World J. Surg. 28, 1180–1185, 2004
DOI: 10.1007/s00268-004-7559-1

WORLD
Journal of
SURGERY

Does Robotic Adrenalectomy Improve Patient Quality of Life When Compared to Laparoscopic Adrenalectomy?

Laurent Brunaud, M.D.,[1] Laurent Bresler, M.D.,[1] Rasa Zarnegar, M.D.,[2] Ahmet Ayav, M.D.,[1] Luc Cormier, M.D.,[3] Sebastien Tretou, M.D.,[1] Patrick Boissel, M.D.[1]

[1]Department of Visceral, Digestive and Endocrine Surgery, CHU Nancy-Brabois, University of Nancy, 11 Allee du Morvan, Nancy, France
[2]Department of Surgery, University Hospitals of Cleveland, Case Western Reserve University, 14 Adelbert Hall, 10900 Euclid Avenue, Cleveland, Ohio, USA
[3]Department of Urology, CHU Nancy-Brabois, University of Nancy, 11 Allee du Morvan, Nancy, France

Published Online: October 15, 2004

Abstract. The purpose of this study was to evaluate and compare perioperative quality of life in patients after laparoscopic versus robotic adrenalectomy. From November 2000 through August 2003, 33 consecutive patients underwent laparoscopic ($n = 14$) and robotic ($n = 19$) adrenalectomy. Data were obtained prospectively during management and by patient questionnaire (SF36, State-Trait Anxiety Inventory) preoperatively and postoperatively, at day 4 and at 6 weeks. Physical functioning, role limitations due to physical health problems, and bodily pain (Physical SF36 scores) were decreased at day 4 ($p = 0.004$) in all patients when compared to preoperative levels; and became similar to preoperative levels after 6 weeks. Patients who underwent robotic adrenalectomy had an increased score at 6 weeks of role limitations due to emotional problems (Mental SF36 score) ($p = 0.03$). No other significant difference was observed between patients after laparoscopic or robotic adrenalectomy. Although state anxiety was decreased postoperatively at day 4 and at 6 weeks ($p = 0.01$) in all patients, there was no significant difference between laparoscopic and robotic adrenalectomy. Postoperative pain was similar in both groups but had a tendency to be higher when patients underwent a left adrenalectomy ($p = 0.07$). Similarly, state anxiety had a tendency to be higher postoperatively at day 4 in patients after left adrenalectomies ($p = 0.06$). This study provides an evaluation of perioperative quality of life in patients after minimally invasive (laparoscopic and/or robotic) adrenalectomy. We observed no major difference between patients who underwent laparoscopic or robotic adrenalectomy. Thus, patients' perioperative quality of life is not a justifiable parameter on which to base promotion of robotic adrenalectomies.

Since the introduction of laparoscopic adrenalectomy a decade ago, it has emerged as the treatment of choice for most adrenal surgical disorders [1, 2]. The acceptance of laparoscopic adrenalectomy instead of open adrenalectomy has been rapid although there are no prospective, randomized trials comparing open with laparoscopic adrenalectomy [3]. Several retrospective studies have suggested, however, that laparoscopic adrenalectomy is associated with less postoperative discomfort, decreased hospital stay, decreased postoperative disability, and decreased rate of complications [3–5]. The wide acceptance of the laparoscopic approach can largely be attributed to advances in techniques and equipment for minimally invasive surgery, heightened patient demand, and the increased familiarity of many surgeons with laparoscopic techniques [1]. Practically speaking, laparoscopic adrenalectomy is the preferred approach for removal of most adrenal tumors except for known invasive adrenal cortical carcinomas [6]. With the advent of robotic surgery, adrenalectomy using robotic endoscopic surgical devices (Da Vinci system) has recently been proposed [7, 8]. Telemanipulator robots have been developed in response to limitations placed on the surgeon by endoscopic surgery: reduced visual quality and control and reduced dexterity related to the instrumentation and ergonomics. Theoretically, improved visualization and dexterity using robotic endoscopic surgical devices may benefit patients by making laparoscopic operations easier. Validation of this notion is, however, currently under investigation in clinical trials [9].

