10th Congress of Baltic States SLTs'

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Functioning and quality of life outcomes after total laryngectomy with primary voice prosthesis: a case study

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OBJECTIVES AND METHODS

Objectives:
The study aimed to

(1) compare functioning and quality of life outcomes in two cases following total laryngectomy with primary tracheoesophageal puncture and voice prosthesis (VP) insertion, by linking assessment results to the International Classification of Functioning, Disability and Health (ICF) framework;

(2) develop ICF-based functioning profiles for these cases.

Methods:

- A mixed-method study comparing two advanced stage laryngeal cancer cases (A and B) post-total laryngectomy with primary VP.
- Data were analysed within the ICF framework to compare outcomes and develop functioning profiles.

Patient-reported assessments:

- World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0);
- World Health Organization Quality of Life-BREF (WHOQOL-BREF);
- Voice Handicap Index (VHI-30);
- Patient Health Questionnaire- 9 (PHQ-9);
- Generalized Anxiety Disorder Scale (GAD-7);
- semi-structured interviews.

Assessment completed by the life partner of patient:

- Intelligibility in Context Scale: Latvian (ICS).

INTRODUCTION

The complete removal of larynx during total laryngectomy affects multiple systems. Rehabilitation following surgery is not only directed at the restoration of voice, but also include respiratory, olfactory and swallowing functions (Royal College of Speech and Language Therapists, 2023).

Patients may share the same diagnosis, but how a health condition affects an individual, depends on responses unique to that person (McWhinney, 2000).

The international Classification of Functioning, Disability, and Health (ICF) not only structures how health condition gives rise to impairment of body structures and functions, but also demonstrated how limitations in activities and participation may be influenced by environmental and personal factors (Eadie, 2007). “While functioning refers to limitations and restrictions related to a health problem, quality of life refers to how someone feels about these limitations and restrictions” (Cieza et al., 2005).

At present, no research has been conducted at Pauls Stradiņš Clinical University Hospital addressing the functioning and health related quality of life of patients following total laryngectomy with primary tracheoesophageal voice prosthesis insertion. It is highlighting a gap and necessity of the present study.

RESULTS [I]
FUNCTIONING

Assessments completed by patients:

Assessment	Case A	Case B
PHQ-9 (depression symptoms)	1 (minimal 0, maximal 27)	14 (min 0, max 27)
GAD-7 (anxiety symptoms)	0 (min 0, max 21)	20 (min 0, max 21)
VHI-30 (voice impairments)	3 (min 0, max 120)	79 (min 0, max 120)
WHODAS 2.0 (disability)	33 (min 32, max 160)	84 (min 32, max 160)

Severity of impairment:

- No/minimal impairment
- Mild impairment
- Moderate impairment
- Severe impairment

Assessment completed by the life partner of patient:

Assessment	Case A	Case B
ICS (speech intelligibilty)	29 (min 7, max 35)	18 (min 7, max 35)

Case A : Speech was usually intelligible.
Case B : Speech was rarely intelligible.

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RESULTS [II]
FUNCTIONING— CASE A

Severity of impairment:

- Mild impairment
- Moderate impairment
- Severe impairment
- Complete impairment

Body functions and structures

s340
Structure of larynx
Complete

s430
Structure of respiratory system
Severe

b310
Voice functions
Moderate None None

b1300
Energy level
Mild Mild

b440
Respiration functions
Mild

b450
Additional respiratory functions
Mild

b510
Ingestion functions
Mild

Activities un participation

d570
Looking after one's health
Moderate

d330
Speaking
Mild

d870
Economic self-sufficiency
Mild

d920
Recreation and leisure
Mild

Environmental factors

e125
Products for communication
+ Facilitator
Severe

e355
Health professionals
+ Facilitator
Severe

e570
Social security services
+ Facilitator
Severe

e580
Health services & policies
+ Facilitator
Severe

e115
Products for personal daily use
– Barrier
Moderate

e225
Climate
– Barrier
Moderate

Personal factors

Patient general infromation: male 67, cohabiting, retired; secondary vocational education (automative engineering); until age 65 worked as driver (passenger and freight transport).
Diagnosis, treatment: laryngeal carcinoma T4N2M0 (2024); total laryngectomy with primary tracheoesophageal voice prosthesis (1 year 4 months post operation); adjuvant radiotherapy and chemotherapy; currently on immunotherapy; pulmonary metastases (2025).
Lifestyle: smoker from age 12 to 59 (1-1,5 packages a day); no alcohol use reported.
Strong **belief** in his own ability to perform tasks and manage daily life “I do everything I used to do”.

