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박 사 학 위 논 문

Emotional Status and Quality of Life
after Reverse Shoulder Arthroplasty in
Patients with Rotator Cuff Insufficiency
: Prospective Sequential Follow-up

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2 0 2 2 년 8 월

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이 논문을 박사학위 논문으로 제출함

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이 승 하

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1. Introduction

Reverse shoulder arthroplasty (RSA) is a successful surgical strategy in patients with various shoulder problems, especially cuff tear arthropathy (1,2). Over the last 20 years, the use of RSA has increased dramatically with the advance of new implants and technologies (3).

RSA was developed as a surgical option for treatment of glenohumeral dysfunction due to rotator cuff insufficiency (3,4). Reliable functional restoration with significant pain relief after RSA, usually reaching maximum improvement 12 months after index surgery, has been demonstrated in numerous studies (5-8). Furthermore, satisfactory long-term outcomes after RSA in patients with rotator cuff insufficiency have recently been reported (4,9,10). According to a study by Cuff et al. (4), in most cases, substantial functional improvement with durable clinical outcomes was maintained at mean 11-years follow-up evaluation after RSA.

Psychological elements are crucial determinants of nociception and functional disability in patients with musculoskeletal problems (11). Recently, a biopsychosocial model has been suggested that the complex including biological, psychological, social, and cultural variables can have a significant effect on an individual experience with nociception and functional disability (11). Several studies have proposed that a biopsychosocial model should be considered for thorough understanding of postoperative clinical outcomes in patients with orthopedic surgeries (12-15). For these reasons, there has been a focus on emotional status and quality of life in patients who have undergone joint replacement surgery. In addition, psychological distress before surgery has been regarded as a determinant affecting postoperative clinical outcomes after

total hip or knee replacement (16-21).

Positive effects of RSA on quality of life at the final follow-up evaluation have been demonstrated in several studies (5,6,8). However, evaluation of the sequential changes and the magnitude of benefits of emotional status and quality of life obtained from RSA has been lacking. In addition, there is controversy regarding the relationship between pre-operative emotional status and postoperative clinical outcomes after RSA (22-24). To date, no study has examining sequential changes of emotional status and quality of life during the early postoperative period after RSA has been reported. Conduct of a detailed assessment of the impact of RSA on quality of life including physical and mental well-being is necessary to determine the feasibility and cost-effectiveness of this procedure in patients with rotator cuff insufficiency.

The purpose of this study was to investigate sequential changes of emotional status and quality of life after RSA in patients with rotator cuff insufficiency and to determine the predictors that can affect post-operative clinical outcomes. This study was conducted to prove the hypothesis that RSA would improve emotional status and quality of life.

2. Materials and Methods

2.1. Study Participants:

Sixty patients who scheduled RSA for the treatment of rotator cuff insufficiency between May 2019 and November 2020 were prospectively enrolled. Inclusion criteria included patients with [1] failed conservative management for rotator cuff insufficiency, [2] no past and present history of psychiatric disorder, [3] no use of antipsychotic drugs, and [4] willingness to participate in the necessary period questionnaires. Exclusion criteria included patients with [1] glenohumeral osteoarthritis without rotator cuff tear, [2] inflammatory arthritis, [3] post-infectious or post-traumatic arthritis, [4] revision arthroplasty, and [5] inability to participate in this study. Of 60 patients who were eligible, 10 patients were excluded including 8 patients with loss of follow-up and 2 patients who died due to medical comorbidity. This prospective cohort study was conducted after approval from the Institutional Review Board (No. 201904054) and all participants provided informed consent.

The mean age of the patients at the time of RSA was 73.7 ± 5.9 years (range, 60 - 88 years). There were 35 females and 15 males. Thirty patients (60.0%) underwent surgery on their dominant arm. Preoperative diagnosis included cuff tear arthropathy in 34 (68.0%) cases and irreparable massive rotator cuff tear in 16 (32.0%) cases. The mean duration of symptoms was 20.8 ± 21.0 months (range, 1 - 72 months).

All procedures were carried out by a senior operator (CHC) at a single institution. The procedure was performed using the deltopectoral approach in all patients. The Trabecular Metal™ Reverse Shoulder System

(Zimmer, Warsaw, IN, USA) was used in 27 patients and Equinoxe[®] Reverse System (Exactech, Gainesville, FL, USA) was used in 23 patients. Wearing an abduction brace during 6 weeks after RSA, passive and active motion exercises were begun at postoperative 1 week.

2.2. Outcomes Measurements:

Outcome measurements included the visual analogue scale (VAS) pain score, the American Shoulder and Elbow Surgeons' scale (ASES) score, the subjective shoulder value (SSV), the hospital anxiety and depression scale (HADS) (25), and the abbreviated scale of World Health Organization quality of life (WHOQOL-BREF) (26). With a research coordinator's assistance, the patients completed all outcome measurements before surgery and at 6 weeks, 3, 6, and 12 months after RSA.

2.2.1. HADS:

The HADS has been widely used in patients with various diseases or healthy people for evaluation of emotional status including depression and anxiety (23,27). It is divided into two 7-item subscales for depression (HADS-depression, ranges; 0 - 21) and anxiety (HADS-anxiety, ranges; 0 - 21) (27). Scores are categorized as follows: 0 - 7 (normal), 8 - 10 (mild), 11 - 14 (moderate), and 15 - 21 (severe).

2.2.2. WHOQOL-BREF:

The WHOQOL-BREF was developed to assess status of quality of life in patients with various diseases or healthy people (26). The instrument consists of 26 items, divided into 4 domains including physical health (0 - 100), psychological health (0 - 100), social relationships (0 -

100), and environment (0 - 100) (26,28).

2.3. Statistical Analysis:

Statistical analyses were conducted using SPSS (version 25.0, IBM SPSS, Armonk, NY, USA) software for Windows. Repeated-measures analysis of variance (ANOVA) and paired t-test were performed for detection of sequential changes in emotional status parameters and outcome measurements. Univariate analysis was performed using the Mann-Whitney U test and Pearson correlation analysis, and multivariate analysis was performed using a linear regression test to determine the correlation between postoperative clinical outcomes and parameters including demographic variables, preoperative HADS-depression, and HADS-anxiety scores. Statistical significance was considered when two-tailed p-value was less than 0.05.

According to the results of the power analysis, the minimal sample size was estimated as 42 patients, which was necessary to demonstrate a difference of -2.4 on HADS-anxiety score at an α level of 0.05 and a β level of 0.08 (15). Considering that the drop-out rate is 30%, enrollment should include 60 patients.

3. Results

The mean HADS-depression and HADS-anxiety scores showed a significant decrease from 13.3 ± 4.7 and 13.9 ± 4.7 before surgery to 3.9 ± 3.6 and 3.7 ± 3.3 at 12 months after RSA (both $p < 0.001$). The incidence of depression and anxiety had decreased from 86.0% and 90.0% before surgery to 14.0% and 8.0% at 12 months after RSA (Table 1).

The mean WHOQOL-BREF score showed a significant increase from 32.3 ± 14.9 before surgery to 79.1 ± 13.7 at 12 months after RSA ($p < 0.001$). The mean VAS pain score, ASES score, and SSV showed significant improvement from 6.6 ± 2.1 , 28.5 ± 15.6 , and $23.6\% \pm 17.1\%$ before surgery to 1.5 ± 1.2 , 81.3 ± 12.1 , and $78.4\% \pm 11.9\%$ at 12 months after RSA (all $p < 0.001$). The mean forward flexion, abduction, external rotation at side, and internal rotation behind the back showed significant improvement from $76.4^\circ \pm 60.7^\circ$, $74.2^\circ \pm 58.7^\circ$, $35.4^\circ \pm 28.6^\circ$, and 5th lumbar level before surgery to $140.1^\circ \pm 17.9^\circ$, $122.0^\circ \pm 20.0^\circ$, $53.4^\circ \pm 10.1^\circ$, and 2nd lumbar level at 12 months after RSA (all $p < 0.001$).

Regarding sequential changes in outcome measurements, significant improvements in HADS-depression, HADS-anxiety, and WHOQOL-BREF scores as well as all clinical scores were observed by 6 weeks after RSA (Table 2). Regarding sequential changes in 4 WHOQOL-BREF domains, significant improvements were observed in physical health, psychological health, social relationship, and environment domain scores (all $p < 0.001$) (Table 3).

Results of univariate analysis showed a negative correlation of age with ASES score, SSV, and WHOQOL-BREF score at 12 months after RSA ($p < 0.01$, 0.05 , and 0.01 , respectively). Preoperative HADS-depres-

sion score showed a negative correlation with ASES and WHOQOL-BREF scores at 12 months after RSA ($p < 0.05$ and 0.01). Preoperative HADS-anxiety score showed a negative correlation with WHOQOL-BREF score at 12 months after RSA ($p < 0.05$) (Table 4). Results of multivariate analysis showed that age was an independent predictor of ASES and WHOQOL-BREF scores at 12 months after RSA ($p < 0.05$ and 0.01). Preoperative HADS-depression and HADS-anxiety scores as well as other demographic variables did not show correlation with any of clinical outcome measurements at 12 months after RSA (Table 5).

Scapular notching was observed in 7 cases (14.0%) with grade 1 in 6 cases and grade 2 in 1 case. Six patients had 7 (14.0%) minor complications including 3 acromial stress fractures, 2 intraoperative humeral fracture, 1 case of temporary brachial plexus palsy, and 1 case of deep vein thrombosis. There were no major complications requiring reoperation or revision surgery.

Table 1. Incidence of Depression and Anxiety

	Before RSA N (%)	At 12 months after RSA N (%)
Depression		
Normal	7 (14.0%)	43 (86.0%)
Mild	7 (14.0%)	5 (10.0%)
Moderate	19 (38.0%)	1 (2.0%)
Severe	17 (34.0%)	1 (2.0%)
Anxiety		
Normal	5 (10.0%)	46 (92.0%)
Mild	6 (12.0%)	3 (6.0%)
Moderate	17 (34.0%)	0 (0.0%)
Severe	22 (44.0%)	1 (2.0%)

N: number; RSA: reverse shoulder arthroplasty.

Table 2. Improvement Patterns of Outcome Measurements after Reverse Shoulder Arthroplasty

Measurement	Before RSA	After RSA				p-value
		At 6 weeks	At 3 months	At 6 months	At 12 months	
VAS pain score	6.6 ± 2.1	3.0 ± 1.6	2.6 ± 1.1	2.0 ± 1.3	1.5 ± 1.2	< 0.001*
ASES score	28.5 ± 15.6	64.0 ± 13.1	69.3 ± 10.5	76.5 ± 12.6	81.3 ± 12.1	< 0.001*
SSV (%)	23.6 ± 17.1	62.4 ± 16.3	69.5 ± 11.8	76.2 ± 13.2	78.4 ± 11.9	< 0.001*
HADS-D score	13.3 ± 4.7	6.8 ± 3.2	5.7 ± 3.0	4.8 ± 3.2	3.9 ± 3.6	< 0.001*
HADS-A score	13.9 ± 4.7	6.8 ± 3.2	5.5 ± 2.9	4.6 ± 3.4	3.7 ± 3.3	< 0.001*
WHOQOL-BREF score	32.3 ± 14.9	56.5 ± 13.6	66.2 ± 12.7	71.6 ± 11.6	79.1 ± 13.7	< 0.001*

The values are given as the mean and the standard deviation. ASES: American Shoulder and Elbow Surgeons' scale; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; RSA: reverse shoulder arthroplasty; SSV: subjective shoulder value; VAS: visual analogue scale; WHOQOL-BREF: abbreviated scale of World Health Organization quality of life. *: Statistically significant (p < 0.05).