The application of patient-assessed measures of health outcome has become increasingly important in the evaluation of health care [10]. Documentation by numerous retrospective studies of advantages of laparoscopic adrenalectomy over open adrenalectomy suggests that quality of life in patients after laparoscopic adrenalectomy may be improved. Furthermore, quality of life measures can also be useful in the decision-making process in patients [3, 11]. Overall, quality of life is currently being considered as a standard endpoint [10, 11]. However, quality of life in patients after laparoscopic adrenalectomy has never been evaluated using validated quality of life questionnaires. The purpose of this study was to assess perioperative quality of life in patients after laparoscopic (laparoscopic and robotic) adrenalectomy and to compare perioperative quality of life in patients after laparoscopic versus robotic adrenalectomy.

This article was presented at the International Association of Endocrine Surgeons meeting, Uppsala, Sweden, June 14–17th, 2004.

Correspondence to: Laurent Brunaud, M.D., e-mail: labrunaud@chu-nancy.fr

Materials and Methods

Subjects

We included in this study all consecutive patients who underwent unilateral laparoscopic or robotic adrenalectomy in our department from November 2000 through August 2003. During the same period, 8 patients were also operated on for Cushing's disease (5 patients) or underwent open adrenalectomy (scheduled laparotomy or conversion to laparotomy after initial laparoscopic approach) (3 patients). These 8 patients were excluded from this study because their quality of life was known (Cushing's disease) or suspected (open adrenalectomy) to be impaired [12]. This exclusion was realized to preclude any bias when comparing quality of life in patients after laparoscopic and robotic adrenalectomy. The choice between the laparoscopic or robotic approach to performing adrenalectomy was realized chronologically as follows: From November 2000 to November 2001, all patients underwent adrenalectomy laparoscopically. In November 2001, robotic endoscopic surgical devices (Da Vinci system) became available in our department [7, 13]. Since then, all patients who have undergone adrenalectomy were operated on with the Da Vinci system.

All patients were operated on via the lateral transabdominal approach, whether for laparoscopic or robotic adrenalectomy [1]. Briefly, the patient was placed in the lateral decubitus position on a beanbag with the side of the diseased gland up. The surgeon stood facing the front of the patient cephalad to the assistant. Four 5- to 10-mm trocars were inserted subcostally, evenly spaced from the midclavicular to the anterior axillary lines. A fifth trocar was used when the robotic approach was employed. On the right, the liver was detached from the triangular ligament and rotated medially. On the left, the spleen, tail of the pancreas, and splenic flexure of the colon were detached from their retroperitoneal attachments and rotated medially. Then, the central adrenal vein was dissected, clipped, and transected when exposure was adequate. Once dissected, the tumor with the adrenal gland was placed in an unbreakable specimen bag and removed through a trocar site.

Data Collection

Data were collected prospectively during management and by patient questionnaire preoperatively (the month before operation), at day 4 after adrenalectomy and again 6 weeks after. The RAND SF-36 questionnaire (SF-36) and the State-Trait Anxiety Inventory (STAI) questionnaire were used, respectively, to measure quality of life and anxiety in patients included in this study [14, 15]. Pain, quality of sleep, and sleep duration were also evaluated at the same time points (preoperatively, on postoperative day 4, and at 6 weeks). Results from the SF-36 health survey were compared with published normative values for the French population [16]. The other independent factors under study were the following: type of adrenal tumor, age, body mass index, tumor size, functionality, and side of the tumor. Mortality rate, morbidity rate (from operation to 30 postoperative days), duration of the surgical procedure (adrenalectomy), postoperative ileus, postoperative fasting, and drainage duration were also assessed.

Outcome Measures

Preoperative and postoperative (day 4 and 6 weeks) quality of life was measured with the RAND SF-36, a generic questionnaire internationally validated in the general population [10, 15]. The feeling of anxiety caused by surgery (laparoscopic or robotic adrenalectomy) was evaluated with an anxiety-targeted psychological questionnaire, the STAI [14]. The SF-36 and the STAI are written, self-administered questionnaires previously validated in French [17, 18].

