluded from the study ***Outcomes:*** Continence Self report by patient (validated) Also used a complication rating scheme ***Other Comments:*** Authors noted that to decrease risk of undiagnosed bleeding due to trocar injury to the epigastric artery, it is wise to reduce insufflation pressure at the end of op and remove trocars under direct visualisation

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
Institut Mutualiste Montsouris Case Series (FRANCE) (continued) **Guillonneau *et al*. 2000** (n=120) **Guillonneau *et al.* 2002** (n=567) **Vallancien *et al*. 2002** (n=841)		All Complications: (from Guilloneau *et al*. 2002) **Complication** — **n (%)** **Urological** Anastomotic fistula — 57 (10) Bladder Injury — 9 (1.6) Ureteral injury — 3 (0.5) Obstructive anuria — 1 (0.17) **Bowel** Rectal injury — 8 (1.4) Ileal injury — 2 (0.35) Sigmoid injury — 1 (0.17) Ileus — 6 (1.1) **Neurological** Compressive neuropraxia — 2 (0.35) Axonal degeneration — 1 (0.17) **Other** Lymphorrhea — 2 (0.4) Thrombosis — 2 (0.35) Hemoperitoneum — 5 (0.88) Epigastric injury — 3 (0.5) Wound dehiscence — 4 (0.7) Total Complications: (n=97) — 105 (17.1%) Major — 21 Minor — 83	

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings				Key safety findings	Appraisal/Comments
Case Series						
Katz *et al.*[22] 2002 FRANCE 143 patients (of the 232 total patients in the case series) who were potent preoperatively, Followup at 1,3,6 and 12 months <u>Selection criteria:</u> Localised prostate cancer amenable to surgical resection	**Erectile Function** Time of Follow-up 1 month 3 months 6 months 12 months Bilateral sparing patients only (63/143) 1 month 3 months 6 months 12 months Positive surgical margins – 25% in bilateral nerve sparing group	No. of respondents 100 80 48 26 No. of respondents 46 34 24 8	% reporting erections 21 31 29.1 53.8 No. (%) reporting erections 13 (21) 14 (22) 7 (11) 7 (11)	% reporting penetrative intercourse 8 23.7 22.9 23 No. (%) reporting penetrative intercourse 7 (11) 11 (17) 5 (8) 1 (2)	None reported	***Potential for Bias:*** Large losses to follow-up Of 143 patients, only 100, 80, 48 amd 26 responded at 1,3,6, and 12 month followups. ***Outcomes:*** Non-validated questionnaire used for patient reported outcomes

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings					Key safety findings	Appraisal/Comments
Olsson *et al.* [23] **2001 FRANCE** 228 patients, Follow-up at 1,3,6, and 12 months May 1998 to February 2000 *(Please note: First half of patient sample overlaps with the Katz et al. study documented above for erectile function)*	**Continence** Perfect diurnal urinary control (no pads and no leaks) No pads used Positive surgical margins: 24.6% Median urethral catheter duration (days): 4	1 months 9.9% (10/109) 18.8 19/109)	3 months 28.6% (22/77) 58.4 (45/77)	6 months 57.4% (35/61) 68.9 (42/61)	12 months 56.8% (21/37) 78.4 (29/37)	No conversion to open RRP Blood transfusion rate: 3% Leaks identified in 19.4% of cases Anastomotic strictures occurred in 1.3% of patients	*Potential for Bias* Only 115 of the 228 patients (50%) agreed to answer questionnaires for the study ***Outcomes:*** Used their own modified version of the International Continence Society (ICS) standard, validated questionnaire

Specialist advisor's opinion / advisors' opinions
Specialist advice was sought from the British Association of Urological Surgeons.

All specialists considered the procedure to be 'definitely novel', still the subject of debate and uncertainty and were aware of only a few very specialised UK centres where the procedure was currently performed.

The impact to the NHS, as a whole, was rated as 'moderate'.

Some specialist advisors provided specific complication rates. These are listed in the table below.

Complication	Results given by Specialist Advisors
Bleeding requiring tranfusion	5% (considerably less than open)
Incontinence	5 to 20%
Injury to other adjacent organs (ie rectum)	2 to 5%
Erectile Dysfunction	50 to 100%
Surgical conversion rate	5%

All specialists raised concerns about the steep learning curve associated with the procedure. It was noted that extensive training would be required before an acceptable level of surgical proficiency could be obtained. The procedure was universally described as 'highly technical in nature. One specialist commented that laparoscopic radical prostatectomies may in fact be 'best left for a few specialised centres in the UK to perform'. Another specialist commented that 'about 50 cases is the 'watershed' phase of the learning curve for this procedure'.

