



Quality of life evaluation of patients with neurogenic bladder submitted to reconstructive urological surgeries preserving the bladder

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ABSTRACT

Treatment of neurogenic bladder (BN) aims to upper urinary tract protection. When the conservative clinical measures are insufficient, surgical treatment is indicated. Though admittedly important, the quality of life (QoL) has been little studied in these patients, there are even contradictory results. The aim of this study was to evaluate QoL before and after bladder augmentation in patients with BN refractory to medical treatment. We analyzed, prospectively, the data of 67 patients who underwent surgical treatment for BN by questionnaire SF-36[®] and Qualiveen[®] QoL before and after six months of operation. Comparisons using paired t-tests and Wilcoxon and the assumption of normality was assessed using the Shapiro-Wilk test were made. According to the analysis of the SF-36[®] questionnaire, the patients had higher QoL indices in the postoperative period in the areas functional capacity, general state of health, vitality, social aspects, emotional aspects and mental health (n = 67; p <0.05). The questionnaire also revealed Qualiveen[®] best result in quality of life index in the postoperative period, and show lower specific negative impact by urinary problems (n = 36; p <0.05). The results show that, despite not being the main objective, the bladder augmentation results in significant improvement in QoL, probably related to the perception of better health and the resolution of urinary incontinence. Thus, the bladder augmentation associated with other urologic reconstruction techniques allows the upper urinary tract protection, and contribute to a better quality of life of patients with BN.

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INTRODUCTION

The term “neurogenic bladder” (NB) is employed to describe any disturbance of the bladder-sphincter system caused by or associated to alteration of bladder innervation and of the muscles of the pelvic floor. Among several etiologies, it includes myelomeningocele, spinal cord injury, myelitis, multiple sclerosis and several other conditions that can reduce bladder capacity and compliance (1).

Bladder neurological alterations are therapeutically challenging, due to high risk of renal failure (2-4). Renal failure is the main cause of death among patients with myelomeningocele in all ages (5). NB treatment is intended to protect the superior renal tract, to promote urinary continence and, when possible, to preserve micturition. When conservative measures, such as clean intermittent catheterization, the use of anticholinergic drugs and intravesical injection of botulin

toxin are insufficient, surgical treatment is indicated (6). Although most care centers use bladder augmentation as the primary choice of treatment, cystectomy and ileal conduit are also satisfactory for those patients (7).

Evaluation of quality of life (QoL) of patients with NB should always be part of the evaluation of symptoms and follow-up of results of treatments, as observed in other chronic and debilitating conditions (8, 9). Measurement of QoL is a fundamental parameter of treatment evaluation, since it allows for a multidimensional understanding of the patient's life, including physical, mental, emotional and social well-being. The perspective of deterioration of renal function is an important source of psychological stress, anxiety and reduction of QoL of patients with NB. Despite this, few articles evaluate the impact of surgical treatment on QoL of patients with NB. In literature, there are contradictory results in different casuistries (7, 10-13). The objective of the present study was to evaluate QoL before and after reconstructive urological surgeries preserving the bladder in patients with NB refractory to clinical treatment.

MATERIALS AND METHODS

From 2008 to 2012, 67 patients with NB refractory to clinical treatment decided to participate in a study previously approved by the Ethical and Research Committee and were submitted to bladder augmentation and to eventual complementary procedures by the same surgeon; there were 22 female patients (32.8%) and 45 male patients (67.2%), with a median age of 29.5 ± 1.7 years. NB etiology included spinal cord injury (n=33; 49.0%), myelomeningocele (n=24; 35.8%) and myelitis (n=10; 15.2%).

Refractory clinical treatment was established when it was observed incapacity to control intravesical pressure, associated or not to deterioration of renal function and to urinary incontinence, using anticholinergic drugs, clean bladder catheterization and intravesical injection of botulin toxin. Exclusion criteria included non-acceptance of participation of the study (two patients). After hospital discharge, patients were followed weekly

during the first two months and monthly after six months of surgery.

