Supplementary Table 1. Patients’ demographics, treatment variables and surgical characteristics by status of follow-up completion.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Complete follow-up(n=328) | Missing in follow-up(n=42) | P value  |
| Age |  |  |  | 0.357 |
|  | <40 years old | 117（35.7%） | 11（26.2%） |  |
|  | 40-50 years old | 165（50.3%） | 26（61.9%） |  |
|  | ≥50 years old | 46（14.0%） | 5（11.9%） |  |
| BMI |  |  |  | 0.222 |
|   | ≤25 | 257 (78.4%) | 28 (66.7%) |  |
|  | 25-30  | 64 (19.5%) | 13 (31.0%) |  |
|  | >30 | 7 (2.1%) | 1 (2.4%) |  |
| Irradiation  |  | 86 (26.2%) | 6 (14.3%) | 0.092 |
| Smokers |  | 5（1.5%） | 0（0%） | 0.271 |
| Comorbidities  |  |  |  | 0.101 |
|  | Diabetes Mellitus | 1（0.3%） | 1（2.4%） |  |
|  | Hypercoagulation | 16（4.9%） | 0（0%） |  |
|  | Hyperlipidemia | 6（1.8%） | 0（0%） |  |
|  | Others | 8（2.4%） | 2（4.8%） |  |
| Pathology |  |  |  | 0.006＊ |
|  | In situ | 30（9.1％） | 0（0%） |  |
|  | Invasive | 292 (89.0%) | 39（92.9%） |  |
|  | Others | 6（1.8%） | 3（7.1％） |  |
| Lymph node invasion |  | 107（32.6%） | 13（31.0%） | 0.880 |
| Neoadjuvant chemotherapy |  | 29（8.8%） | 4（9.5%） | 0.885 |
| Adjuvant chemotherapy |  | 290（88.4%） | 39（92.9%） | 0.363 |
| Hormone therapy |  | 204（68.9%） | 18（66.7%） | 0.809 |
| Timing of reconstruction |  |  |  | 0.105 |
|  | immediate | 199（60.7%） | 20（47.6%） |  |
|  | delayed | 129（39.3%） | 22（52.4%） |  |
| Flap type |  |  |  | 0.384 |
|  | Pedicled TRAM | 296（90.2%） | 36（85.7%） |  |
|  | DIEP | 32（9.8%） | 6（14.3%） |  |
| Pedicle type |  |  |  | 0.041\* |
|  | ipsilateral | 18（6.1%） | 5（13.9%） |  |
|  | contralateral | 260（87.8%） | 31（86.1%） |  |
|  | bilateral | 18（6.1%） | 0（0.0%） |  |
| Zones  |  |  |  | 0.858 |
|  | Hemi-flap | 36（11.0%） | 5（11.9%） |  |
|  | Cross midline flap | 292（89.0%） | 37（88.1%） |  |

Supplementary Table 2. Patient characteristics, treatment variables and surgical characteristics stratified by timing of radiation in irradiated patients.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | IBR+XRT（n=61） | XRT+DBR（n=31） | P value  |
| Age |  |  |  | 0.156 |
|  | <40 years old | 28（45.9%） | 8（25.8%） |  |
|  | 40-50 years old | 23（37.7%） | 17（54.8%） |  |
|  | ≥50 years old | 10（16.4%） | 6（19.4%） |  |
| BMI |  |  |  | 0.375 |
|   | ≤25 | 46（75.4%） | 19（61.3%） |  |
|  | 25-30  | 14（23.0%） | 11（35.5%） |  |
|  | >30 | 1（1.6%） | 1（3.2%） |  |
| Follow-up(months) |  | 34.03±20.43 | 26.11±16.19 | 0.029\* |
| Smoking status |  | 0（0.0%） | 2（6.5%） | 0.035\* |
| Comorbidities  |  |  |  | 0.576 |
|  | Diabetes Mellitus | 0（0.0%） | 0（0.0%） |  |
|  | Hypercoagulation | 5（8.2%） | 2（6.5%） |  |
|  | Hyperlipidemia | 2（3.3%） | 0（0.0%） |  |
|  | Others | 1（1.6%） | 1（3.2%） |  |
| Pathology |  |  |  | 0.223 |
|  | In situ | 0（0.0％） | 1（3.2%） |  |
|  | Invasive | 60 (98.4%) | 30（96.8%） |  |
|  | Others | 1（1.6%） | 0（0.0％） |  |
| Lymph node invasion |  | 51（83.6%） | 22（71.0%） | 0.171 |
| Neoadjuvant chemotherapy |  | 15（24.6%） | 4（12.9%） | 0.177 |
| Adjuvant chemotherapy |  | 56（91.8%） | 29（93.5%） | 0.762 |
| Hormone therapy |  | 40（69.0%） | 21（77.8%） | 0.394 |
| Flap type |  |  |  | 0.236 |
|  | Pedicled TRAM | 60（98.4%） | 29（93.5%） |  |
|  | DIEP | 1（1.6%） | 2（6.5%） |  |
| Pedicle type |  |  |  | 0.999 |
|  | ipsilateral | 2（3.3%） | 1（3.4%） |  |
|  | contralateral | 54（90.0%） | 26（89.7%） |  |
|  | bilateral | 4（6.7%） | 2（6.9%） |  |
| Zones  |  |  |  | 0.600 |
|  | Hemi-flap | 4（6.6%） | 3（9.7%） |  |
|  | Cross midline flap | 57（93.4%） | 28（90.3%） |  |