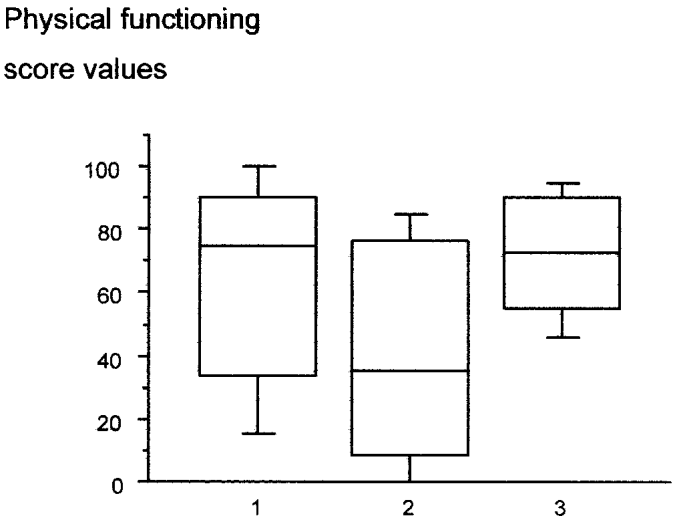

Fig. 1. Physical functioning (Physical SF36 scores) was decreased at day 4 ($p = 0.004$) when compared to preoperative levels (box plot). This score became similar to preoperative levels at the sixth postoperative week (1 = preoperative period; 2 = day 4; 3 = 6 weeks).

The SF-36 consists of 36 questions that evaluate eight discrete dimensions: physical functioning, social functioning, bodily pain, general health perceptions, vitality, role limitations due to emotional problems (role-emotional), role limitations due to physical health problems (role-physical), and mental health. Scores range from 0 (poorest health status) to 100 (best health status). Anxiety is defined in the Diagnostic and Statistic Manual of Mental Disorders (DSM-IV) as the appearance of clinically significant emotional and behavioral symptoms in reaction to an identifiable psychosocial stress factor [19]. Two components of anxiety are usually noted: state and trait. The first reflects the individual's current emotional state and the second refers to relatively stable individuals in anxiety proneness. The STAI questionnaire consists of 40 items divided into two parts, one measuring state anxiety (20 questions) and the other, trait anxiety (20 questions). This tool is particularly useful in assessing the adjustment to stress-inducing medical situations. The scores for each dimension (trait or state) range from 20 (least anxiety) to 80 (the most). Moreover, a standardized visual analog scale was used to evaluate pain, quality of sleep, and sleep duration. This visual analog scale for these 3 criteria ranged from 0 (poorest health status) to 10 (best health status).

Statistical Analysis

All values are expressed as a mean ± standard error except in Figure 1. Statistical analysis was performed by using nonparametric tests. We used the Mann-Whitney *U*-test when two groups were compared and the Kruskal-Wallis test when three groups were compared. Frequencies were compared using the Fisher exact probability test. Comparison of SF-36 scores with published nor-

Table 1. Patient demographics and disease characteristics.

	Total (n = 33)	Laparoscopic group (n = 14)	Robotic group (n = 19)	p Value
Tumors				
Aldosteronoma	11	3	8	NS
Pheochromocytoma	11	7	4	NS
Cortisol-producing adenoma	6	1	5	NS
Non secreting adenoma	5	3	2	NS
Age (years)	46.6 ± 2.3	44.8 ± 3.3	48.0 ± 2.9	NS
Body mass index (kg/m2)	27.6 ± 1.0	28.1 ± 1.5	27.3 ± 1.1	NS
Tumor size (cm)	3.1 ± 0.2	3.3 ± 0.4	3.0 ± 0.4	NS
Nonfunctional–functional tumor ratio	5/28	3/11	2/17	NS
Left–right side ratio	20/13	8/6	12/7	NS

NS: nonsignificant.

Table 2. Morbidity and postoperative characteristics.

	Laparoscopic group (n = 14)	Robotic group (n = 19)	p Value
Morbidity (n)	2	3	NS
Urine retention	1	1	—
Left pleural effusion	—	1	—
Pneumonia	1	—	—
Urinary infection	—	1	—
Postoperative ileus (days)	1.1 ± 0.1	1.7 ± 0.2	NS
Fasting (days)	1.6 ± 0.1	1.8 ± 0.2	NS
Drainage duration (days)	3.5 ± 0.3	3.1 ± 0.2	NS

Table 3. Quality of life scores (SF36 and STAI questionnaires) in all 33 patients.