It was also noted that the British Association of Urological Surgeons (BAUS) Section of Oncology documents laparoscopic radical prostatectomy cases as well as standard open radical prostatectomy cases.

One specialist noted that 'there is a gap between enthusiasm and experience with regard to this technique at present which could create an environment in which some surgeons will be tempted to step well beyond their ability and experience'. In fact, one UK centre, that he is aware of, has ceased performing laparoscopic radical prostatectomies, despite considerable experience in the area, due to their complication rates.

In total, the specialist advisors knew of three UK centres currently undertaking laparoscopic radical prostatectomy procedures:

Basingstoke 150 cases to date

King's College Hospital, London 30 cases to date
Southmead Hospital, Bristol 10 cases to date

Issues for consideration by IPAC
None

References

1. Guillonneau B, Vallancien G. Laparoscopic radical prostatectomy: The Montsouris technique. *Journal of Urology* 2000; **163**(6):1643-1649.

2. Kavoussi LR. Laparoscopic radical prostatectomy: Irrational exuberance? *Urology* 2001; **58**(4): 503-505.

3. Gill IS, Kavoussi R, Clayman RV. Complications of laparoscopic nephrectomy in 185 patients: A multi-instituitional review. *Journal of Urology* 1995; **154**: 479-483.

4. Abbou CC, Hoznek A, Salomon L, Lobontiu A, Saint F, Cicco A, Antiphon P, Chopin D. Robotically assisted radical prostatectomy. A case report. *Progres en Urologie* 2000;**10**(4):520-523.

5. Abbou CC, Hoznek A, Salomon L, Olsson LE, Lobontiu A, Saint F, Cicco A, Antiphon P, Chopin D. Laparoscopic radical prostatectomy with a remote controlled robot. *Journal of Urology* 2001;**165**(6 I):1964-1966.

6. Binder J, Kramer W. Robotically-assisted laparoscopic radical prostatectomy. *British Journal of Urology International* 2001;**87**(4):408-410.

7. Binder J, Jones J, Bentas W, Wolfram M, Brautigam R, Probst M, Kramer W, Jonas D. Robot-assisted laparoscopy in urology. Radical prostatectomy and reconstructive retroperitoneal interventions. *Urologe A* 2002;**41**(2):144-149.

8. Kavoussi LR. Laparoscopic radical prostatectomy with a remote controlled robot - Comment. *Journal of Urology* 2001;**165**(6):1966.

9. Meininger D, Byhahn C, Bueck M, Binder J, Kramer W, Kessler P, Westphal K. Effects of Prolonged Pneumoperitoneum on Hemodynamics and Acid-Base Balance during Totally Endoscopic Robot-assisted Radical Prostatectomies. *World J Surg* 2002;**26**(12).

10. Menon M, Shrivastava A, Tewari A, Sarle R, Hemal A, Peabody JO, Vallancien G. Laparoscopic and robot assisted radical prostatectomy: establishment of a structured program and preliminary analysis of outcomes. *Journal of Urology* 2002;**168**(3):945-949.

11. Menon M, Tewari A, Baize B, Guillonneau B, Vallancien G. Prospective comparison of radical retropubic prostatectomy and robot-assisted anatomic prostatectomy: The Vattikuti Urology Institute experience. *Urology 60(5):864-8,* 2002.

12. Pasticier G, Rietbergen JBW, Guillonneau B, Fromont G, Menon M, Vallancien G. Robotically assisted laparoscopic radical prostatectomy: Feasibility study in men. *European Urology* 2001;**40**(1):70-74.

13. Rassweiler J, Frede T, Seemann O, Stock C, Sentker L. Telesurgical laparoscopic radical prostatectomy - Initial experience. *European Urology* 2001;**40**(1):75-83.

14. Rassweiler J, Binder J, Frede T. Robotic and telesurgery: will they change our future?. [Review] [42 refs]. *Current Opinion in Urology* 2001;**11**(3):309-320.

15. Rassweiler J, Frede T. Robotics, telesurgery and telementoring--their position in modern urological laparoscopy. *Archivos Espanoles de Urologia 55(6):610-28,* 2002;-Aug.

16. Tewari A, Peabody J, Sarle R, Balakrishnan G, Hemal A, Shrivastava A, Menon M. Technique of da vinci robot-assisted anatomic radical prostatectomy. *Urology* 2002;**60**(4):569.

