**Supplementary Table 1. Complication rates reported in studies**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Study | Significant Bleeding n (%) | Mild Bleeding n (%) | Mod. Bleeding n (%) | Severe. Bleeding n (%) | PTX n (%) | Chest tube n (%) | Other Complications | Mortality (30 d) n (%) |
|  | Roglic et al. 2017 | 12 (57.14) | 7 (33.33) | 12 (57.14) | 0 | 0 (0) | 0 | 0 | 0 (0) |
|  | Schmutz et al. 2017 | 2 (1.52) | 87(65.91) | 0 (0) | 2 (1.52) | 15 (11.36) | 8 (6.06) | Sore throat /hoarseness (8 pts) | 0 (0) |
|  | Sriprasart et al. 2017 | 3 (4.05) | 71(95.95) | 2 (2.7) | 1(1.35) | 5 (6.76) | 5 (6.76) | respiratory failure (1 pt) | 3 (4.05) |
|  | Bondue et al. 2017 | 12 (40) | 18 (60) | 10 (33.33) | 2 (6.67) | 6 (20) | 3 (10) | 0 | 0 (0) |
|  | Brueder et al. 2017 | 7 (30.43) | 0 (0) | 6 (26.09) | 1 (4.35) | 2 (8.7) | 2 (8.7) | 0 | 0 (0) |
|  | Cooley et al. 2017 | 3 (5.26) | 0 (0) | 0 (0) | 3 (5.26) | 5 (8.77) | 5 (8.77) | 0 | 0 (0) |
|  | Bango-Álvarez et al. 2017 | 17 (16.04) | 89 (83.96) | 17 (16.04) | 0 (0) | 5 (4.72) | 2 (1.89) | 0 | 0 (0) |
|  | Owuor et al. 2017 | 4 (25) | 0 (0) | 3 (18.75) | 1 (6.25) | 1 (6.25) | 1 (6.25) | 0 | 0 (0) |
|  | DiBardino et al. 2017 | 3 (12) | N/A | N/A | 3 (12) | 2 (8) | 1 (4) | Respiratory failure (1 pt) | 0 (0) |
|  | Kronborg-White et al. 2017 | 7 (18.42) | 0 (0) | 6 (15.79) | 1 (2.63) | 10 (26.32) | 8 (21.05) | Infection (2 pts) | 0 (0) |
|  | Fournier et al. 2017 | 2 (20) | 0 (0) | 0 (0) | 2 (20) | 4 (40) | 3 (30) | 0 | 0 (0) |
|  | Lentz et al. 2017 | 4 (5.63) | 4 (5.63) | N/A | N/A | 3 (4.23) | 3 (4.23) | Respiratory failure (2 pts) | 0 (0) |
|  | Ussavarungsi et al. 2016 | 9 (12.16) | 7 (9.46) | 9 (12.16) | 0 (0) | 1 (1.35) | 1 (1.35) | Infection (1 pt), Pneumomediastinum (1 pt) | 0 (0) |
|  | Ramaswamy et al. 2016 | 1 (1.79) | 0 (0) | 0 (0) | 1 (1.79) | 11 (19.64) |  | 0 | 0 (0) |
|  | Hagmeyer et al. 2016 | 25 (78.13) | 0 (0) | 8 (25) | 17 (53.13) | 6 (18.75) |  | 0 | 0 (0) |
|  | Palazon et al. 2016 | 4 (17.39) | 0 (0) | 0 (0) | 4 (17.39) | 2 (8.7) | 2 (8.7) | Respiratory failure (1 pt) | 0 (0) |
|  | Ravaglia et al. 2016 | 0 (0) | N/A | 0 (0) | 0 (0) | 61 (13.65) | 46 (10.29) | ILD exacerbation (1 pt), Infection (2 pts), Seizures (2 pts) | 1 (0.22) |
|  | Cortadellas et al. 2016 | N/A | N/A | N/A | 0 (0) | 8 (14.81) | 6 (11.11) | 0 | 0 (0) |
|  | Dalvi et al. 2016 | N/A | N/A | N/A | 0 (0) | 4 (5.41) | 3 (4.05) | Infection (1 pt) | 2 (2.7) |
|  | Mikolasch et al. 2015 | 2 (20) | 0 (0) | 1 (10) | 1 (10) | 2 (20) | 2 (20) | 0 | 0 (0) |
|  | Gershman et al. 2015 | N/A | N/A | N/A | N/A | 15 (2.5) | 6 (1) | 0 | 0 (0) |
|  | Hernández-González et al. 2015 | 7 (21.21) | 3 (9.09) | 7 (21.21) | 0 (0) | 4 (12.12) | 1 (3.03) | 0 | 0 (0) |
|  | López et al. 2015 | 0 (0) | 5 (3.03) | 0 (0) | 0 (0) | 8 (4.85) | 7 (4.24) | 0 | 0 (0) |
|  | Griff et al. 2014 | 0 (0) | N/A | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 | 0 (0) |
|  | Fruchter et al. 2014 | 3 (4) | 0 (0) | 3 (4) | 0 (0) | 2 (2.67) | 0 (0) | 0 | 0 (0) |
|  | Pajares et al. 2014 | 22 (28.57) | 17 (22.08) | 22 (28.57) | 0 (0) | 2 (2.6) | N/A | 0 | 0 (0) |
|  | