

# THE EFFECTS OF CARDIAC SURGICAL PROCEDURES ON HEALTH – RELATED QUALITY OF LIFE, COGNITIVE PERFORMANCE, AND EMOTIONAL STATUS OUTCOMES: A PROSPECTIVE 6 – MONTH FOLLOW – UP STUDY

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## SUMMARY

**Introduction:** The aim of this study was to assess the course of health – related quality of life, cognitive and emotional change during the six months after elective CABG, and to investigate how cognitive impairments, depression and posttraumatic stress symptoms were related to quality of life.

**Method:** In a prospective study, we followed up for 6 months 138 of the original 147 patients who had undergone elective CABG surgery.

**Conclusion:** Elective CABG is associated with significant improvements in HRQOL relative to the preoperative period, but impairments in HRQOL were found in a subgroup of post – CABG patients with evidence of PTSD, depression, or cognitive impairments at 6 – month follow – up.

**Key words:** coronary artery bypass graft surgery - cardiopulmonary bypass - cognitive impairments – depression - posttraumatic stress disorder - health – related quality of life - consultation – liaison psychiatry

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## INTRODUCTION

Owing to the continuous refinement of surgical techniques, the progress in cardiopulmonary bypass (CPB) technology and the significant advances in intensive care treatment, the survival rates after major cardiac surgery with CPB such as coronary artery bypass graft surgery (CABG) have considerably improved over the past 40 years. Hence, the success of routine CABG is now no longer judged solely by its effects on traditional end points (e.g. mortality rates) but by its influence on patients' psychosocial well – being (e.g. health – related quality of life), and by its neuropsychological and emotional sequelae. The aim of this study was to assess the course of health – related quality of life, cognitive and emotional change during the six months after elective CABG, and to investigate how cognitive impairments, depression and posttraumatic stress symptoms were related to quality of life.

## SUBJECTS AND METHODS

In a prospective study, we followed up for 6 months 138 of the original 147 patients who had undergone elective CABG surgery. Preoperatively, and at 6 months after surgery, a series of psychometric observer – rating and self – rating scales were administered to evaluate cognitive functioning (SKT), depressive symptoms (BDI),

posttraumatic stress symptoms (PTSS – 10), and health – related quality of life (SF – 36 Health Status Questionnaire).

## RESULTS

Preoperatively, 2.7% (4 out of 147 patients) valued SKT total scores indicating minimal cognitive impairments. At 6 months postsurgery, 17.4% (24 out of the 138 followed – up patients) demonstrated signs of a minimal (N=22), mild (N=1), or moderate (N=1) disturbance of cognitive functions. The obtained SKT total scores reflected significant increases in levels of cognitive impairments from preoperative to 6 – month follow – up evaluations (mean SKT total score before surgery =  $1.5 \pm 1.3$ ; mean SKT total score at 6 – month follow – up =  $2.5 \pm 2.3$ ;  $p < 0.001$ ). However, no extreme or severe cognitive deficits were recorded, and the vast majority of the cognitively impaired patients displayed only minimal cognitive deficits at 6 – month follow – up. Preoperatively, 17% (25 out of 147 patients) suffered from clinical depression: mild or moderate depression occurred in 21 patients, and severe depression in 4 patients, as measured on the BDI. At 6 months postsurgery, only 10.1% (14 out of the 138 followed – up patients) had the diagnostic status of clinical depression: mild or moderate depression in 10 patients, and severe depression in 4 patients. The ratings obtained from the BDI

reflected significant decreases in levels of depression from preoperative to 6 – month follow – up assessments (mean BDI score before surgery =  $6.5 \pm 4.9$ ; mean BDI score at 6 – month follow – up =  $4.6 \pm 4.7$ ;  $p < 0.001$ ). On the basis of the PTSS – 10, 0.7% (1 out of 147 patients) had evidence of preexisting posttraumatic stress disorder (PTSD) before undergoing CABG. 6.5% (9 out of the 138 followed – up patients) had PTSD at 6 months after CABG. However, the PTSS – 10 ratings from the whole sample reflected significant decreases in levels of PTSD symptoms from preoperative to 6 – month follow – up evaluations (mean PTSS – 10 score before surgery =  $18.2 \pm 6.7$ ; mean PTSS – 10 score at 6 – month follow – up =  $17.3 \pm 8.0$ ;  $p < 0.01$ ). The measurements of health – related quality of life (HRQOL) indicated significantly higher SF – 36 values on all of the eight health – related domains from preoperative to 6 – month follow – up assessments. However, at 6 – month follow – up, patients with clinical depression had significantly lower SF – 36 values on all of the eight health – related domains when compared with patients without depression (MH:  $p < 0.001$ ; RE:  $p < 0.001$ ; SF:  $p < 0.001$ ; V:  $p < 0.001$ ; GH:

$p < 0.001$ ; BP:  $p < 0.01$ ; RP:  $p < 0.01$ ; PF:  $p < 0.05$ ). Also, at 6 – month follow – up, patients with PTSD had significantly lower SF – 36 values on RE ( $p < 0.001$ ), MH ( $p < 0.01$ ), SF ( $p < 0.01$ ), GH ( $p < 0.01$ ), V ( $p < 0.05$ ), and BP ( $p < 0.05$ ) when compared with patients without PTSD. Finally, at 6 – month follow – up, patients with cognitive deficits had significantly lower SF – 36 values on PF ( $p < 0.05$ ) when compared with patients without cognitive impairments.

## CONCLUSION

Elective CABG is associated with significant improvements in HRQOL relative to the preoperative period, but impairments in HRQOL were found in a subgroup of post – CABG patients with evidence of PTSD, depression, or cognitive impairments at 6 – month follow – up. We therefore underscore the need for early and comprehensive bio – psycho – social diagnosis and therapy of post – CABG patients in order to treat emotional distress and CABG – related cognitive impairments and enhance patients` quality of life at an early stage after cardiac surgery.

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