	Preoperative	Day 4	Week 6	p Value
SF36 physical scores				
Physical functioning	62 ± 6	41 ± 6	70 ± 4	0.004
Role limitations due to physical health problems	35 ± 7	6 ± 4	34 ± 8	0.004
Bodily pain	50 ± 5	31 ± 4	58 ± 5	0.0003
General health perceptions	47 ± 3	56 ± 3	53 ± 4	NS
SF36 mental scores				
Role limitations due to emotional problems	26 ± 7	14 ± 6	35 ± 9	NS
Social functioning	61 ± 4	55 ± 4	64 ± 5	NS
Mental health	49 ± 4	53 ± 4	58 ± 4	NS
Vitality	36 ± 4	35 ± 3	40 ± 3	NS
STAI—State anxiety	52 + 3	40 + 3	43 + 3	0.01
STAI—Trait anxiety	49 + 2	41 + 2	44 + 2	0.057

STAI = State-Trait Anxiety Inventory.

mative values for the French population was performed using a t-test. Statistical significance was accepted when $p < 0.05$. The data were analyzed and compared using Statview 5.0 (Abacus Concepts, Berkeley, CA).

Results

From November 2000 through August 2003, 33 consecutive patients underwent unilateral laparoscopic (n = 14) and robotic (n = 19) adrenalectomy. These patients included 23 women and 10 men. Indications for laparoscopic or robotic adrenalectomy were aldosteronoma in 11 patients, pheochromocytoma in 11 patients, cortisol-producing adenoma in 6 patients, and nonsecreting adenoma in 5 patients. Age, body mass index, tumor size, nonfunctional/functional tumor ratio and left/right tumor side ratio were similar in the two groups (Table 1).

The mortality rate was 0%; postoperative morbidity was 15.1% (2 of 14 patients after laparoscopic adrenalectomy and 3 of 19 patients after robotic adrenalectomy) (Table 2). Morbidity rate was similar in patients after laparoscopic or robotic adrenalectomy. Mean duration time for laparoscopic adrenalectomy and robotic adrenalectomy were 86 ± 7.8 and 107 ± 6.6 minutes, respectively (ns). No difference was observed for postoperative ileus, fasting, and drainage duration between patients after laparoscopic and robotic adrenalectomy (Table 2).

Results in All 33 Patients

Physical functioning, role limitations due to physical health problems, and bodily pain (Physical SF36 scores) were decreased at day 4 (p = 0.004) in all 33 patients when compared to preoperative levels (Table 3). These three different scores became similar to preoperative levels after 6 weeks (Fig. 1). Inversely, the last physical SF36 score (general health) and the four mental SF36 scores (vitality, social functioning, role emotional, and mental health) were not modified at day 4 and 6 weeks in comparison to preoperative levels (Table 3). We also observed that all SF-36 scores were significantly decreased during the preoperative period in comparison with norms from the general French population (aged 45–54 years) (Table 4) [16]. This decrease was also observed at 6 weeks for all SF-36 scores except for the following: bodily pain, social functioning, and mental health (Table 4). State anxiety evaluated by STAI questionnaire was decreased postoperatively at day 4 and at 6 weeks in comparison to preoperative levels (p = 0.01). This decrease was also observed with trait anxiety, but to a lesser extent (p = 0.057) (Table 3).

Using a standardized visual analog scale, mean pain values, quality of sleep, and sleep duration were similar at preoperative period, at day 4, and at 6 weeks for all 33 patients. Mean pain values were 2.4 ± 0.5 preoperatively, 3.2 ± 0.4 at day 4 (ns), and 1.8 ± 0.4 at 6 weeks (ns). Quality of sleep values were 5.8 ± 0.4, 5.4 ± 0.4, and 6.5 ± 0.4, respectively (ns). Mean sleep duration was 6.8 ± 0.2 hours preoperatively, 7.4 ± 0.7 hours at day 4, and 7.5 ± 0.2 hours at 6 weeks (ns).

Comparison between Right (13 Patients) or Left Adrenalectomy (20 Patients)

Two SF36 scores were lower at day 4 in patients who underwent left adrenalectomy. These scores were bodily pain (41 ± 4 versus 23 ± 5) (p = 0.05) and social functioning (66 ± 4 versus 47 ± 3) (p = 0.03). For both scores, these differences between patients after right and left adrenalectomy were absent preoperatively and were not observed anymore at postoperative week 6. Concomitantly, we observed that:

– State anxiety had a tendency to be higher postoperatively at day 4 in patients after a left adrenalectomy (34 ± 3 versus 44 ± 3)(p = 0.06).
– Postoperative pain had a tendency to be higher when patients

Table 4. Results of SF-36 survey in patients before and after adrenalectomy (6 weeks) compared with the general population.