Table 3. Improvement Patterns of Quality of Life Measurement after Reverse Shoulder Arthroplasty

Measurement	Before RSA	After RSA				p-value
		At 6 weeks	At 3 months	At 6 months	At 12 months	
WHOQOL-BREF						
Total score	32.3 ± 14.9	56.5 ± 13.6	66.2 ± 12.7	71.6 ± 11.6	79.1 ± 13.7	< 0.001*
Physical health domain	27.9 ± 16.7	53.9 ± 15.9	63.2 ± 14.8	69.0 ± 12.8	77.9 ± 14.5	< 0.001*
Psychological health domain	27.9 ± 14.7	53.2 ± 15.3	62.2 ± 16.2	68.9 ± 13.8	78.5 ± 15.6	< 0.001*
Social relationship domain	40.5 ± 19.9	63.4 ± 16.1	73.8 ± 11.7	76.4 ± 10.4	80.5 ± 13.7	< 0.001*
Environment domain	32.8 ± 14.7	55.5 ± 14.5	65.5 ± 13.7	72.3 ± 13.0	79.4 ± 14.7	< 0.001*

The values are given as the mean and the standard deviation. RSA: reverse shoulder arthroplasty; WHOQOL-BREF: abbreviated scale of World Health Organization quality of life. *: Statistically significant ($p < 0.05$).

Table 4. Univariate Analysis for Correlation between Variables and Postoperative Outcome Measurements

	At 12 months after RSA			
	VAS pain score	ASES score	SSV	WHOQOL-BREF score
Age				
Pearson coefficient	0.214	-0.372	-0.327	-0.439
p value	> 0.05	< 0.01*	< 0.05*	< 0.01*
Sex				
p value	> 0.05	> 0.05	> 0.05	> 0.05
Involved side				
p value	> 0.05	> 0.05	> 0.05	> 0.05
Duration of symptoms				
Pearson coefficient	-0.048	-0.014	0.023	-0.066
p value	> 0.05	> 0.05	> 0.05	> 0.05
Preoperative diagnosis				
p value	> 0.05	> 0.05	> 0.05	> 0.05
Previous operation history				
p value	> 0.05	> 0.05	> 0.05	> 0.05
Implant design				
p value	> 0.05	> 0.05	> 0.05	> 0.05
Preoperative HADS-D score				
Pearson coefficient	0.236	-0.318	-0.135	-0.425
p value	> 0.05	< 0.05*	> 0.05	< 0.01*
Preoperative HADS-A score				
Pearson coefficient	0.089	-0.203	-0.064	-0.304
p value	> 0.05	> 0.05	> 0.05	< 0.05*

ASES: American Shoulder and Elbow Surgeons' scale; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; SSV: subjective shoulder value; VAS: visual analog scale; WHOQOL-BREF: abbreviated scale of World Health Organization quality of life. *: Statistically significant ($p < 0.05$).

Table 5. Multivariate Analysis to Determine the Effect of Variables on Postoperative Outcome Measurements

	At 12 months after RSA			
	VAS pain score	ASES score	SSV	WHOQOL-BREF score
Age				
Coefficient	0.033	-0.701	-0.527	-1.013
95% CI	-0.033 to 0.099	-1.357 to -0.045	-1.223 to 0.168	-1.681 to -0.346
p value	> 0.05	< 0.05*	> 0.05	< 0.01*
Sex				
Coefficient	0.433	-4.260	-4.213	-1.229
95% CI	-0.364 to 1.229	-12.170 to 3.651	-12.600 to 4.174	-9.277 to 6.819
p value	> 0.05	> 0.05	> 0.05	> 0.05
Involved side				
Coefficient	0.363	-4.623	-2.674	-4.085
95% CI	-0.411 to 1.136	-12.307 to 3.060	-10.820 to 5.473	-11.902 to 3.732
p value	> 0.05	> 0.05	> 0.05	> 0.05
Duration of symptoms				
Coefficient	-0.005	0.017	0.019	-0.002
95% CI	-0.022 to 0.013	-0.155 to 0.189	-0.163 to 0.202	-0.177 to 0.173
p value	> 0.05	> 0.05	> 0.05	> 0.05
Preoperative diagnosis				
Coefficient	0.160	0.310	-3.039	1.511
95% CI	-0.604 to 0.924	-7.279 to 7.900	-11.085 to 5.008	-6.210 to 9.232
p value	> 0.05	> 0.05	> 0.05	> 0.05
Previous operation history				
Coefficient	0.424	-4.418	0.448	-9.380
95% CI	-1.027 to 0.410	-4.055 to 10.227	-5.864 to 9.279	-2.066 to 12.465
p value	> 0.05	> 0.05	> 0.05	> 0.05
Preoperative HADS-D score				
Coefficient	0.138	-1.074	-0.596	-1.185
95% CI	-0.006 to 0.283	-2.506 to 0.358	-2.115 to 0.923	-2.642 to 0.272
p value	> 0.05	> 0.05	> 0.05	> 0.05
Preoperative HADS-A score				
Coefficient	-0.072	0.180	0.224	0.046
95% CI	-0.216 to 0.071	-1.244 to 1.604	-1.286 to 1.734	-1.402 to 1.495
p value	> 0.05	> 0.05	> 0.05	> 0.05

