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BRIEF COMMUNICATION

Patients' satisfaction and wound-site complications after radial artery harvesting for coronary artery bypass

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Abstract

The aim of the study was to establish patients' satisfaction and the incidence of wound-site complications after radial artery (RA) harvesting for bypass surgery. A telephonic quality of life questionnaire was performed in 306 consecutive patients who had undergone coronary artery bypass grafting with the use of RA with the open technique. A psychometric Likert scale was used to define the degree of patients' satisfaction. The questionnaire concerned arm pain, cosmesis and mobility, sensory and neurological complications, and patients' general health state. The median values and the modal scores achieved the maximal value of satisfaction for all site-related complications and the mean scores were >4 out of 5. The median patients' general health state was 4. Cosmetic result of the wound was considered at least acceptable by 98% of patients. The incidence of impairing peripheral neurological complications was 16.7%. The degree of patients' satisfaction after RA harvesting was more than satisfactory and the incidence of wound-site complications was acceptable. The incidence of neurological injuries was lower than previously described.

Keywords: Quality of life • Coronary artery bypass grafting • Arterial grafts • New technology • Wound healing • Wound infection

INTRODUCTION

The use of the radial artery (RA) has become increasingly popular in the last two decades [1, 2].

The clinical impact of different harvesting techniques of RA has been investigated too [3]. One of these is endoscopic RA harvesting. Endoscopic RA harvesting aims to reduce wound complications compared with the open technique, while preserving the quality of the RA as a bypass graft. A further theoretical advantage of endoscopic RA harvesting is its improved cosmetic result, which may improve patients' satisfaction. Up to now there are no conclusive data to confirm these theoretical advantages. A recent review [3] showed the lack of comparative studies about RA complications related to the harvesting technique.

Another interesting issue is the incidence of peripheral neurological complications after RA harvesting. The incidence oscillates between 30% [4] and 67% [5] after open harvesting and between 2% [6] and 84% [7] for endoscopic harvesting. A recent study has shown a higher incidence of sensory disturbances after endoscopic RA harvesting, when compared with the open procedure [8]. This extreme variability is most probably due to the small sample size of these studies and to the lack of uniformity of the harvesting techniques.

So far, only a few studies have investigated the degree of patients' satisfaction after RA harvesting [4–5, 9].

The aim of this study was to establish patients' satisfaction and the incidence of wound-site complications after RA harvesting with an open technique, as previously described [2].

MATERIALS AND METHODS

We selected 307 consecutive patients from our institutional database (Medical Computer Support, 5.10.0, Wilp, The Netherlands) who had undergone coronary artery bypass grafting (CABG) with the use of RA between September 2004 and May 2008. Through a quality of life questionnaire, patients were asked to report their postoperative pain, mobility, neurological disorders and degree of satisfaction about the cosmetic result after RA harvesting (Table 1). Follow-up was completed in 306 patients. One patient had moved to Norway, and therefore it was not possible to contact him.

This quality of life questionnaire was performed by telephone by using the Likert scale, a psychometric scale commonly used in survey research [10]. The format of the Likert scale implies specific metric relations among the response levels. Verbal labels are symmetrical about a neutral middle. Each item was analysed separately.

All data were entered in an Excel spreadsheet. Statistical analysis was performed using SPSS 15.0 (SPSS Inc., Chicago, IL, USA).

Table 1: Telephonic questionnaire throughout Likert scale

Question/Likert item	Patient answer	Score
1. Arm pain: Do you have pain or discomfort on the arm?	Always	1
	Often	2
	Sometimes	3
	Rarely	4
	Never	5
2. Arm cosmesis: How do you consider the cosmetic result of the wound on your arm?	Extremely poor	1
	Poor	2
	Barely acceptable	3
	Good	4
	Excellent	5
3. Arm mobility: Do you have problems with performing hand normal activities? (for example work, drive, ride bicycle, write, washing yourself, housework)	Always	1
	Often	2
	Sometimes	3
	Rarely	4
	Never	5
4. Arm sensory and neurological complications: Do you have problems of sensitivity? (for example itch, numbness, hand anaesthesia/paresthesia)	Always	1
	Often	2
	Sometimes	3
	Rarely	4
	Never	5
5. Health state: How do you define your own general health state today?	Extremely poor	1
	Poor	2
	Barely acceptable	3
	Good	4
	Excellent	5