	General population[a] (n = 407)	Preoperative (n = 33)	p Value*	Week 6 (n = 33)	p Value**
SF36 Physical scores					
Physical functioning	89 ± 3	62 ± 6	< 0.05	70 ± 4	< 0.05
Role limitations due to physical health problems	87 ± 5	35 ± 7	< 0.05	34 ± 8	< 0.05
Bodily pain	75 ± 4	50 ± 5	< 0.05	58 ± 5	NS
General health perceptions	70 ± 3	47 ± 3	< 0.05	53 ± 4	< 0.05
SF36 Mental scores					
Role limitations due to emotional problems	86 ± 5	26 ± 7	< 0.05	35 ± 9	< 0.05
Social functioning	83 ± 3	61 ± 4	< 0.05	64 ± 5	NS
Mental health	68 ± 3	49 ± 4	< 0.05	58 ± 4	NS
Vitality	62 ± 3	36 ± 4	< 0.05	40 ± 3	< 0.05

[a]Norms from the general French population (ages 45 to 54 years) published in SF-36 health survey manual [16].
*p Values for comparison between general population and preoperative SF-36 scores.
**p Values for comparison between general population and postoperative (6 weeks) SF-36 scores.

underwent a left adrenalectomy. For left adrenalectomy, these values were 2.4 ± 0.5, 3.4 ± 0.5, and 1.6 ± 0.5 at the preoperative period, on day 4, and at 6 weeks, respectively (p = 0.07).

–Postoperative quality of sleep (6.5 ± 0.5 versus 4.6 ± 0.6) (p = 0.05) and sleep duration (8.7 ± 0.9 hr versus 6.3 ± 1.1 hr) (p = 0.01) were lower at day 4 in patients after left adrenalectomy.

Comparison between Laparoscopic (14 Patients) and Robotic (19 Patients) Adrenalectomy

No significant difference was observed for all SF36 scores between patients after laparoscopic or robotic adrenalectomy except for one of them. Role limitations due to emotional problems were increased after 6 weeks in patients who underwent robotic adrenalectomy (10 ± 4 versus 52 ± 5) (p = 0.03). Moreover, we observed that there was no significant difference between patients after laparoscopic or robotic adrenalectomy regarding state and trait anxiety. Similarly, we observed that postoperative pain, quality of sleep, and sleep duration were similar in patients after laparoscopic or robotic adrenalectomy.

Discussion

Since its introduction, laparoscopic adrenalectomy has emerged as the preferred surgical approach for most adrenal surgical disorders [1, 2, 6]. The acceptance of laparoscopic adrenalectomy instead of open adrenalectomy has been rapid, although there are no prospective, randomized trials comparing open with laparoscopic adrenalectomy [3]. Several retrospective studies have suggested, however, that laparoscopic adrenalectomy is associated with less postoperative discomfort, decreased hospital stay, decreased postoperative disability, and decreased rate of complications [3–5, 20, 21]. These considerations may lead to the fact that laparoscopic adrenalectomy is theoretically associated with increased quality of life in comparison with the open approach. However, to our knowledge, there have been no previous reports about perioperative evaluation of quality of life in patients after open or laparoscopic adrenalectomy. Although this study does not evaluate patients after open adrenalectomy, it provides an evaluation of perioperative quality of life in patients after minimally invasive (laparoscopic and robotic) adrenalectomy.

Although the number of patients in this study was small, we observed that physical SF-36 scores (physical functioning, role limitations due to physical health problems, bodily pain) were temporarily decreased and patients had less anxiety (state and trait) after minimally invasive adrenalectomy in comparison to preoperative levels. The phenomenon of temporarily decreased SF-36 physical scores at day 4 can be interpreted as an intermittent alteration of physical ability immediately after the operation. This is also emphasized by the fact that these three different scores became similar to preoperative levels after 6 weeks and that all SF-36 mental scores were not significantly modified postoperatively. Furthermore, these data and all provided scores in the present study are useful because they may be used in further studies [22]. For example, it is considered that the optimal management strategy in patients with adrenal incidentaloma remains controversial. The recent National Institutes of Health (NIH) Consensus Conference for "management of the clinically inapparent adrenal mass" acknowledged the lack of available studies evaluating the psychosocial, health outcome, and quality of life issues among patients with adrenal incidentalomas [3]. In the same manner, we estimated in a Markov decision analysis model that patients' perioperative quality of life after laparoscopic adrenalectomy could be among the relevant criteria in the decision-making process for patients with adrenal incidentaloma (manuscript in preparation). Thus, assessement of perioperative quality of life from the present study could be used in the decision-making process in patients with adrenal incidentaloma to improve patient care [10, 11].

