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Health-related quality of life in patients with nasal prosthesis

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ABSTRACT

Objective: To evaluate the health-related quality of life (QOL) in patients with nasal prosthesis after tumour resection with partial or total rhinectomy.
Material and methods: Patients with nasal prosthesis were asked to complete a quality of life questionnaire. 43 patients with prosthesis after partial or total rhinectomy completed the University of Washington quality of life questionnaire. Answers were systematically analysed.
Results: 27 patients were male, 16 were female. Mean age was 62 years, and the mean interval between tumour resection and date of study inclusion was 45.3 months. There are gender-specific differences for the QOL domain 'recreation' and age-specific differences for the domains 'appearance' and 'saliva'. The fields 'activity', 'mood' and 'appearance' are the most severely affected QOL domains in patients with nasal prosthesis.
Conclusion: Similar to other head and neck cancers there is a need and a deficiency in psycho-oncological support after partial or total rhinectomy, the influence on QOL however was much lower than initially expected. This should be considered with regard to the oncological benefits of this surgical procedure. Compared to the results of other head and neck malignancies the 'appearance' is only slightly affected. A stable prosthesis is needed to enable the maintenance of the accustomed activities.

1. Introduction

Malignancies of the nasal cavity, especially squamous cell carcinoma, tend to local aggressive growth. Sufficient tumour excision – if necessary with partial or total resection of the exterior nose – is crucial but may be related with devastating changes of the outward appearance and psychosocial sequelae (Turner and Reh, 2012).

After total rhinectomy there are basically two possibilities for rehabilitation: Nasal prosthesis (NP) or operative reconstruction. Although only "artificial" there are some obvious advantages in nasal prosthesis: Early rehabilitation, shortening surgery and hospitalization time, low initial costs and particularly the ease in the inspection of the former tumour region to ensure a reliable treatment control (Atay et al., 2013; Brenner and Berger, 1992). However, the influence of this treatment on the health-related quality of life (HRQOL) has not been profoundly evaluated while at the same time there are a lot of prejudices against nasal prosthesis.

We here present to the best of our knowledge the largest study evaluating the HRQOL in patients with NP and compare our results with studies on HRQOL of patients after treatment of other head and neck malignancies.

2. Methods

The study was performed in accordance with the guidelines of the Helsinki Declaration of 1975, as revised in 1983, and the study protocol was approved by the local institutional review board (Ethics Committee of the Albert-Ludwigs-University of Freiburg).

The data of patients who had undergone partial or total rhinectomy between 2002 and 2014 due to malignancies of the nasal cavity were reviewed. These patients received the German version of the University of Washington quality of life questionnaire (UWQOL) with a detailed explanation of the study and were asked complete and return the questionnaire (http://www.headandneckcancer.co.uk). The investigators obtained informed consent from each participant. All patients had bone-anchored/

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implant-retained prosthesis with a grouped implant system (mostly Epiplating®, Medicon eG, Tuttlingen, Germany).

The University of Washington quality of life questionnaire (UWQOL) was first introduced in 1993 by Hassan and Weymuller. After several revisions of this questionnaire its fourth version was established in 2002 and is still valid today (Rogers et al., 2002). Aside from the fact that this questionnaire is best validated, widely used and has a short completion time, the UWQOL has a better coverage of appearance issues compared to other head and neck HRQOL questionnaires (Djan and Penington, 2013). Its width of use enables a reliable comparison of the results with HRQOL after treatment of other head and neck malignancies.

The UWQOL questionnaire captures data concerning physical and social function with questions that address 12 domains over the period of the last 7 days: pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder function, taste, saliva, mood, and anxiety. The patient is also able to list the three most important domains over the last seven days. Additionally there are 3 general items measuring global health-related QOL, change in health-related QOL since diagnosis, and overall QOL. Each question has between 3 and 6 answers and is scored from 0 to 100. A score of 80 or higher was defined as a 'good score'.

