**Appendix IV.** Detailed overview of treatment-related factors explored and their association with health-related quality of life (HRQOL).

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| **Factor** | **First Author (Year)** | **Results** |
| Surgery | Castle-Kirzbaum (2022) | Temporary ↓ sinonasal HRQOL on day 1 postoperatively (md=40.0 [95% CI: 23.0 to 49.0]) with gradual return to BL within 3-6 weeks postoperatively (md=14.5 [95% CI 6.0 to 28.75], p = 0.36) via SNOT-22↓ HRQOL in first 3 weeks postoperatively (md=108.0 [95% CI 99.0 to 122.0]) vs. preoperative BL (md=125.0 [95% CI 111.0 to 146.0]) with return to BL by 6 weeks (md=121.0 [95% CI 109.0 to 139.0]) via ASBQ |
| Jakola (2012) | Modest average ↑ in HRQOL with noticeable long-term ↑ HRQOL via EQ-5D (Δ=0.09 [95 % CI: 0.00 to 0.17], p=0.040)Deterioration after surgery associated with higher preoperative HRQOL scores (p=0.049) |
| Jones (2016) | Stable or slightly improved HRQOL after surgery measured by ASBQ (p=0.48); only ↓ in performance domain↓ postoperative sino-nasal specific HRQOL measured by SNOT-22 (p=0.04) |
| Karsy (2019) | No significant difference in preoperative to follow-up EQ-5D-3L scores (p≥0.05) |
| Wagner (2019) | Between preoperative status and 12 month follow-up, ↑ in role-physical (D̅=18.94, p<0.001) and role-emotional (D̅=13.89, p=0.020) scores on SF-36 |
| Wirsching (2020) | At least 1 year post-surgery, patients had improved global health (20.7% [95% CI: 15.2 to 26.2%]), headaches (18.6% [95% CI: 13.6 to 23.6%]) and seizures (12.1% [95% CI: 7.7 to 16.5%]), and < 10% improvement in emotional and social functioning, future uncertainty, nausea and vomiting, pain, appetite loss, visual disorder and motor dysfunction scores on EORTC QLQ-C30/BN20 |
| Zweckberger (2019) | One day prior to surgery, patients had low EORTC QLQ-C30 scores (x̄=60.6 ± 21.5); at 3–5mo post-surgery, there was no significant ↓ in HRQOL (x̄=57.5 ± 22.2); at 9–12mo follow-up, HRQOL ↑ to slightly higher levels than those observed preoperatively (x̄=63.6 ± 24.1 points) |
| Time since surgery | Castle-Kirzbaum (2018) | ↑ HRQOL as per ASBQ beyond preoperative BL at ≥6mo postoperatively (md=144.0 [95% CI: 119.0 to 158.0]) and 1 year postoperatively (md=146.0 [95% CI: 110.0 to 159.0]) |
| Kalkanis (2000) | No association between time since surgery and FACT-Br scores (p=0.77) |
| Kofoed Lauridsen (2022) | No association between time since surgery and FACT-G/Br scores (p>0.05) |
| Nassiri (2019) | No correlation between time since surgery and global HRQOL or functional/symptom domains of EORTC QLQ-C30 (rs<0.5 in all cases) |
| Pettersson-Segerlind (2021) | Low correlation between postoperative follow-up time and HRQOL via EQ-5D(r=0.167) |
| Timmer (2019) | No association between time since surgery at an interval of ≤ 9 years and SF-36 scores\* |
| Previous surgery | Castle-Kirszbaum (2022) | No association between reoperation and preoperative HRQOL or HRQOL change at 6 months via ASBQ (both p>0.05) |
| Fisher (2021) | No association between reoperation and any of the SF-36 domains (all p>0.05) |
| Henzel (2013) | Previous operations associated with ↑ MCS before SRT (p=0.004), after SRT (p=0.014), and in each follow-up interval (p=0.006) vs. primary SRTPrimary SRT associated with initially worse PCS values reached similar levels to previous operations cohort over time (p=0.054) |
| Jones (2016) | No association between previous surgery and HRQOL via ASBQ (p>0.05) |
| Keshwara (2022) | No association between number of surgeries and HRQOL via EORTC QLQ-C30/BN20 (p=0.849) |
| Kofoed Lauridsen (2022) | No association between number of surgeries and FACT-G/Br scores (p>0.05) |
| Zamanipoor Najafabadi (2021b) | No association between reoperation and HRQOL via SF-36 (p≥0.05) |
| Extent of resection | Castle-Kirszbaum (2022) | No association between gross total resection and preoperative HRQOL or HRQOL change at 6 months via ASBQ (both p≥0.05) |
| Jakola (2012) | No association between extent of resection and post-operative changes in EQ-5D values (p≥0.05) |
| Jones (2016) | No association between gross total resection and HRQOL via ASBQ (p≥0.05) |
| Ouyang (2015) | Complete resection associated with ↓ postoperative KPS improvement (EXP(β)=0.107 [95% CI: 0.011 to 1.051], p=0.035) |
| Waagemans (2011) | No association between extent of resection (Simpson’s grade) and SF-36 scores (p=0.06) |
| Surgical approach | Karsy (2019) | Non-frontotemporal approaches associated with ↑ EQ-5D scores at 1 year (p<0.05) |
| Ouyang (2015) | No association between surgical approach and postoperative HRQOL via KPS (p≥0.05) |
| Torales (2024) | No difference in SF-36 scores between endonasal vs. supraorbital approach at 1 year for anterior skull base MGM patients (p>0.05) |
