**Supplementary Table 1: Survival outcomes after inguinal lymph node dissection, by clinical and pathological nodal stage.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author | No undergoing iLND |  | cN0 | cN1 | cN2 | cN3 |  | pN0 | pN1 | pN2 | pN3 |
| Horenblas et al (1993) | 32 | Distribution by stage | 16% | 32% | 46% | 6% |  | 31% | 34% | 25% | 6% |
| 5yr DFS | 80% | 80% | 60% | 100% | 100% | 79% | 17%\* | 50%\* |
| Ravi et al (1993) | 201 | Distribution by stage | 49% | 51% | | | 51% | 49% | | |
| 5yr OS | NR | | | | 95% | 76% | | |
| Demkow et al (1999) | 46Э | Distribution by stage | NR | | | | 62% | 38% | | |
| 5yr DFS | NR | | | | 82% | 40%\*† | | |
| Leewansangtong et al (2001) | 50 | Distribution by stage | 34% | 66% | | | 35% | 15% | 30% | 20% |
| OS | 100% | 33% | | | 100% | 100% | 67% | 38% |
| Marconnet et al (2010) | 114 | Distribution by stage | 44% | 31% | 19% | 6% | 46% | 25% | 20% | 9% |
| 5yr CSS  5yr RFS | 93%  74% | 84%  68% | 32%  27% | 0%  0% | 93% | 89% | 31% | 0% |
| Graafland et al (2011) | 161 | Distribution by stage | 32% | 68% | | | - | 37% | 41% | 22% |
| 5yr RFS | 88% | 60% | | | - | 91% | - | 51%\* |
| Martin et al (2012) | 49 | Distribution by stage | 33% | 67% | | | 41% | 24% | 0% | 35% |
| OS  CSS  DFS | NR | | | | 95%  100% | 92%  92%  83%  † | -  -  - | 65%  65%  47%  †\* |
| Djajadiningrat et al (2014) | 944 | Distribution by stage | 78% | 12% | 6% | 4% | 65% | 12% | 7% | 16% |
| 5yr CSS | 90% | 66% | 43% | 32% | 96% | 80%  \* | 66%  \* | 37% |
| Veeraterapillay et al (2015) | 81 | Distribution by stage | 77% | 23% | | | 61% | 16% | 15% | 7% |
| 5yr CSS | NR | | | | 92% | 73% | 61% | 33% †‡ |
| Reddy et al (2017) | 182 | Distribution by stage | 43% | 25% | 15% | 15% | 48% | 13% | 11% | 27% |
| 3yr RFS | 92% | 65% | 55% | 38% | 92% | 65% | 55% | 38%\*§ |
| Chavarriaga et al (2021) | 209 | Distribution by stage | 63% | 15% | 14% | 8% | 57% | 5% | 11% | 26% |
| 8yr CSS | NR | | | | 91% | 64% | 48% | 33% |

\*Adjuvant RT; †Adjuvant CT; ‡Adjuvant CRT; § Induction CT; Э Includes 11 patients who additionally underwent PLND; NR: not reported; OS: Overall survival; CSS: Cancer specific survival; DFS: Disease-free survival; RFS: Recurrence-free survival.

**Supplementary Table 2: Survival outcomes for ILND vs Surveillance**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reference | Patients | Survival in ILND group | Survival in surveillance group | % pN0 |
| Horenblas et al (1993) | 107 | Overall Survival  cN0: 80%  cN1: 80%  ≥cN2: 38% | Overall survival  cN0: 96%  cN1: 66%  ≥cN2: 0% | 31% |
| McDougal et al (1995)1 | 64 | 3yr OS  All stages: 72%  ≥Stage 2B: 82% | 3yr OS  All stages: 61%  ≥Stage 2B: 24% | 42% |
| Mistretta et al (2019)2 | 943 | 5yr CSS  N0: 89%  N1: 56%  ≥N2: 45%  CSS Hazard ratio 0.42\* | 5yr CSS  N0: 83%  N1: 17%\*  ≥N2: 32%\* | NA |

ILND: Inguinal lymph node dissection; OS: Overall survival; CSS: Cancer specific survival; \*p<0.05; 1Stage 2B defined as G3 or ≥T2 stage. 2Based on consensus N stage that combines both clinical and pathological staging.

**Supplementary Table 3: Early vs Delayed ILND outcomes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reference | Patients | Survival Early ILND | Survival Delayed ILND | % pN0 |
| Ornellas et al (1994) | 142 | 5yr DFS  All N stage: 65%  N+: 30% | 5 yr DFS  All N stage: 8%\*  N+: 0%\* | 42% |
| McDougal et al (1995) | 64 | 3yr OS  All stages: 72%  ≥Stage 2B: 82% | 3yr OS  All stages: 33%  ≥Stage 2B: 33% | 42% |
| Ornellas et al (2008) | 688 | 5yr DFS  All N stage: 75%  N+: 35% | 5 yr DFS  All N stage: 40%\*  N+: 25% | 50% |
| Gulia et al (2009) | 28 | 5yr CSS: 91% | 5yr CSS: 13%\* | 43% |
| Chipollini et al (2020) | 84 | 5yr CSS: 64.1%  Recurrence HR 0.48\* | 5y CSS: 39.5%\* | 37% |
| Chipollini et al (2017) | 1919 | 5yr CSS: 65%  Overall survival HR 0.67\* | 5y CSS: 65% | 94% |
| Shao et al (2022) | 109 | 5yr OS: 63% | 5yr OS: 75% | 35% |
| Kroon et al (2005) | 40 | 3yr DFS: 84% | 3yr DFS: 35%\* | 0% |