This study also showed that pain, quality of sleep, and sleep duration were not significantly modified after minimally invasive adrenalectomy. However, left side adrenalectomy was associated with increased pain, increased postoperative state anxiety, decreased postoperative quality of sleep, and decreased sleep duration. These phenomena can be interpreted as a consequence of the more extensive dissection that is generally necessary on the left side in comparison to right side adrenalectomy.

The present results indicated that all preoperative SF-36 scores and most postoperative SF-36 scores (6 weeks) were significantly lower than published normative scores from the general population. Preoperative alteration of quality of life can be explained by an increased anxiety in patients anticipating hospitalization for the operation. Indeed, we observed that state anxiety (and also trait anxiety but to a lesser extent) was higher in the preoperative period than at day 4 and at 6 weeks. Although quality of life measures are increasingly used for measuring health outcome, anxiety in patients waiting for an operation has rarely been evaluated [10]. We believe

that preoperative anxiety should be taken into account when assessing preoperative quality of life in patients with surgical disease to preclude any bias with disease-related quality of life. Another explanation of the lower quality of life in the preoperative period is the proportion of patients with a secreting adrenal tumor in this study. Most patients had pheochromocytoma and cortisol-producing adenoma (46%) or aldosteronoma (33%). Even if the relationship between those endocrine diseases and quality of life is not well known, it is reasonable to expect poor quality of life scores in patients with adrenaline-secreting tumor [22–25].

Despite quality of life improvement that has been observed after operation in patients with Cushing's disease, this patient population has been shown to experience poor health as measured by the SF-36 when compared with the general population [12]. Although patients with Cushing's disease were excluded from this study, this last series showed that some adrenal disease can be responsible for quality of life degradation, sometimes for a long time after surgery (mean follow-up 29 months). This notion is also a possible explanation for the decrease of postoperative SF-36 scores observed in the present study in comparison to the general population. Another explanation is the delay of 6 weeks between operation and the last quality of life measure. One can hypothesize that 6 weeks is too short a period after operation to be able to show any quality of life improvement. Indeed, recent studies in patients with adrenal, parathyroid, and pancreatic disease had a delay of 12 to 29 months after operation to evaluate postoperative health related quality of life [12, 26–28]. However, the present study was designed more to assess surgical procedure–related quality of life (preoperative and early postoperative quality of life) than postoperative adrenal disease–related quality of life (long-term postoperative quality of life).

The Da Vinci mechanical robot (Intuitive Surgical, Sunnyvale, CA) consists of three multijointed arms mounted on a mobile surgical cart, two for instrumentation and the third for the camera. The instrument tips are jointed such that they have six degrees of freedom of movement. A further degree of freedom is provided by the action of the instrument tip (e.g., grasping or cutting). Complex movements similar to those possible with hands and wrists are made possible on a miniaturized scale within the abdominal cavity [9]. Although there is as yet no clear evidence that patients benefit from the use of robotic systems, the theoretical advantage may be that patients would benefit from its use from a clinical and a quality of life point of view [9, 29, 30]. The present study observed no significant difference between quality of life in patients after laparoscopic or robotic adrenalectomy except for role limitations due to emotional problems that were increased at 6 weeks after robotic adrenalectomy. Furthermore, the group of patients with laparoscopic adrenalectomy and the group with robotic adrenalectomy had similar preoperative characteristics, morbidity, and postoperative ileus, fasting, drainage duration. We have no rational explanation for the observed improvement of role limitations due to emotional problems at 6 weeks. Because this study was open and not randomized, this may be a subjective finding among patients who knew they were being operated on using a robotic system. Finally, we conclude that perioperative quality of life is not a justifiable parameter to promote robotic adrenalectomies because we did not observe major difference between patients who underwent laparoscopic or robotic adrenalectomy. Nontheless, we believe that this robotic system enables the surgeon to perform better laparoscopic procedures, especially when dissection is necessary in narrow spaces (pelvic dissection), when dissection has to be done precisely (Heller myotomy procedure), or when the procedure includes digestive reconstruction (gastrectomy) [31]. Regarding this last notion, adrenalectomy is probably too simple a surgical procedure to find any major clinical and quality of life differences between the standard laparoscopic and robotic approaches. Although we did not find objective data in the present study supporting the use of Da Vinci robotic system, we think that it is still worthwhile for performing adrenalectomy. For example, this system enables easier dissection in an obese patient with a small left aldosteronoma that could be difficult to find and remove using a standard laparoscopic approach. It also may be associated with improved perioperative hemodynamic modifications in patients with pheochromocytoma. Finally, this system provides improved ergonomics for the surgeon, a feature that could be evaluated in further studies.