| Radiotherapy | Benz (2018) | Radiotherapy associated with ↓ HRQOL in vitality, role-physical, social functioning on SF-36 compared to surgery alone\* |
| Fisher (2021) | Radiotherapy as initial treatment associated with ↓ HRQOL in SF-36 bodily pain (D̅=−33.0 [95% CI: −55.2 to −10.9]) and vitality (D̅=−18.9 [95% CI: −33.7 to −4.1)) vs. surgery as initial treatment (p<0.05)No difference between patients treated with only surgery vs. surgery + adjuvant radiotherapy (p>0.05)No difference between patients treated with surgery + adjuvant radiotherapy vs. radiotherapy as initial treatment (p>0.05) |
| Henzel (2013) | Temporary ↓ HRQOL during treatment phase, but HRQOL parameters normalized to BL by ≥12mo after SRT\*↓ HRQOL in role-physical, role-emotional, vitality and social functioning and pain domains on SF-36\*↑ in values for mental health and general health domains until the end of radiotherapy\* |
| Jones (2016) | Adjuvant radiotherapy associated with lower scores in the ASBQ domain of pain (p=0.01) |
| Kalkanis (2000) | No association between stereotactic radiosurgery or adjunctive radiotherapy and HRQOL via FACT-Br (both p>0.05) |
| Keshwara (2022) | No association between type of radiotherapy (fractionated radiotherapy, stereotactic radiosurgery, or both) and EORTC QLQ-C30/BN20 scores (p=-0.401)No association between number of radiotherapy courses and EORTC QLQ-C30/BN20 scores (p=0.671) |
| Lisowski (2022) | No significant change in median KPS score before vs. after radiotherapy – both at 90↓ on functional scales for physical, role, cognitive, social functioning and ↑ on symptom scales for fatigue, pain, dyspnea, insomnia, constipation, financial impact on EORTC QLQ-C30Sequential radiotherapies not significantly associated with global health status on the QLQ-C30 (p≥0.05) |
| Zamanipoor Najafabadi (2021b) | No association between radiotherapy and SF-36 scores (p≥0.05) |
| Discharge destination | Kofoed Lauridsen (2022) | Discharge to home associated with ↑ long-term FACT-G/Br scores (FACT-G: p=0.020 and FACT-Br: p=0.018) |
| Active surveillance | Zamanipoor Najafabadi (2021a) | No significant differences in SF-36 scores in patients with first-line surgery/radiotherapy compared to patients followed with active MRI surveillance |
| Surgical complications | Fisher (2021) | No association between surgical complications and any of the SF-36 domains (all p>0.05) |
| Jakola (2012) | No association between surgical complications and postoperative EQ-5D scores (p≥0.05) |
| Karsy (2019) | Absence of surgical complications associated with ↑ EQ-5D-5L scores at 1 year (p<0.05) |
| Keshwara (2022) | Postoperative complications associated with ↓ EORTC QLQ-C30/BN20 scores (β=−6.7 [95% CI: −13.2 to −0.3], p=0.041) |
| Kofoed Lauridsen (2022) | No association between postoperative complications and FACT-G/Br scores (p>0.05) |
| Meixensberger (1996) | Intra/postoperative bleeding and CSF disturbances associated with ↓ postoperative HRQOL via KPS (rs=−0.01508, p<0.05)Cranial nerve disturbances associated with ↓ postoperative HRQOL via KPS (p<0.001) |
| Zamanipoor Najafabadi (2021b) | No association between surgical complications and HRQOL via SF-36 (p≥0.05) |
| AED Use | Keshwara (2022) | No association between number of AEDs used and EORTC QLQ-C30/BN20 scores (p=0.410) |
| Tanti (2017) | Current AED use associated with ↓ FACT-Br summary scores (D̅=−21.8, p<0.001) and MCS scores (D̅=−4.9, p<0.05) compared to no AED use Current AED use associated with a greater ↓ on FACT scores than recent seizures (β=−0.218, p=0.02) |
| Waagemans (2011) | AED use associated with ↓ role-physical, social functioning, mental health, vitality, and general health on SF-36 (all p<0.05)When executive functioning controlled for, no significant correlation between AED use and HRQOL in 7/8 domains on SF-36 |

***Notes:*** *AED=antiepileptic drug; ASBQ=Anterior Skull Base Questionnaire; BL=baseline; CI=confidence interval; CSF=cerebrospinal fluid; EORTC QLQ BN20=European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Brain Neoplasm 20; EORTC QLQ C30=European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30; EQ-5D=EuroQOL-5 Dimensions; EXP(β)=exponentiated regression coefficient; FACT-Br=Functional Assessment of Cancer Therapy-Brain; FACT-G=Functional Assessment of Cancer Therapy-General; HRQOL=health-related quality of life; KPS=Karnofsky performance scale; MCS=mental component scale (from SF-36); md=median; MGM=meningioma; OR=odds ratio; p=p-value; PCS=physical component scale (from SF-36); RR=relative risk; SF-36=36-item Short Form Survey; SNOT-22=Sino-nasal Outcome Test-22; SRT=stereotactic radiotherapy; β=regression coefficient; D̅=difference between means; r=correlation coefficient; rs=Spearman’s Rho; χ2=chi-square; x̅=mean ± standard deviation; ↑=increase(d); ↓=decrease(d); Δ=change in score*

*\*margin of error not reported*