2. *Однопортові* лапароскопічні втручання. Перший досвід та перспективи використання / О. Ю. Іоффе, О. П. Стеценко, Т. В. Трасюк [та ін.] // Хірургія України. – 2011. – № 3. – С.16–20.

3. *Single*-port laparoscopic appendectomy conducted intracorporeally with the aid of a transabdominal sling suture / O. Ates, G. Hakguder, M. Olguner, F. M. Akgur // Journal of Pediatric Surgery. – 2007. – N 6, Vol. 42. – P. 1071–1074.

4. *Single* Port Access Laparoscopic Cholecystectomy / P. Bucher, P. Pugin [et al.] // World J Surgery. – 2008. – N 5, Vol. 33. – P.1015–1019.

REFERENCES

1. Zakharash M.P., Zakharash Yu.M., Usova E.B. Surgery by single laparoscopic access — a new tendency of noninvasive surgery. Surgery of Ukraine 2010;3(35):100-109.

2. Ioffe O.Yu., Stetsenko O.P., Trasyuk T.V. et al.Single port laparoscopic interventions. First experience and perspectives of application. Surgery of Ukraine 2011;3:6-20.

3. Ates O., Hakguder G., Olguner M., Akgur F.M. Single-port laparoscopic appendectomy conducted intracorporeally with the aid of a transabdominal sling suture. Journal of Pediatric Surgery 2007;6,42:1071-1074.

4. Bucher P., Pugin P. et al. Single Port Access Laparoscopic Cholecystectomy. World J Surgery 2008;5(33): 1015-1019.

Submitted 20.08.2012

UDC 615.583.3:616.62.-008.22

V. V. Lysenko

COMPARISON OF THE LONG-TERM RESULTS OF MONOPOLAR AND BIPOLAR TRANSURETHRAL RESECTION OF THE PROSTATE

The Odessa National Medical University, Odessa, Ukraine

УДК 615.583.3:616.62.-008.22

В. В. Лысенко

СРАВНЕНИЕ ОТДАЛЕННЫХ РЕЗУЛЬТАТОВ МОНОПОЛЯРНОЙ И БИПОЛЯРНОЙ ТРАНСУРЕТРАЛЬНОЙ РЕЗЕКЦИИ ПРЕДСТАТЕЛЬНОЙ ЖЕЛЕЗЫ

Одесский национальный медицинский университет, Одесса, Украина

В последние годы внедрено большое количество альтернативных малоинвазивных методов лечения доброкачественной гиперплазии предстательной железы (ДГПЖ). Современные многоцентровые исследования демонстрируют сопоставимость ближайших результатов биполярной ТУР, биполярной и плазмокинетической энуклеации простаты, а также гольмиевого и green-лазера в лечении ДГПЖ по сравнению со стандартной методикой монополярной ТУР. Большинство исследований сравнивают периоперационные и ранние послеоперационные результаты биполярной и монополярной ТУР простаты. Автором статьи поставлена задача оценить качество жизни и характер отдаленных послеоперационных осложнений после биполярной ТУР в сроки от 36 до 60 мес. после операции по сравнению с монополярной ТУР предстательной железы. В результате исследования установлено, что при практически равных интраоперационных и ранних послеоперационных показателях биполярная ТУР предстательной железы имеет преимущества перед монополярной ТУР по отдаленным результатам в связи с меньшим количеством риска рецидива ДГПЖ ($p<0,05$) и отсутствием послеоперационных рубцовых изменений в зоне резекции.

Ключевые слова: биполярная ТУР, монополярная ТУР, ДГПЖ, стриктура уретры, отдаленные результаты.

UDC 615.583.3: 616.62.-008.22

V. V. Lysenko

COMPARISON OF THE LONG-TERM RESULTS OF MONOPOLAR AND BIPOLAR TRANSURETHRAL RESECTION OF THE PROSTATE

The Odessa National Medical University, Odessa, Ukraine

The monopolar transurethral resection of the prostate (TUR) has long remained a “gold” standard of treatment of benign prostatic hyperplasia (BPH). However, recently there have been introduced a large number of alternative noninvasive methods of BPH treatment. Modern multicenter studies demonstrate the comparability of the intraoperative data and early postoperative characteristics of the monopolar and bipolar TUR.

