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*Sebastian Piotrowicz[1], Łukasz Nyk[1], Mieszko Kozikowski[1],Tomasz Gołąbek[2], Andrzej Borówka[1], Jakub Dobruch[1]

Complications of endoscopic radical prostatectomy

Powikłania endoskopowej prostatektomii radykalnej

1st Unit of Didactics, Department of Urology, Centre of Postgraduate Medical Education, European Health Centre Otwock
Head of Department: Jakub Dobruch, MD, PhD
2nd Department of Urology, Collegium Medicum, Jagiellonian University in Kraków
Head of Department: Professor Piotr L. Chłosta, MD, PhD, FEBU, FRCS (Glasg)

Keywords

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Słowa kluczowe

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S u m m a r y

Introduction. Transperitoneal endoscopic radical prostatectomy (TERP) with extended pelvic lymph nodes dissection should be performed if the risk of lymph nodes involvement is greater than 5%. In other cases, endoscopic extraperitoneal radical prostatectomy (EERP) is performed.

Aim. To evaluate the incidence of complications during endoscopic radical prostatectomy performed in the Department of Urology of CMKP in 2011-2013.

Material and methods. Data of 192 men subjected to ERP were analysed. Patients were divided into two groups: TERP, n = 101 and EERP, n = 91. It was a retrospective analysis primarily of complications observed during surgery and in the early postoperative period.

Results. TERP and EERP were performed in 101 (52.6%) and 91 (47.4%) men, respectively. The largest group were men aged 60 to 64 years. In the majority of patients (87%) based on clinical data it was concluded that the cancer was clinically confined to the prostate (c £ T2, N0, M0), while in the remaining patients it was thought to be locally advanced (cT ≥ 3, N0, M0). The mean duration of hospitalisation was 5 days, wherein the two groups presented similarly. The most common complication observed in men treated with TERP and EERP was bleeding requiring blood transfusions, but it usually involved every tenth patient in both groups.

Conclusions. Despite the abovementioned complications, we believe that endoscopic radical prostatectomy ensures patients' safety. In addition, ERP supplemented with extended pelvic lymph node dissection in selected patients is not associated with the occurrence of serious complications.

S t r e s z c z e n i e

Wstęp. Radykalna prostatektomia (RP) powinna być uzupełniona rozległym wycięciem regionalnych węzłów chłonnych, jeśli ryzyko wystąpienia przerzutów jest większe niż 5% i wówczas wykonywana jest z dostępu przezotrzewnowego (ang. *transperitoneal endoscopic radical prostatectomy* – TERP). W pozostałych przypadkach operacja jest wykonywania z dostępu pozaotrzewnowego (ang. *endoscopic extraperitoneal radical prostatectomy* – EERP).

Cel pracy. Ocena częstości występowania powikłań podczas endoskopowej prostatektomii radykalnej wykonywanej w Klinice Urologii CMKP w latach 2011-2013.

Materiał i metody. Analizą objęto dane 192 mężczyzn. Chorych podzielono na dwie grupy: TERP (n = 101) oraz EERP (n = 91). Analiza miała charakter retrospektywny i dotyczyła głównie zjawisk, które zaobserwowano podczas operacji i we wczesnym okresie pooperacyjnym.

Wyniki. U 101 (52,6%) chorych wykonano TERP, u 91 (47,4%) EERP. Najliczniejszą grupę stanowili mężczyźni w wieku 60-64 lata. U większości (87%) chorych na podstawie danych klinicznych uznano, że rak był klinicznie ograniczony do stercza (cT £ 2, N0, M0), u pozostałych uważano, że był zaawansowany miejscowo (cT ≥ 3, N0, M0). Średni czas trwania hospitalizacji wyniósł 5 dni, przy czym w obu grupach przedstawiał się podobnie. Najczęstszym powikłaniem obserwowanym u mężczyzn poddanych TERP i EERP było krwawienie wymagające podania masy erytrocytarnej, niemniej w obu grupach dotyczyło to zwykle co dziesiątego chorego.

Wnioski. Pomimo wymienionych powyżej niedoskonałości uważamy, że endoskopowa prostatektomia radykalna jest operacją zapewniającą pacjentom bezpieczeństwo. Ponadto u wybranych chorych uzupełnienie ERP rozległą limfadenektomią również nie wiąże się z wystąpieniem groźnych zdarzeń dla zdrowia operowanego mężczyzny.