Prospectively, the data from the generic questionnaire about QoL *Short Form Health Survey (SF-36®)* were analyzed. The 67 patients filled the questionnaire before and six months after the surgery. Also, 36 patients answered the specific questionnaire for QoL *Qualiveen®*. The question forms were completed in the ambulatory and were supervised by the physician that performed the surgeries. The question forms were translated and validated to Portuguese (14, 15).

The pre and post-operative data were statistically analyzed by the softwares R, version 2.7.1 and Epi Info version 6.04. Parametric data were analyzed by paired-t test and non-parametric data by Wilcoxon test. Normality assumption was evaluated by the Shapiro-Wilk test. Significance level was established as 5%.

RESULTS

For bladder augmentation it was utilized the distal ileum (n=56; 83.6%), sigmoid colon (n=8; 11.9%) and stomach (n=3; 4.5%). In 14 patients some complementary procedures were performed: cutaneous apendico-vesicostomy (n=7), continent cutaneous ileo-vesicostomy (Yang-Monti technique) (n=2) (16), unilateral ureteral reimplantation (n=4) and cutaneous apendicostomy (Malone technique) (n=1) (17). All patients were continent after 6 months of bladder augmentation surgery. In spite of the magnitude of the surgery, only prolonged ileum delayed hospital discharge in some cases. Routinely, a cystostomy catheter was maintained for one week and through it it was instilled a mucolytic solution, preventing urinary obstruction (retention) by mucus.

During the 6 months period of follow-up, there were no episodes of urinary tract infection or surgical wound infection, as well as no clinical metabolic disturbances.

According to the analysis of the SF-36® questionnaire (Table-1), patients presented higher QoL at post-operative period in the domains functional capacity, general health status, vitality, social aspects, emotional aspects and mental health. The domains physical limitation and pain showed

Table 1 - Quality of life before and after surgery according to the SF-36® questionnaire.

Domains ¹	Pre-operative (n=67)	Post-operative (n=67)	P
Functional capacity	29.0±26.2	35.0±28.7	0.024 ³
Physical limitation	33.9±36.6	40.5±41.8	0.087 ³
Pain	66.6±26.3	70.1±25.2	0.199 ²
General health	58.9±22.1	67.0±20.4	<0.001 ²
Vitality	62.7±24.8	67.2±26.1	0.012 ³
Social aspects	63.8±27.0	72.3±29.0	0.010 ³
Emotional aspects	44.3±42.0	56.5±41.4	0.020 ³
Mental health	62.0±24.0	66.3±25.8	0.009 ³

1 = Pontuacion limit from 0 to 100; **2** = paired T-test; **3** = Wilcoxon test
Values expressed as median±standard deviation

no statistical differences between pre and post-operative periods.

The four domains of the *Qualiveen*® questionnaire, that measure the specific negative impact of urinary problems on QoL showed lowered values at the post-operative periods (inconvenience, limitations, fear and impact on daily activities). Also, it was observed a lowered SIUP index *Specific Impact of Urinary Problems* (Table-2).

The parameter that measures general QoL also showed better result during post-operative period (QoL index).

DISCUSSION

Main objectives of NB treatment include preservation of renal function and prevention of

urological complications (8, 9). Since the introduction of clean intermittent catheterization by Lapedes et al. (1972) (18), emptying regularly the bladder is an important basic treatment, in order to protect the deterioration of the renal tract, to reduce the frequency of urinary infections and to allow good continence following catheterization. In cases when bladder capacity is not correctly recovered using anticholinergics, bladder augmentation surgery is the treatment of choice, as long as renal function is preserved (9).

When it was observed difficulty to perform urethral catheterization via urethra, the use of a continent stoma in the abdomen is indicated (16) and in our study it was performed in 9 patients. In one patient it was performed a catheter stoma in the colon, allowing for antegrade enema for

Table 2 - Quality of life before and after surgery according to *Qualiveen*® questionnaire.