17. **Fromont G, Guillonneau B, Validire P, Vallancien G. Laparoscopic radical prostatectomy. preliminary pathologic evaluation. *Urology* 2002;60(4):661.**

18. **Dahl DM, L'esperance JO, Trainer AF, Jiang Z, Gallagher K, Litwin DE, Blute RD. Laparoscopic radical prostatectomy: initial 70 cases at a U.S. university medical center. *Urology* 2002;60(5):859-863.**

19. **Guillonneau B, Vallancien G. Laparoscopic radical prostatectomy: the Montsouris experience. *Journal of Urology* 2000;163(2):418-422.**

20. **Guillonneau B, Rozet F, Cathelineau X, Lay F, Barret E, Doublet JD, Baumert H, Vallancien G. Perioperative complications of laparoscopic radical prostatectomy: the Montsouris 3-year experience. *J Urol* 2002;167(1):51-56.**

21. **Vallancien G, Guillonneau B, Cathelineau X, Baumert H, Doublet JD. Localised prostate cancer: treatment by laparoscopic radical prostatectomy: Results about 841 cases. *Bulletin de l Academie Nationale de Medecine* 186(1):117-23.**

22. **Katz R, Salomon L, Hoznek A, De La Taille A, Vordos D, Cicco A, Chopin D, Abbou CC. Patient reported sexual function following laparoscopic radical prostatectomy. *Journal of Urology* 2002;168(5):2078-2082.**

23. **Olsson LE, Salomon L, Nadu A, Hoznek A, Cicco A, Saint F, Chopin D, Abbou CC. Prospective patient-reported continence after laparoscopic radical prostatectomy. *Urology* 2001;58(4):570-572.**

ANNEX: Studies that met the inclusion criteria but which were not tabulated.

Abbou CC, Salomon L, Hoznek A, Antiphon P, Cicco A, Saint F, Alame W, Bellot J, Chopin DK. Laparoscopic radical prostatectomy: preliminary results. *Urology* 2000;**55**(5):630-634.

Andreoni C, Gattas N, Srougi M. Initial experience with extraperitoneal endoscopic radical retropubic prostatectomy. *Brazilian Journal of Urology* 2001;**27**(6):563-565.

Bollens R, Vanden Bossche M, Roumeguere T, Damoun A, Ekane S, Hoffmann P, Zlotta AR, Schulman CC. Extraperitoneal laparoscopic radical prostatectomy - Results after 50 cases. *European Urology* 2001;**40**(1):65-69.

Guillonneau B, Cathelineau X, Barret E, Rozet F, Vallancien G. Laparoscopic radical prostatectomy: technical and early oncological assessment of 40 operations. *European Urology* 1999;**36**(1):14-20.

Guillonneau B, Vallancien G. Laparoscopic radical prostatectomy: initial experience and preliminary assessment after 65 operations. *Prostate* 1999;**39**(1):71-75.

Guillonneau B, Cathelineau X, Doublet JD, Vallancien G. Laparoscopic radical prostatectomy: The lessons learned. *Journal of Endourology* 2001;**15**(4):441-445.

Guillonneau B, Rozet F, Barret E, Cathelineau X, Vallancien G. Laparoscopic radical prostatectomy: assessment after 240 procedures. *Urologic Clinics of North America* 2001;**28**(1):189-202.

Guillonneau B, Cathelineau X, Doublet JD, Baumert H, Vallancien G. Laparoscopic radical prostatectomy: Assessment after 550 procedures. *Critical Reviews in Oncology-Hematology* 2002;**43**(2):123-133.

Guillonneau B, Cathelineau X, Barret E, Rozet F, Vallancien G. Radical laparoscopic prostatectomy: early results in 28 cases. *Presse Medicale* 1998;**27**(31):1570-1574.

Habuchi T, Iinuma M, Sato K, Sato S, Matsuura S, Shimoda N, Tsuchiya N, Mitsumori K, Kato T. [Early results in the initial 15 cases of laparoscopic radical prostatectomy in Akita University Medical Center]. [Japanese]. *Hinyokika Kiyo - Acta Urologica Japonica* 2002;**48**(3):139-144.

Hara I, Kawabata G. Japanese experience with radical prostatectomy. *Curr Urol Rep* 2002;**3**(2):159-163.

Hattori R, Ono Y, Gotho M, Yoshikawa Y, Hirabayashi S, Yamada S, Ohshima S. [Laparoscopic radical prostatectomy--initial 10 cases]. [Japanese]. *Nippon Hinyokika Gakkai Zasshi - Japanese Journal of Urology* 2001;**92**(6):603-608.

Hoznek A, Salomon L, Olsson LE, Antiphon P, Saint F, Cicco A, Chopin D, Abbou CC. Laparoscopic radical prostatectomy. The Creteil experience. *Eur Urol* 2001;**40**(1):38-45.