The author of the paper compare quality of life and nature of the long-term postoperative complications after the bipolar TUR in the period from 36 to 60 months after the operation in comparison with the monopolar TUR of the prostate. There were evaluated the frequency of BPH relapses and infravesical obstruction development, associated with the postoperative scar changes in the urethra and neck of the bladder, which was confirmed by the data of ascending urethrography and urine flowmetry. The patients with the irritative symptoms, associated with the bladder overactivity, were excluded from the study.

The author demonstrates that 6.7% patients after monopolar TUR underwent repeated TUR due to BPH relapse and 13.3% of patients had the infravesical obstruction, associated with the scar changes in the zone of the surgical intervention in the long-term period after the monopolar TUR. The bipolar TUR of the prostate had advantages over the monopolar TUR in the long-term results, regarding smaller quantity of risk of BPH relapse ($p<0.05$) and absence of the postoperative scar changes in the zone of resection. Besides, the amount of patients contented by results of the operation is reliably more after the bipolar TUR ($p<0.05$).

Key words: bipolar TUR, monopolar TUR, BPH, the stricture of the urethra, the long-term results.

Objective

The monopolar transurethral resection (TUR) of the prostate has long remained a "gold" standard of treatment of benign prostatic hyperplasia (BPH) [9; 15; 17; 24]. The standard procedures of the operation have already been developed, special peculiarities of the postoperative period, complications and postoperative results have been studied [15]. However, in the recent years there were introduced a large number of alternative noninvasive methods of BPH treatment [1; 8; 12; 13; 19; 27]. Modern multicenter studies demonstrate the comparability of the immediate results of the bipolar TUR, bipolar and plasmokinetic enucleation of the prostate as well as holmium and green-laser in BPH treatment [20; 21; 25; 26]. The advantages of the new technologies are caused only by the expansion of indications to noninvasive surgical intervention due to absence of limitations in surgery duration, absence of the risk of the TUR-syndrome development and their smaller morbidity, which allows to use data of the procedure in large extension of hyperplasia [2–4; 6; 7; 11; 14; 16].

The authors of studies on this topic, comparing intraoperative data and early postoperative characteristics, have found that the monopolar and bipolar TUR are little distinguished in these indices [5; 10; 13; 15; 16; 18]. However, at present the basic criterion of effectiveness of one or other procedure is customary assumed to consider the patients' quality of life. Based on these positions we did not encounter any studies, which evaluate long-term results of both forms of surgical intervention.

Aim of the work. To compare quality of life and nature of the long-term postoperative complications after the bipolar TUR in the period from 36 to 60 months after the operation in comparison with the monopolar TUR of the prostate.

Materials and Methods

23 patients participated in the study, whom the bipolar TUR of the prostate gland for BHPG was performed from June 2007 to June 2009 with the use of a electro-surgical generator Autocon II 400 (Karl Storz, Germany). The patients' age was (69±12) years. The prostate volume was (85.5± ±32.9) ml. The PSA index was (2.3±1.9) ng/ml. Duration of the operation was (60±25) min. The period of catheterization was (4±2) days. To make the comparison 30 patients were examined who were performed standard, monopolar TUR of the prostate for BPH. The patients' age was (71±6) years. The prostate volume was (58.5±23.6) ml. The PSA index was (2.9±1.4) ng/ml. Duration of the operation was (45±20) min. The period of catheterization was (5±2) days in comparison. That is both groups were compared by the criteria of inclusion in the study. To eliminate the effect of the special peculiarities of the surgical technology and experience of the surgeon all surgical intervention were performed by one specialist. The follow-up period of the patients was from 36 to 60 months. There were evaluated the frequency of BPH relapses, which was revealed with TRUS and frequency of development of the infravesical obstruction, associated with the postoperative scar changes in the urethra and neck of the bladder, which was confirmed by the data of ascending urethrography and uroflowmeter. The patients with the irritative symptoms, associated with the bladder overactivity, were excluded from the study.