ASES: American Shoulder and Elbow Surgeons' scale; CI: confidence interval; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; SSV: subjective shoulder value; VAS: visual analog scale; RSA: reverse shoulder arthroplasty; WHOQOL-BREF: abbreviated scale of World Health Organization quality of life. *: Statistical significance ($p < 0.05$).

4. Discussion

This is the first prospective research to evaluate the question of whether RSA for the treatment of rotator cuff insufficiency improves emotional status and quality of life and whether emotional distress before surgery affects postoperative clinical outcomes. Sequential improvement of emotional status and quality of life as well as functional recovery with pain relief was observed from 6 weeks after RSA. And preoperative emotional status was not predictive of poor postoperative outcomes. Age was only an independent predictor of functional outcome and quality of life at 12 months after RSA. These findings suggest that RSA for the treatment of rotator cuff insufficiency provides rapid improvement of emotional status and quality of life and younger patients had better postoperative functional ability and quality of life.

Several studies have proposed that a biopsychosocial model should be considered for thorough understanding of postoperative clinical outcomes in patients with orthopedic surgeries (12-15). Hence, emotional status and quality of life have been focused in patients who have undergone joint replacement surgeries. In addition, emotional distress before surgery has been considered as a determinant affecting postoperative clinical results after total hip or knee replacement (16-21). Numerous studies have suggested the importance of mental well-being and quality of life after total joint replacement. Although the benefits of RSA on postoperative functional recovery with pain relief in patients with rotator cuff insufficiency have been demonstrated (5,6,8), understanding of the sequential changes of emotional status and quality of life obtained from use of RSA is lacking. In the current study, HADS-depression and HADS-anxiety scores showed a significant decrease from 6 weeks after

RSA. A pattern of continuous decline was observed until 12 months after surgery. The incidences of depression and anxiety were 86.0% and 90.0% before surgery, which decreased to 14.0% and 8.0% at 12 months after RSA. Although patients with past and present history of psychiatric disorder were excluded from this study, high incidences of depression and anxiety were observed before surgery. This might have been the result of substantial pain with serious functional disability due to rotator cuff insufficiency. These findings indicate that preoperative emotional distress could be reversible with rapid improvement following RSA.

Compared with anatomical total shoulder arthroplasty, RSA has been regarded as being less predictable or having inferior postoperative clinical results. With recent advances of new implants and technologies, numerous studies have demonstrated reliable functional restoration with significant pain relief in the early postoperative period with satisfactory long-term clinical outcomes following RSA for rotator cuff insufficiency (4-10). Castricini et al. (5) reported that patients who underwent RSA appear similar functional ability and quality of life compared to age-matched healthy control subjects at mid-term follow-up evaluation. In the current study, the mean WHOQOL-BREF score, VAS pain score, ASES score, and SSV showed significant improvement from 32.3, 6.6, 28.5, and 23.6% before surgery to 79.1, 1.5, 81.3, and 78.4% at 12 months after RSA. A pattern of continuous increase in overall WHOQOL-BREF score with scores from 4 domains as well as VAS pain score, ASES score, and SSV was observed until 12 months after surgery. In a study reported by Cho et al. (15) with a design similar to that of the current study, the mean WHOQOL-BREF score, VAS pain score, ASES score, and SSV were 67.7, 1.2, 86.9, and 87.8% at 12 months after anatomical total shoulder arthroplasty for primary