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RESULTS [III]
FUNCTIONING— CASE B

Severity of impairment:

- Mild impairment
- Moderate impairment
- Severe impairment
- Complete impairment

Body functions and structures

b1801 Body image — Complete	b180 Experience of self & time — Mild, Complete, Complete	b310 Voice functions — Complete, Complete, Complete, None	b3100 Production of voice — None, Complete	b3101 Quality of voice — Complete, Complete, None, Complete, None, None
b330 Fluency & rhythm of speech — Complete	b440 Respiration functions — Complete	s340 Structure of larynx — Complete	b134 Sleep functions — Severe	b1400 Sustaining attention — Severe
b1470 Psychomotor (specific) — Severe	b1520 Appropriateness of emotion — Severe, Severe	b152 Emotional functions — Severe, Severe, Complete, Complete, Moderate, Moderate, None	b1521 Regulation of emotion — Severe	b1522 Range of emotion — Severe
b1608 Thought functions — Severe	b255 Smell function — Severe	b450 Additional respiratory fn. — Severe	b510 Ingestion functions — Severe	s330 Structure of pharynx — Severe
s430 Structure resp. system — Severe	s520 Structure of oesophagus — Severe	b147 Psychomotor control — Moderate	b535 Digestive sensations — Moderate	b1300 Energy level — Mild
b144 Memory functions — Mild				

Activities un participation

d845 Employment — Complete	d870 Economic self-sufficiency — Complete, Complete	d910 Community life — Complete	d770 Intimate relationships — Severe	d920 Recreation & leisure — Moderate
d720 Complex interpersonal int. — Mild	d760 Family relationships — Mild			
d155 Acquiring skills — Complete	d330 Speaking — Complete, Complete, Complete, Moderate	d332 Singing — Complete	d3600 Communication devices — Complete	d4501 Walking long distances — Complete
d550 Eating — Complete	d175 Solving problems — Severe, Moderate	d510 Washing oneself — Severe	d540 Dressing — Severe	d350 Conversation — Moderate
d570 Health self-care — Moderate	d469 Walking & moving — Moderate	d4154 Maintaining standing — Mild	d4602 Moving around outside — Mild	

Environmental factors

e5402 Transport services — + Facilitator, Complete	e310 Immediate family — + Facilitator, Severe	e250 Sound — − Barrier, Complete	e165 Assets — − Barrier, Severe	e115 Products daily living — − Barrier, Moderate
e155 Building products — − Barrier, Moderate	e320 Friends — − Barrier, Moderate	e345 Strangers — − Barrier, Moderate	e580 Health services & policies — − Barrier, Moderate	e5801 Health systems — − Barrier, Moderate
e125 Communication products — Unspecified				

Personal factors

Patient general information: male, 71 years old, retired; secondary vocational education (electromechanics); employed in profession until age 55, sebsequently in construction.
Diagnosis and treatment: laryngeal carcinoma T3N0M0 (2024); total laryngectomy with primary tracheoesophageal voice prothesis (1 year 6 months post operation); adjuvant radiotherapy with severe complications; pharyngoesophageal junction scaring stenosis following total laryngectomy (2025).
Lifestyle: non-smoker, no alcohol use, fishing, writing poems.
Belief in onself and love.

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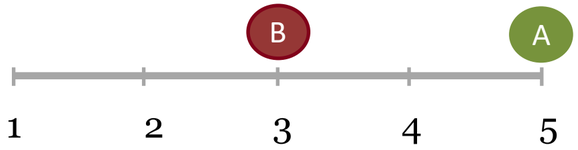
RESULTS [IV]
QUALITY OF LIFE

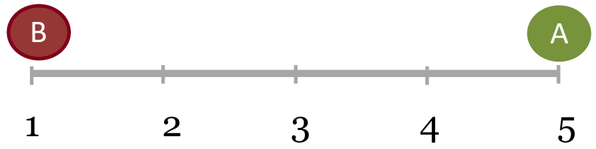
- Case A
- Case B

Assessment: World Health Organization Quality of Life-BREF (WHOQOL-BREF)

"How would you rate your quality of life?"