IBR+XRT: immediate breast reconstruction followed by radiation;

XRT+DBR: prior radiation and delayed breast reconstruction.

Supplementary Table 3. Patients’ aesthetic and psychological evaluations by Breast-Q reconstruction module stratified by timing of radiation in irradiated patients.

|  |  |  |  |
| --- | --- | --- | --- |
|  | IBR+XRT（n=58） | XRT+DBR (n=28) | P value |
| Aesthetic evaluation 3 months post-op | 68.67±16.85 | 63.22±15.59 | 0.516 |
| Aesthetic evaluation >1 year post-op | 67.62±17.44 | 64.56±17.84 | 0.772 |
| Psychological evaluation  | 77.70±21.35 | 65.94±29.30 | 0.194 |

IBR+XRT: immediate breast reconstruction followed by radiation;

XRT+DBR: prior radiation and delayed breast reconstruction.

Supplementary Table 4. Patients’ aesthetic and psychological evaluations by Breast-Q reconstruction module stratified by timing of reconstruction.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Immediate（n=199） | Delayed (n=129) | P value |
| Aesthetic evaluation 3 months post-op | 68.54±16.82 | 64.74±14.33 | 0.412 |
| Aesthetic evaluation >1 year post-op | 68.80±16.90 | 66.06±15.78 | 0.453 |
| Psychological evaluation  | 78.74±23.42 | 71.99±23.94 | 0.049\* |

Supplementary Table 5. Early breast complications, secondary surgery of the reconstructed breasts by type of flap

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pedicled TRAM（n=332） | DIEP (n=38) | P value |
| Early breast complications |  |  |  |  |
|  | Overall complications | 37 (11.1%) | 7 (18.4%) | 0.189 |
|  | Impaired perfusion | 21（6.3%） | 4（10.5%） | 0.359 |
|  | Partial necrosis | 10（3.0%） | 1（2.6%） | 0.894 |
|  | Delayed wound healing | 22（6.6%） | 3（7.9%） | 0.216 |
| Secondary surgery |  | 27（8.1%） | 6（15.8%） | 0.148 |
|  | Fat necrosis related | 24（7.2%） | 3（7.9%） | 0.882 |
|  | Non fat necrosis related | 11（3.3%） | 3（7.9%） | 0.211 |

Supplementary Table 6. Late complications by type of flap

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pedicled TRAM(n=296) | DIEP(n=32) | P value |
| Overall Fat necrosis |  | 48（16.2%） | 5（15.6%） | 0.931 |
| Change of fat necrosis between intervals | Newly developed | 4（1.4%） | 0（0%） | 0.363 |
|  | Increased severity | 4（1.4%） | 0（0%） | 0.363 |
| Flap Contracture |  | 6（2.0%） | 0（0%） | 0.264 |

Supplementary Table 7. Patients’ aesthetic and psychological evaluations by Breast-Q reconstruction module by type of flap

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pedicled TRAM (n=296) | DIEP (n=32) | P value |
| Aesthetic evaluation 3 months post-op | 67.41±15.91 | 62.92±14.27 | 0.412 |
| Aesthetic evaluation >1 year post-op | 68.03±16.85 | 64.52±13.60 | 0.395 |
| Psychological evaluation  | 74.18±24.18 | 81.00±21.69 | 0.204 |