OS: Overall survival; CSS: Cancer specific survival; DFS: Disease-free survival; HR: Hazard ratio; \*p<0.05

**Supplementary Table 4: Studies reporting lymph node yield (LNY) and survival**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Reference | Patients | Median f/u (mo) | PLND | pN0 | Median No LN removed | Median No of +ve LN | Lymph node yield (LNY) | Outcome by LNY (all N stages) | Outcome by LNY (N+ only) |
| Zhu et al (2014) | 393 | 32 | NR | 46% | 15 | 2 | ≥8  <8 | 5yr CSS:  80%  61%\* | 5yr CSS:  65%  45%\* |
| Soodana-Prakash et al (2018) | 364 | 32 | NS | 57% | 16 | 0 | >15  ≤15 | 5yr OS:  72%  53%\* | 5yr OS:  59%  37%\* |
| Chipollini et al (2019) | 532 | 28 | 37% | 33% | ILND - 15  PLND - 13 | ILND - 2  PLND - 2 | ILND  ≥15  <15  PLND  ≥9  <9 | 5yr OS:  70%  59%\*  60%  40% | NR |
| Mao et al (2019) | 527 | NR | NR | 0% | 7 | NS | ≥8  <8 | Only LN+ analysed | 5yr OS:  53%  34%\* |

OS: Overall survival; CSS: Cancer specific survival; ILND: Inguinal lymph node dissection; PLND: Pelvic lymph node dissection; NR: not reported, \*p<0.05

**Supplementary Table 5: Studies reporting lymph node density (LND) and survival.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Reference | Patients | Median f/u (Mo) | % PLND | % pN0 | Median No LN removed | Median No of +ve LN | Survival by lymph node density (LND) |
| Svatek et al (2009) | 45 | 24 | 73% | 0% | 32 | 2 | 5yr CSS  LND ≤6.7%: 92%  LND >6.7%: 23%\* |
| Zai-shang et al (2014) | 146 | 42 | 17% | 51% | 22 | 2 | 5yr CSS  LND <16%: 24%  LND ≥16%: 81%\* |
| Lughezzani et al (2015) | 81 | 26 | 69% | 0% | 21 | 2 | 5yr CSS  LND <22%: 65%  LND >22%: 10%\* |
| Soodana-Prakash et al (2018) | 364 | 32 | NS | 57% | 16 | 0 | 5yr OS  LND <12.5%: 76%  LND ≥12.5%: 47%\* |
| Chavarriaga et al (2022) | 87 | 22 | 0% | 0% | 22 | 5 | 3yr CSS  LND <20%: 49%  LND ≥20%: 26%\* |

OS: Overall survival; CSS: Cancer specific survival; \*p<0.05

**Supplementary Table 6: Complications after inguinal lymph node dissection**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Author | Patients | Surgical approach | Wound complications (%) | | | Lymphatic complications (%) | |
| **Infection** | **Necrosis** | **Seroma** | **Lymphoedema** | **Lymphocele** |
| **Bevan-Thomas et al (2002)** | 53 | Prophylactic ILND  Radical ILND | 9  18 | 4.5  14 | 12  11 | 21  21 | 0  7 |
| **Nelson et al (2004)** | 22 | Radical ILND | 7.5 | 10 | - | 17 | 15 |
| **Bouchot et al (2004)** | 88 | Modified ILND  Radical ILND | <1  7 | 2.5  12 | 2.5  14 | 3.4  22 | <1  15 |
| **Martin et al (2012)** | 49 | Modified or Radical ILND | 33 | 3.3 | 2.2 | 17 | 12 |
| **Stuiver et al (2013)** | 163 | Radical ILND | 43 | 16 | 24 | - | - |
| **Nirmal et al (2011)** | 25 | Tensor fascia lata flap closure  Standard wound closure | 5  14 | 15  50 | 18  15 | - | - |
| **Yao et al (2010)** | 104 | Fascia Lata preservation | 2.5 | 5.5 | 1.5 | 12 | 5 |
| **Mistretta et al (2019)** | 233 | NS | 5 | - | - | 5.6 | - |
| **Koifman et al (2013)** | 170 | Radical ILND | 2 | 3 | 2.4 | 7.6 | 1.8 |
| **Tsaur et al (2015)** | 29 | Limited ILND | 23 | - | 3.5 | 16 | 7 |
| **Alnajjar et al (2019)** | 87 | Myocutaneous flap closure  Primary closure | 33  19 | 5.6  0 | -  - | -  - | 11  26 |
| **Yao et al (2010)** | 75 | Modified ILND | 1.4 | 4.7 | 2 | 2 | 14 |
| **Koifman et al (2021)** | 42 | Myocutaneous flap closure  Radical ILND | 6.5  0 | 13  3.1 | 4.8  3.1 | 26  3.1 | 3.2  0 |
| **Lopes et al (1996)** | 145 | Radical ILND | 22 | 15 | 60 | 30 | - |
| **Gulia et al (2009)** | 23 | Radical ILND | 17 | 35 | 13 | 22 | - |

ILND: Inguinal lymph node dissection; NS: Not specified