Conflict of interest
Konflikt interesów

None
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Address/adres:

*Sebastian Piotrowicz
Klinika Urologii CMKP
Europejskie Centrum Zdrowia Otwock
ul. Borowa 14/18, 05-400 Otwock
tel. +48 (22) 710-30-49
spiotrowicz@wp.pl

INTRODUCTION

Radical prostatectomy (RP) is a recognised method for the treatment of prostate cancer, particularly at an early clinical stage. It allows for the achievement of 5-year and 10-year overall survival rate at the level of 80 and 75% and biochemical relapse-free survival rate of 70%-90% and 60%-80%, respectively (1, 2). Endoscopic radical prostatectomy (ERP) was first performed in 1992 by Schuessler (3). In Poland ERP was introduced in 2004. In our centre ERP is the method of choice for selected patients with prostate cancer. In addition, if the risk of lymph node involvement is higher than 5%, this procedure is supplemented with extended regional lymph node dissection using transperitoneal approach (transperitoneal endoscopic radical prostatectomy – TERP). In the remaining cases the operation is performed using extraperitoneal approach (endoscopic extraperitoneal radical prostatectomy – EERP). Endoscopic radical prostatectomy represents the dominant method for the treatment of patients with prostate cancer in selected centres in Poland. Unfortunately, the number of lymph nodes removed during these operations is surprisingly low and is not consistent with the recommendations of the European Association of Urology (4). Consequently, the authors did not encounter any account of the possible complications when this procedure is supplemented with extended regional lymph node dissection. Therefore, they decided to present the rate of complications observed during endoscopic radical prostatectomy that was performed at the Department of Urology of the Centre of Postgraduate Medical Education, Poland, in 2011-2013.

AIM

To evaluate the incidence of complications during endoscopic radical prostatectomy performed in the Department of Urology of CMKP in 2011-2013.

MATERIAL AND METHODS

The data of 192 men who underwent ERP in the specified period of time were analysed. The patients were divided into two groups. The first one included men who underwent transperitoneal surgery (TERP; n = 101), while the second one included men who underwent extraperitoneal surgery (EERP; n = 91). It was a retrospective analysis primarily of complications observed during surgery and in the early postoperative period. Negative consequences of ERP which appeared within 3 months of the procedure have also been presented.

RESULTS

In 101 (52.6%) patients TERP was performed and 91 patients (47.4%) underwent EERP. The selection of the method for radical prostatectomy depended on the patient's and operating urologist's preferences. In the vast majority of cases transperitoneal surgery was performed in patients with high- or moderate-risk cancer (cT $\geq$ 2b and/or PSA $\geq$ 10 ng/ml and/or Gl.s. $\geq$ 7).

The men who underwent surgery were 44 to 76 years old. The largest group were men aged 60 to 64 years (tab. 1).

Tab. 1. Age structure of men who underwent endoscopic radical prostatectomy (ERP)

Age (years)	ERP	
	Number of operated patients	Percent
47-49	3	1.6
50-54	21	10.9
55-59	34	17.7
60-64	63	32.8
65-69	45	23.4
70-74	21	10.9
> 74	5	2.6
Total	192	100.0%

Mean PSA and PSA density (PSAD) levels were higher in men who underwent TERP than those who underwent EERP. Similarly, in the TERP group abnormalities in physical examination (DRE) and transrectal ultrasound examination were more common. In the majority of patients (87%), based on clinical data, the cancer was considered to be clinically limited to the prostate (cT £ 2, N0, M0). In the remaining patients it was thought to be locally advanced (cT $\geq$ 3, N0, M0). In one case EERP was performed instead of TERP due to the risk of bleeding associated with congenital thrombocytopaenia. In men who underwent TERP cancer turned out to be locally advanced more frequently and was characterised by higher malignancy as rated on the Gleason scale (tab. 2).

The mean duration of hospital stay was 5 days and it was similar in both groups. The most common complication observed in men undergoing TERP and EERP was bleeding requiring the administration of packed red blood cells; however, this was usually the case in every tenth patient in both groups. The remaining adverse events were observed extremely rarely (tab. 3). No complications rated as grade IIIb or higher on the Clavien-Dindo scale were recorded.

DISCUSSION

Radical prostatectomy is the method of choice for a selected group of operated patients. The present progress in minimally invasive surgery allows for the extension of indications for radical treatment without significantly increasing the risk of intra- and perioperative complications, and, consequently, without significantly compromising the quality of life of the operated men. The presence of metastases in lymph nodes in men with cancer clinically confined to the organ of origin is a negative prognostic factor (5-7). Appropriate and early diagnosis of these lymph node lesions allows for the introduction of adjuvant therapy; however, currently, the majority of imaging examinations are not sufficiently reliable yet for the assessment of lymph nodes (8, 9).

Tab. 2. Characteristics of the analysed group

	TERP	EERP	Total
Number of men	101	91	192
Age (mean ± SD)	62.3 ± 6.9	62.4 ± 5.7	62.3 ± 6.3
PSA (mean ± SD)	11.9 ± 11.6	6.9 ± 3.6	9.5 ± 9.1
PSAD (mean ± SD)	0.48 ± 0.21	0.19 ± 0.1	0.28 ± 0.19
Prostate volume (mean ± SD)	43.4 ± 19.9	42.7 ± 21.1	43.0 ± 20.5
Abnormal DRE	90 (89%)	38 (42%)	128 (67%)
Abnormal TRUS	61 (60%)	21 (23%)	82 (43%)
Cancer staging based on clinical data			
Cancer limited to the prostate	77 (76%)	90 (99%)	167 (87%)
Locally advanced cancer	24 (24%)	1 (1%)	25 (13%)
Cancer malignancy rated after biopsy (Gleason score, mean ± SD)	7.09 ± 0.8	6.13 ± 0.9	6.61 ± 1.0
Cancer staging after surgery			
Cancer limited to the prostate	58 (57%)	66 (73%)	124 (65%)
Extraprostatic infiltration	21 (21%)	19 (21%)	40 (21%)
Seminal vesicle involvement	21 (21%)	6 (6%)	27 (14%)
Adjacent structure involvement	1 (1%)	0	1 (0.5%)
Pelvic lymph node involvement	13 (13%)	0	13 (7%)
Cancer malignancy (Gleason score, mean ± SD)	7.0 ± 0.9	6.1 ± 0.9	6.6 ± 1.0