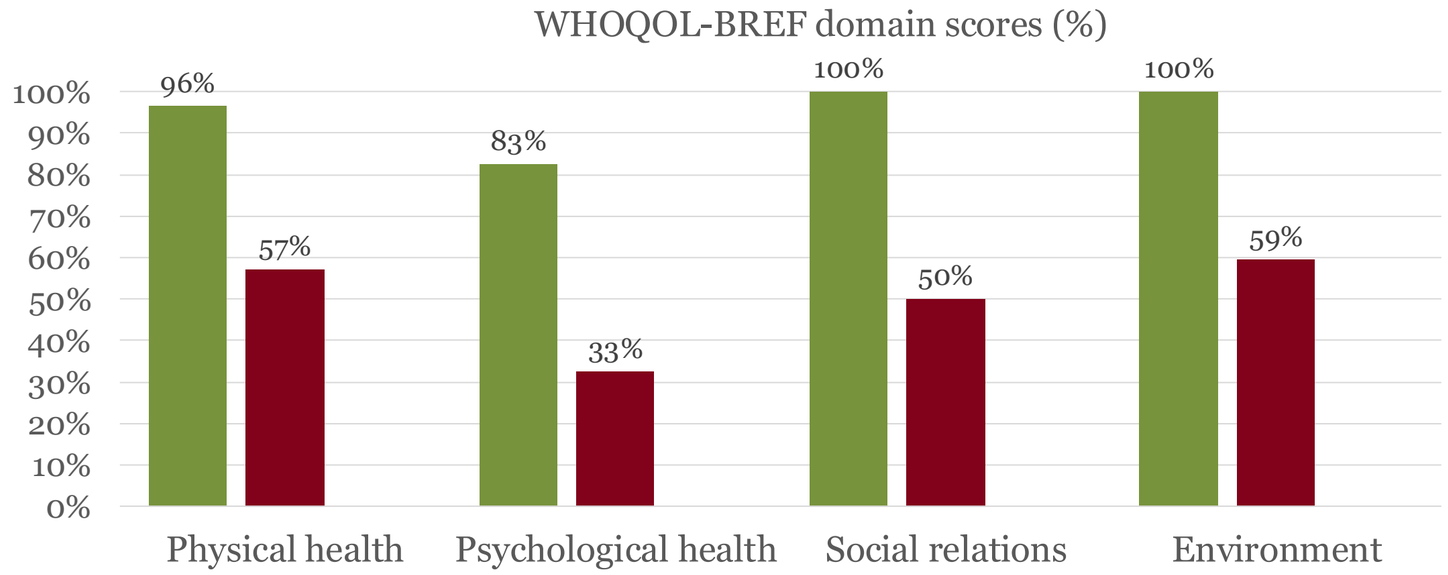


"How satisfied are you with your health?"



Quality of life scale:
1– very poor
2 – poor
3 – neither poor nor good
4 – good
5 – very good

Health satisfaction scale:
1– very dissatisfied
2 – dissatisfied
3 – neither
4 – satisfied
5 – very satisfied



CONCLUSIONS

Despite similar medical interventions, outcomes differed significantly between the two cases:

Case A reported high psychological wellbeing, minimal self-perceived voice impairment, absence of adjuvant radiotherapy or chemotherapy complications and satisfaction of received healthcare, alongside a better experienced quality of life and usually intelligible speech, as reported by the life partner.

In contrast, case B reported moderate depression, severe anxiety symptoms and severe self-perceived voice impairment. In addition, complications of adjuvant radiotherapy affecting voice production and swallowing function were observed, together with “neither poor nor good” experienced quality of life and, according to the patient’s life partner, rarely intelligible speech.

In conclusion, total laryngectomy with tracheoesophageal voice prosthesis insertion represents very individualized cases that extend beyond the surgical procedure itself. Adjuvant therapy acts as an independent variable, that may further compromise functioning. The findings of this study support the necessity of a holistic, patient centred and multidisciplinary approach following surgical procedures- to address not only voice rehabilitation, but also psychological wellbeing, daily routine adaptation with the help of other healthcare providers.

LIMITATIONS

Findings of this study are descriptive and based on two individual cases, as a result no causal relationships can be drawn. Further research with larger samples is needed to explore functioning and quality of life influencing factors.

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