Domains	Pre-operative (n=36)	Post-operative (n=36)	P
Inconvenience ¹	1.82±1.06	1.31±0.96	0.002 ³
Limitation ¹	2.78±0.86	2.21±0.98	<0.001 ⁴
Fears ¹	2.25±0.86	1.79±1.04	0.003 ³
Daily activities impact ¹	1.97±1.09	1.48±1.01	0.002 ³
SIUP index ¹	2.23±0.76	1.70±0.83	<0.001 ³
QoL index ²	0.02±0.90	0.54±0.97	<0.001 ⁴

1 = ponctuation limit from 0-4; **2** = ponctuation limites from -2 to +2; **3** = paired T-test; **4** = Wilcoxon test
Values expressed as median±standard deviation

severe intestinal constipation (17). Ureteral reimplantation was performed in 4 patients with grades IV and V vesico-ureteral reflux in order to protect the superior renal tract. Cases with grades I and II reflux were not surgically corrected due to low correlation with renal failure, following amelioration of bladder capacity (9). The choice of gastrointestinal segment was based upon renal function and easiness of technique, in order to move the chosen segment to bladder without tension. Three cases of gastro-cystoplasty were performed in patients with limited renal function, that contraindicated the use of ileum or colon, due to absorptive capacity of intestinal mucosa.

The generic question form SF-36® presented higher indexes of QoL at the post-operative period in all domains, except physical limitation and pain. The use of a specific questionnaire for patients with spinal cord injury (Qualiveen®) completed the QoL evaluation, since generic question forms may not correctly reflect important aspects of physical, social and psychological well-being of these individuals (8).

We started the use of (Qualiveen®) only for the last 36 patients, since it was not included in the original project. Since this was a prospective study, the data of the initial patients could not be analyzed. Also, the results of (Qualiveen®) showed lower impact on QoL in all studied domains during post-operative period. The generic evaluation of QoL included in this instrument was in accordance to the previous relative positive effect of the surgical treatment.

It is important to stress the heterogeneity of the present data in terms of baseline diseases and their evolution period, that varied from a few years (patients with spinal cord injury and myelites), to lifetime (patients with myelomeningoceles). Forms of treatment also varied, in terms of the chosen gastrointestinal segment and of the need of the construction of continent conduits for catheterization. However, in order to unify the samples, bladder augmentation surgery was performed as primary surgical procedure and all patients presented bladder disturbances, including low compliance, elevated pressures and low capacity of storage. Although there were differences, better quality of life was observed in all individu-

als, even in those without urinary incontinence in the pre-operative period. These aspects corroborate the perception that health status is benefitted by reconstructive urological surgeries with bladder preservation.

Probably, there was better urinary continence during catheterization intervals, since this is a troublesome alteration in all patients. Urinary continence probably benefitted secondarily social life and allowed for the performance of daily activities, as noted by the questionnaires. Patients submitted to continent conduit for catheterization were able to empty more easily their bladder, with a better QoL, since the difficulty during pre-operative period to catheterize was corrected. Interval spaces between catheterization were corrected allowing for the avoidance of urinary leakage. The absence of alteration of the SF0360® domains physical limitation and pain after surgery is predictable, since the surgical procedures were directed to the urinary tract problems.

QoL improvement during post-operative period in patients with NB refractory to clinical treatment was also observed in previous studies (7, 13). Although this correlation seems obvious, the absence of QV improvement following surgeries for urinary incontinence of patients with NB was also published (12). Since QoL is a concept that includes social, psychological and physical aspects, different populations can experience these aspects differently, and it is important to perform studies in different centers (12). Although cystectomy and ileum conduit also present good results in terms of QoL (7), this technique present long term clinical risks, such as renal failure, and has been deprecated by most authors (19). Bladder augmentation associated to other techniques of urological reconstruction remains an excellent choice for NB patients, although without side effects as the presence of mucus in the urine and the need of intermittent catheterization (20). Being less aggressive and without an incontinent abdominal stoma, it is preferred in relation to cystectomy. Future studies may discriminate better the implied factors related to QoL improvement in patients submitted to reconstructive urological surgeries and contribute to better choice of therapies for this complex condition.

CONCLUSIONS

Surgical treatment of NB refractory to clinical treatment using reconstructive techniques in order to preserve the bladder is associated with improvement of QoL indexes at post-operative period, according to the SF-36® and Qualiveen® questionnaires.

CONFLICT OF INTEREST

None declared.

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