Résumé. Le but de ce travail a été d'évaluer et de comparer la qualité de vie péri-opératoire de patients opérés d'une surrénalectomie par voie laparoscopique ou robotisée. De Novembre 2000 à Aout 2003, 33 patients consécutifs ont été opérés par voie laparoscopique ($n = 14$) ou par voie robotisée ($n = 19$). Les résultats ont été obtenus de façon prospective durant la prise en charge ou par questionaires (SF36, State-Trait Anxiety Inventory). Les scores d'activité physique, de limitations dues à l'état physique et de douleurs physiques (Scores Physiques SF36) étaient diminués au 4 ème jour postopératoire ($p = 0.004$) en comparaison avec la période préopératoire. Ces scores redevenaient similaires aux valeurs préopératoires à la 6 ème semaine postopératoire. Les patients opérés par voie robotisée avaient une augmentation du score de limitations dues à l'état psychique (Score Mental SF36) à la 6 ème semaine postopératoire ($p = 0.03$). Aucune autre différence n'a été observé entre les patients opérés par voie laparoscopique ou par voie robotisée. Bien que l'anxieté immédiate était diminuée au 4 ème jour et à la 6 ème semaine postopératoire ($p = 0.01$), il n'existait pas de différence significative entre les patients opérés par voie laparoscopique ou par voie robotisée. La douleur postopératoire était similaire dans les deux groupes et avait une tendance à être plus importante après surrénalectomie gauche ($p = 0.07$). De façon similaire, l'anxieté immédiate avait une tendance à être plus importante après surrénalectomie gauche ($p = 0.06$). Cette étude évalue la qualité de vie des patients opérés d'une surrénalectomie par voie mini-invasive (laparoscopie ou robot). Nous n'avons pas observé de différence majeure entre ces deux voies d'abord pour la réalisation d'une surrénalectomie. Ainsi, la qualité de vie periopératoire ne peut pas être un argument utilisable pour promouvoir l'utilisation d'un système robotique pour réaliser une surrénalectomie.

Resumen. El propósito del estudio fue evaluar y comparar la calidad de vida en pacientes sometidos a adrenalectomía laparoscópica versus adrenalectomía robótica. En el periodo noviembre 2000 hasta agosto 2003, 33 pacientes fueron sometidos a adrenalectomía laparoscópica ($n = 14$) o adrenalectomía robótica ($n = 19$). Se obtuvo la información en forma prospectiva en el curso del manejo y mediante un cuestionario (SF36, State-Trait Anxiety Inventory) tanto en el periodo preoperatorio como en el postoperatorio en el día 4 y a las 6 semanas. La función física, las limitaciones por problemas de salud de orden físico y el dolor corporal ("scores" físicos SF36) aparecieron disminuidos en el día 4 ($p = 0.004$) en la totalidad de los pacientes en comparación con los niveles preoperatorios, y fueron similares a los niveles preoperatorios a las 6 semanas. Los pacientes en quienes se practicó adrenalectomía robótica mostraron un aumento del "score" de limitaciones por problemas emocionales a las 6 semanas ("score" mental SF36) ($p = 0.03$). No se registraron otras diferencias significativas entre los pacientes sometidos a adrenalectomía laparoscópica o robótica. Aunque el estado de ansiedad se vio disminuido tanto en el día 4 postoperatorio como a las 6 semanas ($p = 0.01$) en todos los pacientes, no hubo diferencia significativa entre los dos grupos. El dolor postoperatorio fue similar en los dos grupos, pero con tendencia a ser mayor en los casos de adrenalectomía izquierda ($p = 0.07$). Igualmente, el estado de ansiedad mostró tendencia a ser superior en el día 4 luego de adrenalectomía izquierda ($p = 0.06$). El presente estudio provee una evaluación de la calidad de vida perioperatoria en pacientes después de adrenalectomía de invasión mínima (laparoscópica y/o robótica). No observamos mayores diferencias entre los pacientes sometidos a

adrenalectomía laparoscópica o robótica. Por consiguiente, la calidad de vida perioperatoria no constituye un parámetro justificable para promover la adrenalectomía robótica.

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