After comparing the results of the UWQOL with other more in-depth questionnaires, Lowe et al. were able to define 'significant problems' depending on the score and the attached importance (http://www.headandneckcancer.co.uk). Furthermore Rogers et al. proposed the evaluation of two subscale scores, one for 'physical function' (chewing, swallowing, speech, taste, saliva and appearance) and another for 'social-emotional function' (anxiety, mood, pain, activity, recreation and shoulder function) (Rogers et al., 2010). For the 3 general items measuring the QOL a 'good score' was defined for scores $\geq$50 in question 1 and $\geq$60 in questions 2 and 3.

Data of the returned questionnaires were analysed with the Statistical Package Social Sciences (version 20.0; SPSS Inc, IBM, Chicago, CA) and compared with HRQOL data of patients after treatment of other head and neck malignancies. For significance testing, we used Mann–Whitney-U and Wilcoxon-Test. Probabilities of less than 0.05 were accepted as statistically significant.

3. Results

Our study included 43 patients with partial (2 patients) or total (41 patients) resection of the exterior nose who were rehabilitated with a nasal prosthesis. Twenty-seven patients (62.8%) were male and 16 (37.2%) were female. The mean patient age was 62.4 years and ranged from 37 to 87 years (median 61). The mean interval between tumour resection and date of study inclusion was 45.3 months and ranged from 6 to 163 months (median 33).

The results of the UWQOL domain scores and the percentage of 'good scores' (score $\geq$80) of these patients are shown in Table 1. Activity, mood and appearance were the three most important domains selected by patients (Fig. 1). The composite score for physical function was 83.67 and for social-emotional function 78.05. In the ranking of the significant problems the domain "appearance" was evaluated as most important, followed by saliva, activity and mood (Table 2).

The results for the general QOL items are listed in Table 3. The percentage of 'good scores' (score $\geq$80) was 54.8% for health-related QOL compared to the month before patients had cancer, 52.4% for health-related QOL during the past 7 days and 61.9% for overall QOL during the past 7 days.

We also analysed the factors that affect the HRQOL of patients with nasal prosthesis. The only domain influenced by gender was 'recreation' ($p = 0.03$), showing better results in female patients (mean score: in males 65.74; in females 82.81). The other domains did not show any gender-specific characteristics. The median interval between tumour resection and date of study inclusion was 33 months. There were no differences in the results related to the time after rhinectomy (group 1 with less and group 2 with more than 33 months). The median age of the patients was 61 years; younger patients showed significant lower scores for the domains 'appearance' than older patients (mean score in patients $\leq$61 years: 56.58, in patients >61 years: 79.41; $p < 0.001$) and 'anxiety' (mean score in patients $\leq$61 years: 67.9, in patients >61 years: 83.5, $p = 0.45$). The results for 'saliva' (mean score in patients $\leq$61 years: 56.84, in patients >61 years: 86.47; $p = 0.057$) were almost significant.

4. Discussion

In the last two decades the evaluation of QOL aspects in head and neck cancer patients has played a more and more decisive role (Rogers and Lowe, 2009). The quantification of the impact of an oncologic treatment on functional, emotional and social aspects is a subject of various instruments. In this respect, the UWQOL is one of the most widely and frequently used and best validated questionnaires (Linardoutsos et al., 2014).

Facial defects after tumour surgery may result in multiple functional and psychosocial difficulties (Chang et al., 2005). Our current study is the largest study on long-term QOL in patients with nasal prosthesis (NP). Former studies did not focus on the special aspect of NP but some evaluated the results for these patients together with other facial or auricular prosthesis (Chang et al., 2005).

Table 1
Results of UWQOL in patients with nasal prosthesis.

	Mean	Standard deviation	Percentage of 'Good score' ($\geq$80)
Pain	87.21	19.95	62.8%
Appearance	67.44	20.07	16.3%
Activity	73.26	21.41	32.6%
Recreation	72.09	24.52	27.9%
Swallowing	93.72	12.35	79.1%
Chewing	95.24	14.86	88.4%
Speech	94.29	11.92	79.1%
Shoulder	90.00	22.19	74.4%
Taste	81.43	27.01	58.1%
Saliva	70.93	35.51	53.5%
Mood	70.93	26.69	27.9%
Anxiety	75.58	27.19	41.9%
Composite scores:			
Physical function	83.67	13.44	
Social function	78.05	13.48	