Tab. 3. Adverse events observed in the patients depending on the type of ERP

	TERP	EERP	Total
Duration of hospital stay (days)	4.8 ± 1.7	5.7 ± 2.5	5.2 ± 2.1
Need for packed red blood cells transfusion	9 (9%)	12 (13%)	21 (11%)
Lymphocele	1 (1%)	0	1 (0.5%)
Anastomotic leak	1 (1%)	2 (2%)	3 (1.6%)
Rectal damage	1 (1%)	4 (4%)	5 (2.6%)
Parenteral nutrition	1 (1%)	3 (3%)	4 (2%)
Ileus	1 (1%)	0	1 (1%)
Neurological disorders	1 (1%)	0	1 (1%)

Therefore, at present, pelvic lymphadenectomy remains the most precise method for prostate cancer staging in the case of lymph node metastasis (10).

In our Department radical prostatectomy is supplemented with extended lymphadenectomy if the risk of lymph node involvement exceeds 5%. The aim of the paper was to assess the rate of complications which may occur after endoscopic prostatectomy, including for those patients in whom radical prostatectomy was supplemented with extended lymphadenectomy. Please note that all procedures were performed by one surgeon.

In over half of the operated men (52.6%) ERP was supplemented with extended lymphadenectomy. The oncological type of cancer, level of malignancy and staging assessed both in imaging and physical examinations was less favourable in this group of the operated men.

The most common postoperative complication observed in patients undergoing ERP was bleeding that required packed red blood cells transfusion; however, this was usually the case in every tenth patient in both groups and no man required intraoperative transfusion. Another complication was rectal damage which occurred in 2.6% of the operated men. In all cases it was diagnosed intraoperatively and treated endoscopically. As a result, in 4 patients parenteral nutrition was applied. No operated patient developed anal fistula. Lein et al. presented the risk of rectal damage to be similar (3.3%) in a group of 1000 patients undergoing endoscopic surgery (11).

Vesicourethral anastomosis was performed using a continuous suture and its integrity was checked intraoperatively by the administration of 250 ml of saline. In 3 patients (1.6%) anastomotic leakage was found and cystography was performed before the removal of a Foley catheter from the urinary bladder. In the remaining patients the catheter was removed on the 10th day after the operation. In the source cited above anastomotic leakage was found in 22.3% of the operated patients during routine cystography performed on the 5th and 6th day after the procedure (11).

At present, the number of complications following pelvic lymphadenectomy is not significant and performing extended pelvic lymphadenectomy does not have a negative effect on the number of complications either. Heidenreich et al. compared groups of patients undergoing limited and extended lymph node dissection and did not find any difference in the rate of complications, which was 9% in both groups (12). However, extended pelvic lymphadenectomy increases the rate of detection of metastasis in lymph nodes by 15-30% compared to limited pelvic lymphadenectomy (13, 14). Allaf et al. demonstrated that in a group of patients who underwent extended lymphadenectomy in whom lymph node lesions accounted for less than 15% of the dissected nodes 5-year biochemical relapse-free survival was 43%, while for men who underwent limited lymphadenectomy this type of survival rate was only 10% (15).

Extended lymphadenectomy is associated with a higher risk of chylothorax. However, transperitoneal surgical approach enables one to take advantage of the peritoneal function; as a result, the occurrence of lymphocele is extremely rare. The draining tube was removed on the 2nd day after the operation once the level of creatinine in the collected fluid was measured. In our material lymphocele requiring transcutaneous drainage was found in one patient who was treated using the transperitoneal approach. Extended regional lymph node dissection may also result in transient

neural transmission dysfunction. In one man transient parestesias in the lower extremity were found. In our analysis grade I to IIIa complications on the Clavien-Dindo scale were recorded.

Endoscopic prostatectomy appears to be a safe method free from dangerous complications; however, we are aware of the shortcomings of our study. First and foremost, the paper is of a retrospective nature. Moreover, the subject of the study was the assessment of intraoperative and early postoperative complications, which excludes the evaluation of the operated patients' quality of life and oncological success. It is a well-known fact that health related quality of life (HRQoL) is primarily compromised by erectile dysfunction and urinary incontinence following surgical prostatectomy.

CONCLUSIONS

Despite the shortcomings mentioned above we believe that endoscopic radical prostatectomy is a procedure that ensures patient safety. In addition, combining ERP with extended lymphadenectomy in selected patients is not associated with any dangerous complications.

Finally, minimally invasive surgery is associated with short hospitalisation and faster recovery.

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