osteoarthritis. Based on these findings, it was confirmed that short-term clinical results after RSA are comparable to those of anatomical total shoulder arthroplasty. Taken together, the findings of the current study demonstrated that RSA provides rapid improvement of emotional status and quality of life as well as functional recovery with pain relief in patients with rotator cuff insufficiency. In addition, shoulder surgeons can explain the pattern of postoperative recovery in patients with scheduled or undergoing RSA for treatment of rotator cuff insufficiency.

Various parameters including age, gender, involved side, severity of cuff tear arthropathy, prior ipsilateral shoulder surgery, comorbidity, preoperative clinical scores have been considered as possible predictors of postoperative clinical outcomes after RSA in patients with rotator cuff insufficiency (7,29,30). However, there is little information with regard to whether emotional status before surgery affects postoperative clinical outcomes. Emotional distress before surgery may hinder postoperative recovery and produce dissatisfaction following joint replacement surgery. Several studies have highlighted that preoperative mental health such as emotional distress was associated with poorer postoperative clinical outcomes after total hip or knee replacement (16,17,19,20). By contrast, other studies have reported that preoperative mental health was not predictive of postoperative outcomes after joint replacement surgery (18,21). Blackburn et al. (21) showed that the severity of emotional distress in patients who scheduled total knee arthroplasty was associated with worse preoperative clinical scores. However, preoperative depression and anxiety were sequentially improved with pain reduction and functional restoration during the early postoperative period (21). There is controversy regarding the association between preoperative emotional status and postoperative clinical outcomes in patients who have undergone shoulder arthroplasty (22-24). Solberg et al. (22) reported that mental

health status is a significant predictor of postoperative pain and function after shoulder arthroplasty. Rauck et al. (7) reported that worse mental health status before surgery was associated with a higher rate of dissatisfaction after RSA. In a systematic review conducted by Vajapey et al. (23), preoperative emotional distress was correlated with poorer clinical outcomes with increased complications after shoulder arthroplasty. By contrast, Cho et al. (15) reported that preoperative emotional status was not predictive of poor postoperative outcomes after anatomical total shoulder arthroplasty. The results of the current study were similar to those reported by Blackburn et al. (21) and Cho et al. (15). Although the results of univariate analysis showed a negative correlation of preoperative HADS-depression and HADS-anxiety scores with WHOQOL-BREF score at 12 months after RSA, they were not correlated with all outcome measurements at 12 months after RSA in multivariate analysis. In addition, age was only an independent predictor of ASES score and WHOQOL-BREF score at 12 months after RSA. These findings demonstrate that preoperative emotional status was not predictive of poor postoperative outcomes and younger patients had better postoperative functional ability and quality of life.

The current study had several limitations. First, the assessment of emotional distress was based on the self-rated screening tool without a definite diagnosis by a psychologist. However, use of the HADS is common for evaluation of depression and anxiety in patients with chronic musculoskeletal problems or healthy people. Second, follow-up evaluation was short-term in this study. Based on a study conducted by Cabarcas et al. (31), which reported that maximal medical improvement was achieved at 12 months after RSA, close follow-up evaluation (6 weeks, 3, 6, 12 months) was performed during the early postoperative period. Evaluation of sequential changes in emotional status and quality

of life after RSA might be sufficient. Third, no comparison or control groups with other treatment options were included. Fourth, other musculoskeletal or medial conditions that might affect preoperative or postoperative emotional status and quality of life were not considered in this study. Future well-designed long-term comparative studies are warranted to determine the impact of RSA on emotional status and quality of life.

In conclusion, this study showed sequential improvement of emotional status and quality of life as well as functional recovery with pain relief from 6 weeks after RSA in patients with rotator cuff insufficiency. Especially, younger patients had better postoperative functional ability and quality of life. These findings suggest that RSA for rotator cuff insufficiency provides rapid improvement of emotional status and quality of life.