Jacob F, Salomon L, Hoznek A, Bellot J, Antiphon P, Chopin DK, Abbou CC. Laparoscopic radical prostatectomy: preliminary results. *Eur Urol* 2000;**37**(5):615-620.

Kawabata G, Hara I, Hara S, Isotani S, Sakai Y, Wada Y, Miyake H, Gotoh A, Chokyu H, Fujisawa M, Okada H, Kamidono S, Arakawa S. [Laparoscopic radical prostatectomy: initial 17 case report]. [Japanese]. *Nippon Hinyokika Gakkai Zasshi - Japanese Journal of Urology* 2001;**92**(7):647-655.

Kawakita M, Sato M, Oguchi N, Muguruma K, Murota T, Matsuda T. [Transperitoneal laparoscopic radical prostatectomy with the Montsouris technique: experience in initial 5 cases]. *Nippon Hinyokika Gakkai Zasshi* 2001;**92**(4):506-512.

Miyake H, Kawabata G, Gotoh A, Fujisawa M, Okada H, Arakawa S, Kamidono S, Hara I. Comparison of surgical stress between laparoscopy and open surgery in the field of urology by measurement of humoral mediators. *International Journal of Urology* 2002;**9**(6):329-333.

Nadu A, Salomon L, Hoznek A, Olsson LE, Saint F, de la TA, Cicco A, Chopin D, Abbou CC. Early removal of the catheter after laparoscopic radical prostatectomy. *Journal of Urology* 2001;**166**(5):1662-1664.

Nagai A, Nasu Y, Shirasaki Y, Iguchi H, Arata R, Tsugawa M, Tsushima T, Kumon H. Laparoscopic radical prostatectomy: Initial cases at Okayama University Hospital. *Acta Medica Okayama* 2002;**56**(1):51-52.

Rassweiler J, Sentker L, Seemann O, Hatzinger M, Stock C, Frede T. Heilbronn laparoscopic radical prostatectomy - Technique and results after 100 cases. *European Urology* 2001;**40**(1):54-64.

Rassweiler J, Sentker L, Seemann O, El Quaran M, Stock C, Frede T. Laparoscopic radical prostatectomy: Technique and early experience. *Aktuelle Urologie* 2000;**31**(4):238-246.

Rassweiler J, Sentker L, Seemann O, Hatzinger M, Rumpelt HJ. Laparoscopic radical prostatectomy with the Heilbronn technique: an analysis of the first 180 cases. *Journal of Urology* 2001;**166**(6):2101-2108.

Safarik L, Dvoracek J, Vrany M. Laparoscopic radical prostatectomy. [Czech]. *Endoskopie* 2000;**9**(2):30-32.

Salomon L, Levrel O, de la TA, Anastasiadis A, Saint F, Zaki S, Vordos D, Cicco A, Olsson L, Hoznek A, Chopin D, Abbou C. Radical prostatectomy by the retropubic, perineal and laparoscopic approach: 12 years of experience in one center. *European Urology* 2002;**42**(2):104.

Salomon L, Levrel O, De La Taille A, Hoznek A, Chopin D, Abbou CC. Sites of positive surgical margins after retropubic, perineal and laparoscopic radical prostatectomy. *Progres en Urologie* 2002;**12**(4):628-634.

Salomon L, Anastasiadis AG, Katz R, de la TA, Saint F, Vordos D, Cicco A, Hoznek A, Chopin D, Abbou CC. Urinary continence and erectile function: A prospective evaluation of functional results after radical laparoscopic prostatectomy. *European Urology* 2002;**42**(4):338-343.

Schuessler WW, Schulam PG, Clayman RV, Kavoussi LR. Laparoscopic radical prostatectomy: Initial short-term experience. *Urology* 1997;**50**(6):854-857.

Soulie M, Salomon L, Seguin P, Mervant C, Mouly P, Hoznek A, Antiphon P, Plante P, Abbou CC. Multi-institutional study of complications in 1085 laparoscopic urologic procedures. *Urology* 2001;**58**(6):899-903.

Turk I, Deger S, Winkelmann B, Schonberger B, Loening SA. Laparoscopic radical prostatectomy - Technical aspects and experience with 125 cases. *European Urology* 2001;**40**(1):46-52.

Turk I, Deger IS, Winkelmann B, Roigas J, Schonberger B, Loening SA. Laparoscopic radical prostatectomy: experience with 145 procedures. *Urologe A* 2001;**40**(3):199-206.

Vallancien G. Extraperitoneal laparoscopic radical prostatectomy - Results after 50 cases - Editorial comment. *European Urology* 2001;**40**(1):69.