

Table S1. Characteristics of HO+ cases (n= 29) after FFF.

| ID | Sex | Age at free flap | Primary disease | Resection site | Neck dissection | Defect-type [3, 35] | Fibula-segments | Analog (A) vs. virtual (V) planning | Radiol. onset HO (mo) | HO-type | HO clinical symptoms | Clinical onset HO (mo) | Radiation | Surgical removal |
|----|-----|------------------|-----------------|----------------|-----------------------------|---------------------|-----------------|-------------------------------------|-----------------------|---------|----------------------|------------------------|-----------|------------------|
| 1 | M | 68.3 | OSCC | Max. | None | II | 2 | A | 28 | 1 | | | - | |
| 2 | M | 49.7 | OSCC | Mand. | MRND ipsi., SOND contra. | I | 1 | A | 1 | 1 | | | < 60 Gy | |
| 3 | M | 65.7 | OSCC | Mand. | MRND ipsi. | I | 1 | A | 80 | 2 | | | - | |
| 4 | M | 57.1 | OSCC | Mand. | MRND ipsi. | I | 1 | A | 8 | 1 | | | < 60 Gy | |
| 5 | M | 62.4 | AMB | Max. | None | II | 2 | A | 11 | 1 | Bony masses | 4 | - | y (12 mo) |
| 6 | M | 63.4 | OSCC | Mand. | MRND ipsi. | I | 1 | A | 13 | 2 | Swallowing | 3 | < 60 Gy | n |
| 7 | M | 49.2 | OSCC | Mand. | MRND ipsi. | I | 1 | A | 13 | 1 | | | - | |
| 8 | M | 47.4 | OS | Mand. | SOND ipsi. MRND | III | 2 | A | 27 | 1 | | | - | |
| 9 | M | 60.4 | OSCC | Mand. | MRND ipsi., SOND contra. | II | 2 | A | 10 | 1 | | | < 60 Gy | |
| 10 | M | 46.1 | OSCC | Mand. | MRND ipsi. | I | 1 | A | 3 | 3 | | | - | |
| 11 | M | 56.3 | OSCC | Mand. | MRND ipsi., | III | 3 | A | 9 | 3 | Swallowing | 5 | < 60 Gy | n |

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|----|---|------|-------|-------|----------------------------------|-----|---|---|----|---|-----------------|---|---------|--------------|
| 12 | F | 53.9 | ACC | Max. | SOND contra. None | II | 1 | A | 4 | 2 | | - | | |
| 13 | M | 42.3 | AMB | Max. | None | II | 1 | V | 5 | 4 | Trismus | 4 | - | y (6 mo) |
| 14 | M | 45.1 | ACIN | Max. | None | II | 1 | V | 20 | 1 | | | - | |
| 15 | M | 60.7 | OSCC | Mand. | MRND ipsi. | III | 2 | A | 11 | 2 | | | - | |
| 16 | M | 37.8 | OSCC | Mand. | SOND bilat. | IV | 3 | V | 3 | 1 | | | - | |
| 17 | M | 54.0 | OKC | Max. | None | II | 1 | V | 7 | 4 | Swallow- ing | 1 | - | y (9 mo)) |
| 18 | F | 73.1 | OSCC | Max. | MRND ipsi. | II | 1 | V | 1 | 2 | Trismus | 5 | < 60 Gy | y (25 mo) |
| 19 | M | 53.6 | OSCC | Mand. | MRND ipsi, SOND contra. | III | 3 | V | 10 | 4 | | | - | |
| 20 | M | 76.8 | OSCC | Mand. | MRND ipsi. | IIc | 2 | V | 1 | 1 | Swallow- ing | 4 | < 60 Gy | n |
| 21 | M | 56.8 | OSCC | Mand. | SOND ipsi. | II | 2 | V | 19 | 1 | | | < 60 Gy | |
| 22 | M | 51.1 | OSCC | Mand. | MRND ipsi. | II | 2 | V | 12 | 2 | | | < 60 Gy | |
| 23 | M | 70.6 | OSCC | Mand. | SOND ipsi. | III | 3 | V | 5 | 1 | | | ≥ 60 Gy | |
| 24 | M | 24.4 | OKC | Max. | None | II | 2 | V | 5 | 4 | Swallow- ing | 6 | - | y (11 mo) |
| 25 | M | 14.8 | OS | Max. | None | III | 1 | V | 1 | 1 | Trismus | 4 | < 60 Gy | n |
| 26 | M | 40.8 | OM | Mand. | None | IV | 3 | V | 5 | 2 | | | - | |
| 27 | F | 65.1 | BPONJ | Mand. | None | III | 3 | V | 8 | 2 | Bony masses | 8 | - | n |
| 28 | M | 30.0 | ORN | Mand. | None | I | 1 | A | 21 | 2 | | | ≥ 60 Gy | |

| | | | | | | | | | | | |
|----|---|------|------|-------|------|-----|---|---|----|---|---------|
| 29 | F | 40.3 | OSCC | Mand. | None | III | 1 | A | 50 | 1 | < 60 Gy |
|----|---|------|------|-------|------|-----|---|---|----|---|---------|

ACC, adenoid cystic carcinoma; ACIN, Acinus cell carcinoma; AMB, Ameloblastoma; BPONJ, bisphosphonate related necrosis of the jaw; OKC, odontogenic keratocyst; OM, Osteomyelitis; ORN, Osteoradionecrosis; OS, Osteosarcoma; OSCC, Oral squamous cell cancer; MR, modified radical, SO, supraomohyoidal; ND, neck dissection.