Results

Within the follow-up period from 36 to 60 months after the operation as a result of the control examination 20/23 (87%) patients were satisfied by quality of urination by the IPSS scale after bipolar TUR and 24/30 (80%) after monopolar TUR ($p<0.05$). 1/23 (4.3%) patients after bipolar TUR and 2/30 (6.7%) patients after monopolar TUR ($p<0.5$) underwent repeated TUR due to BPH relapse. Strictures of the urethra and scar changes of the neck of the bladder were not noted in the long-term period after bipolar TUR, while after monopolar TUR there were noted 3/30 (10%) scar stenosis of the neck of the bladder and 1/30 (3.3%) had the non-extended stricture of the membranous part of the urethra. Thus, 13.3% of patients had the infravesical obstruction, associated with the scar changes in the zone of the surgical intervention in the long-term period after the monopolar TUR. It is probably possible to explain it by the deeper damaging effect on the mucosa of the urethra and neck of the bladder by the monopolar current. Furthermore, it is not possible to exclude probability by the appearance of anomalous course, which is characteristic for the monopolar electro-surgical effect.

Thus, comparing the results obtained it is possible to note that in practically equal intraoperative and early postoperative indices the bipolar TUR of the prostate has advantages over the monopolar TUR in the long-term results, regarding smaller quantity of risk of BPH relapse ($p<0.05$) and absence of the postoperative scar changes in the zone of resection. Besides, the amount of patients contented by results of the operation is reliably more after the bipolar TUR ($p<0.05$).

Conclusions

1. The bipolar TUR of the prostate does not differ from the monopolar standard TUR of the prostate gland by technique and is compared with the latter by the intraoperative and early postoperative characteristics.

2. The rate of development of the late postoperative complications, such as BPH relapse, scar strictures of the urethra and stenosis of the neck of the bladder

are reliably less in the bipolar TUR of the prostate.

3. The bipolar TUR does not lead to the significant damages of mucosa of the urethra and neck of the bladder due to absence of the risk of the anomalous motion of the electric current.

4. The amount of patients satisfied with the results of the noninvasive operation is reliably more after the bipolar TUR of the prostate gland; therefore the procedure should be widely introduced in the clinical practice.

REFERENCES

1. Alivizatos G, Skolarikos A. Photoselective vaporization of the prostate to manage benign prostatic hyperplasia. J Endourol 2008;22: P. 2117-2119.

2. Finley DS, Beck S., Szabo RJ. Bipolar saline TURP for large prostate glands. Scientific World Journal 2007; 7:1558-1562.

3. Gupta N, Sivaramakrishna, Kumar RR, Dogra PN, Seth A. Comparison of standard transurethral resection, transurethral vapour resection and holmium laser enucleation of the prostate for managing benign prostatic hyperplasia of > 40 g. BJU Int 2006; 97:P.85-89.

4. Hahn RG. Fluid absorption in endoscopic surgery. BJA 2006;96: 8-20.

5. Ho HSS, Yip SKH, Lim KB [et al] A prospective randomized study comparing monopolar and bipolar transurethral resection of prostate using transurethral resection in saline (TURIS) system. Eur Urol 2007;52: 517-524.

6. Horasanli K, Silay MS, Altay B [et al] Photoselective potassium titanyl phosphate (KTP) laser vaporization versus transurethral resection of the prostate for prostates larger than 70 mL: a short-term prospective randomized trial. Urology 2008;71:247-251.

7. Iori F, Franco G, Leonardo C [et al] Bipolar transurethral resection of prostate:clinical and urodynamic evaluation. Urology 2008;71: 252-255.

8. Kuntz RM. Current role of lasers in the treatment of benign prostatic hyperplasia (BPH). Eur Urol 2006;49: P.961-969.

9. Marszalek Martin, Ponholzer Anton, Pusman Marlies [et al] Transurethral Resection of the Prostate. Eur Urol Suppl, Vol.8, issue 6, 2009:504-512.

