**Table. 3 Summary of the studies on the use of percutaneous endoscopic gastrostomy (PEG) in ALS patients**

|  |  |  |  |
| --- | --- | --- | --- |
| Study | Patients | Results | |
| Burkhardt et al. [82] | PEG = **46**  non-PEG = **25** | *Survival* | **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**)  **■** median survival [months]: 40.1 *vs.* 29.8 (p < 0.01) |
| Kasarskis et al. [30] | PEG = **85** | *Decline of BMI* | **Decreased** in **post-PEG** (**pre-PEG** *vs.* **post-PEG**)  **■** difference in decline rate (pre-PEG minus post-PEG rate): 0.384 (SD+0.454) (p < 0.001) |
| Chio et al. [47] | PEG = **50**  non-PEG = **18** | *Survival* | **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**)  **■** HR [median survival]: 0.65 (p = 0.02) |
| Chio et al. [134] | PEG = **52**  non-PEG = **169** | *Survival* | **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**)  **■** HR [median survival]: 0.26 (p = 0.0004) |
| Del Piano et al. [49] | NG = **13**  non-NG = **18** | *Survival* | **No difference** (**PEG** *vs.* **non-PEG**)  **■** median post-onset of bulbar symptoms survival [months]: 21.5 vs 25.0 (p > 0.05) |
| Mazzini et al. [28] | PEG = **31**  No PEG = **35** | *Survival*  *Effect on BMI*  *Quality of life* | **No difference** (**PEG** *vs.* **non-PEG**) (at *6* *month*)  **■** Kaplan-Meyer curve: (p = 0.35)  **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**) (at *12*, *18* and *24* *months*)  **■** Kaplan-Meyer curve: (p < 0.05, p < 0.001, p < 0.001, respectively)  **Increased** in *PEG*  **■** ANOVA: (p = 0.03)  **Decreased** in *non-PEG*  **■** ANOVA: (p < 0.001)  **Improved in PEG** (**PEG** *vs.* **non-PEG**)  [no data given] |
| Shaw et al. [35] | PEG = **18**  RIG = **72**  NG = **8** | *Survival* | **No difference** (**PEG** *vs.* **RIG**)  **■** median survival [months]: 7.13 (95% CI; 4.81–9.45) *vs.* 6.31 (95% CI; 4.58–8.04) (p = 0.50)  **Prolonged** in **PEG+RIG** (**PEG+RIG** *vs.* **NG**)  **■** median survival [months]: 7.13 (95% CI; 4.81–9.45)/6.31 (95% CI; 4.58–8.04) *vs.* 0.95  (95% CI, 0.00–2.77) (p = 0.03) |
| Desport et al. [19] | PEG = **30**  Non-PEG = **30** | *Survival*  *Nutrition status (in PEG)* | **No difference** (**PEG** *vs.* **non-PEG**)  [no data given]  **Significant increase** in total weight, BMI and TSF  (p < 0.02, p < 0.02 and p = 0.04, respectively)  **No significant increase** in MAMC |
| Mitsumoto et al. [43] | PEG1 = **91**  Late-PEG1 = **69**  Never-PEG1 = **52**  1 ALSFRS bulbar score ≤5 | *Survival*  *Nutrition status* | **No difference** (**PEG** *vs.* **late-PEG** *vs.* **never-PEG**)  **■** duration to death since symptoms onset (mean): 47 months [range, 8–146) *vs.* 43 months [range, 13–163) *vs* . 58 [range, 6–303) (p = 0.33 – Cox proportional hazard model)  **No difference** (**PEG** *vs.* **late-PEG**)  **■** duration to death since PEG (mean): 14 months [range, 2-61] *vs.* 10 months [range, 1-28] (p = 0.10 – Cox proportional hazard model)  **No difference** (**PEG** *vs.* **late-PEG**)  **■** weight gain [mean]: 2.3 kg *vs.* 3.6 kg |
| Mathus-Vliegen et al. [52] | PEG = **55**1  NG = **13**1  1all patients with bulbar signs and symptoms | *Survival* | **No difference** (**PEG** *vs.* **NG**)  **■** median survival [days]: 122 days *vs.* 92.5 days (p > 0.05)  **■** 30-days mortality rate [%]: 11.5 *vs.* 23.1 (p > 0.05) |
| Forbes et al. [54] | PEG = **142**  non-PEG = **1084** | *Survival* | **No difference** (PEG *vs.* non-PEG)  **■** Log rank: 2.08 [IQR, 1.44–2.99] *vs.* 2.06 [IQR, 1.29–3.49] (p = 0.52) |
| Zamietra et al. [62] | PEG = **11**  NIV + PEG= **5** | *Quality of life* | **No difference** (pre-PEG *vs.* post-PEG)  ■ ALSSQoL-R [no data given]  **No difference** (pre-NIV+PEG *vs.* post-NIV+PEG)  **■** ALSSQoL-R [no data given] |
| Strong et al. [58] | PEG = **73** (41 bulbar-onset, 32 limb-onset)  Controls = **293** (86 bulbar-onset, 207 limb-onset) | *Survival (bulbar onset)*  *Survival (limb onset)* | **Shortened** in **PEG** (**PEG** *vs.* **non-PEG + Controls)**  ■ median survival [months]: 22.0 [IQR, 17.4–27.0] *vs.* 30.0 [IQR, 22.4–39.1] (p < 0.001)  **No difference** (**PEG** *vs.* **non-PEG + Controls)**  ■ median survival [months]: 24.0 [IQR, 18.3–42.0] *vs.* 35.5 [IQR, 24.0–54.2] (p = NS) |
| Spataro et al. [60] | PEG = **76**1  non-PEG = **74**1  1 with symptoms of dysphagia | *Survival*  *Survival (bulbar onset)*  *Survival (limb onset)* | **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**)  ■ median survival [months]: 38 [IQR, 24–56] *vs*. 32 [IQR, 21–49] (p = 0.05)  **No difference** (**PEG** *vs.* **non-PEG**)  ■ median survival [months]: 28 [IQR, 22–45] *vs.* 25 [IQR, 16–34] (p = 0.14)  **Prolonged** in **PEG** (**PEG** *vs.* **non-PEG**)  ■ median survival [months]: 44 [IQR, 33–58] *vs.* 36 [IQR, 23–54] (p = 0.046) |

**PEG** = ALS patients with indication for PEG who accepted the method; **non-PEG** = patients with indication for PEG who refused the method; **NG =** ALS patients on the nasogastric tube use; **Control** = ALS patients with no indication for PEG at the time of assessment; **ALSSQoL-R** = Amyotrophic Lateral Sclerosis Specific Quality of Life Instrument-Revised; **BMI** = Body mass index; **MAMC =** mid-arm muscle circumference; **TSF** = triceps skinfold thickness.