Table 2: Mean score, median and mode value of Likert items

Question/Likert item	Mean score ± SD
1. Arm pain	4.56 ± 0.67
2. Arm cosmesis	4.49 ± 0.64
3. Arm mobility	4.73 ± 0.44
4. Arm sensory and neurological complications	4.2 ± 0.99
5. Health state	3.96 ± 0.65

Values are reported as mean ± standard deviation or as percentage. Modal score and median value were calculated for each Likert item.

RESULTS

The mean follow-up was 50.7 ± 15.9 months.

The mean score, the median value and the modal score for each Likert item are listed in Table 2.

The median values and the modal scores achieved the maximal value of satisfaction for all site-related complications (Likert items 1 – 4).

The median value and the modal score which expressed patients' general health state was 4. The mean value was slightly inferior: 3.96.

Six patients reported constant postoperative pain, while 76% of patients never suffered from postoperative pain.

Five patients considered the aesthetic result of the wound extremely poor, while 98% of patients considered the aesthetic result of the wound at least acceptable.

Three patients reported daily problems in performing simple normal handlings and 51 patients reported constant or frequent sensitive or neurological disturbances.

Therefore, the overall incidence of severe peripheral neurological complications was 16.7%.

Twenty-one patients defined their general health state as poor or extremely poor.

COMMENT

Considering the high mean scores obtained for all Likert items, patients' degree of satisfaction after CABG with open RA harvesting can be considered excellent. These results confirmed the minimal impact on patients' quality of life related to the surgical site of RA harvesting.

Less than 1% of patients reported persistent disability in performing simple handlings.

The majority of patients (98%) considered the cosmetic result of the wound at least acceptable. This fact is of paramount importance, leading us to re-consider the theoretical advantages of endoscopic RA harvesting. As a matter of fact, the key advantage of endoscopic RA harvesting is cosmetic, since the incidence of wound-site complications with open RA harvesting is reported as negligible in previous studies. Therefore, the results of the present study may raise doubts about endoscopic RA harvesting, until there will be sufficient evidence that the endoscopic technique does not impair RA quality and the long-term patency of the grafts. This fact should be carefully considered when translating the improvements of endoscopic vein harvesting compared with open vein harvesting in the setting of RA harvesting. We can state that endoscopic vein harvesting has proven to be a significant improvement with respect to open vein harvesting. Endoscopic RA harvesting has not yet proved the same with respect to open RA harvesting.

The incidence of invalidating neurological complications reported in this study (16.7%) is lower than those shown in previous articles [4–5].

We believe that the standardization of harvesting techniques permits one to optimize the quality of the conduit and to minimize the damage of the harvest site. In fact, we hypothesize that daily practice of the open RA harvesting technique strongly contributed to the relative low incidence of neurological complications in our study.

Twenty-one patients defined their general health state as poor or extremely poor. However, the mean scores of these patients were ≥4 for all the other Likert items. Therefore, we can presume that the reasons for their poor health state were not related to RA harvesting.

This study presents some limitations. The first is the lack of comparison with an endoscopic RA harvesting group. Nevertheless, the aim of the study was observational in all-comers, consecutive patients in a single institutional setting. A second limitation of this study is that the questionnaire was done by telephone and patients were not directly examined for sensory changes. On the other hand, in order to overcome this limit, the questions were clear and restrained.

To conclude, the degree of patients' satisfaction after CABG with open RA harvesting can be defined as excellent and the incidence of wound-site complications is more than acceptable.

Moreover, the incidence of peripheral neurological disturbances was lower than previously described [4–5], although not yet completely nihil.

To further clarify the degree of patients' satisfaction, a prospective comparison study between open and endoscopic RA harvesting is needed. In such a study, clinical end-points related to the quality of the harvested conduit, such as MACCE, should also be included.

Conflict of interest: none declared.

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