10. Mamoulakis C, Ubbink DT, de la Rosette JJMCH Bipolar versus monopolar transurethral resection of the prostate:a systematic review and meta-analysis of randomized controlled trials. Eur Urol 2009;56:P.798-809.

11. Michielsen DP, Debacker T, De Boe V [et al] Bipolar transurethral resection in saline-an alternative surgical treatment for bladder outlet obstruction? J Urol 2007;178:P.2035-2039, discussion 2039.

12. Montorsi F, Naspro R, Salonia A [et al] Holmium laser enucleation versus transurethral resection of the prostate:results from a 2-center, prospective, randomized trial in patients with obstructive benign prostatic hyperplasia. J Urol 2004;172:1926-1929.

13. Nuhoglu B, Ayyildiz A, Karaguzel E [et al] Plasmakinetic prostate resection in the treatment of benign prostate hyperplasia:results of 1-year follow up Int J Urol 2006;13: 21-24.

14. Rajbabu K, Chandrasekara SK, Barber GH NJ [et al] Photoselective vaporization of the prostate with the potassiumtitanyl-phosphate laser in men with prostates of > 100 mL BJU Int 2007;100: 593-598, discussion 598.

15. Rassweiler J, Teber D, Kuntz R, Hoffman R. Complications of transurethral resection of the prostate (TURP) — incidence, management, and prevention. Eur Urol 2006;50:969-980.

16. Rassweiler J, Schulze M, Stock C [et al] Bipolar transurethral resection of the prostate-technical modifications and early clinical experience. Minim Invasive Ther Allied Technol 2007;16: 11-21.

17. Reich O, Gratzke C, Stief CG Techniques and long-term results of surgical procedures for BPH Eur Urol 2006;49:970-978.

18. Riccardo A, Rocco D, Di Lorenzo G [et al] Four-Year Outcome of a Prospective Randomised Trial Comparing Bipolar Plasmakinetic and Monopolar Transurethral Resection of the Prostate. Eur Urol 2009;55:922-931.

19. Ruszat R, Seitz M, Wyler SF [et al] GreenLight laser vaporization of the prostate: single-center experience and long-term results after 500 procedures Eur Urol 2008;54:P.893-901.

20. Ruszat R, Wyler SF, Seitz M [et al] Comparison of potassium-titanyl-phosphate laser vaporization of the prostate and transurethral resection of the prostate: update of a prospective non-randomized two-centre study BJU Int 2008;102:1432-1438.

21. Ahyai Sascha A, Gilling Peter, Kaplan Steven A [et al] Meta-analysis of Functional Outcomes and Complications Following Transurethral Procedures for Lower Urinary Tract Symptoms Resulting from Benign Prostatic Enlargement Eur Urol 2010;58:384-397.

22. Seckiner I, Yesilli C, Akduman B [et al] A prospective randomized study for comparing bipolar plasmakinetic resection of the prostate with standard TURP Urol Int 2006;76:139-143.

23. Singh H, Desai MR, Shrivastav P, Vani K. Bipolar versus monopolar transurethral resection of prostate: randomized controlled study J Endourol 2005;19:333-338.

24. Wendt-Nordahl G, Bucher B, Hacker A [et al] Improvement in mortality and morbidity in transurethral resection of the prostate over 17 years in a single center J Endourol 2007;21: 1081-1087.

25. Wilson LC, Gilling PJ, Williams A [et al] A randomised trial comparing holmium laser enucleation versus transurethral resection in the treatment of prostates larger than 40 grams: results at 2 years Eur Urol 2006;50:569-573.

26. Xia S-J, Zhuo J, Sun X-W [et al] Thulium laser versus standard transurethral resection of the prostate: a randomized prospective trial Eur Urol 2008;53:382-390.

27. Yu X, Elliott SP, Wilt TJ, McBean AM Practice patterns in benign prostatic hyperplasia surgical therapy: the dramatic increase in minimally invasive technologies J Urol 2008; 180:241-245.

Submitted 20.08.2012