5. Summary

The aims of this study were to investigate sequential changes of emotional status and quality of life following RSA in patients with rotator cuff insufficiency and to determine the predictors that can affect postoperative clinical outcomes. Fifty patients undergoing RSA for rotator cuff insufficiency were enrolled. VAS pain score, ASES score, SSV, HADS, and WHOQOL-BREF were assessed before surgery and at 6 weeks, 3, 6, and 12 months after surgery. From 6 weeks after surgery, significant improvements in HADS-depression, HADS-anxiety, and WHOQOL-BREF scores, as well as in all outcome measures, including VAS pain score, ASES score, and SSV were observed. In multivariate analysis, age was negatively correlated with final ASES score and WHOQOL-BREF score. This study revealed significant improvement of emotional status and quality of life as well as functional recovery with pain reduction from 6 weeks after RSA. Especially, younger patients had better postoperative function ability and quality of life. These findings suggest that RSA for rotator cuff insufficiency offers rapid improvement of emotional status and quality of life.

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Emotional Status and Quality of Life after Reverse Shoulder Arthroplasty in Patients with Rotator Cuff Insufficiency: Prospective Sequential Follow-up Study

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(Abstract)

The aims of this prospective study were to investigate sequential changes of emotional status and quality of life following reverse shoulder arthroplasty (RSA) in 50 patients with rotator cuff insufficiency and to determine the predictors that can affect postoperative clinical outcomes. The visual analogue scale (VAS) pain score, the American Shoulder and Elbow Surgeons' scale (ASES) score, the subjective shoulder value (SSV), the hospital anxiety and depression scale (HADS), and the World Health Organization quality of life scale abbreviated version (WHOQOL-BREF) were assessed before surgery and at 6 weeks, 3, 6, and 12 months after surgery. From 6 weeks after surgery, significant improvements in HADS-depression, HADS-anxiety, and

WHOQOL- BREF scores, as well as in all outcome measures, including VAS pain score, ASES score, and SSV were observed. In multivariate analysis, age was negatively correlated with final ASES score and WHOQOL-BREF score ($p < 0.05$ and < 0.01). This study revealed significant improvement of emotional status and quality of life as well as functional recovery with pain reduction from 6 weeks after RSA in patients with rotator cuff insufficiency. Especially, younger patients had better postoperative function ability and quality of life.

역행성 견관절 전치환술 후 정신 심리학적 상태 및 삶의 질 : 연속적 추시 연구

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(초록)

본 전향적 연구의 목적은 역행성 견관절 전치환술을 시행한 50명의 회전근개 부진증 환자에 대해 심리적 상태 및 삶의 질에 대한 연속적 변화를 조사하고 수술 후 임상 결과에 영향을 미치는 요인을 확인하고자 함이었다. 시각 통증 척도 (visual analogue scale, VAS), American Shoulder and Elbow Surgeons' scale (ASES) 점수, 주관적 견관절 척도 (subjective shoulder value, SSV), 병원 불안 우울 척도 (hospital anxiety and depression scale, HADS), 세계보건기구 삶의 질 간편형 척도 (World Health Organization quality of life scale abbreviated version, WHOQOL-BREF) 점수를 이용하여 술 전, 술 후 6주, 3개월, 6개월, 12개월 마다 평가하였다. 수술 후 6주부터 VAS 점수, ASES 점수, SSV 뿐만 아니라 HADS-depression 점수, HADS-anxiety 점수, WHOQOL - BREF 점수 등 모든 측정값에서 통계적으로 유의한 향상을 보였고, 다변량 분석에서 나이는 ASES

점수, WHOQOL-BREF 점수와 통계적으로 유의한 음의 상관관계를 보였다. 본 연구를 통해 회전근개 부전증 환자에서 역행성 견관절 전치환술 시행 후 6주부터 통증 감소 및 기능 회복 뿐만 아니라 심리적 상태와 삶의 질에서도 의미 있는 호전을 보였으며, 특히 젊은 환자일수록 수술 후 기능 회복과 삶의 질이 좋은 것으로 나타났다.

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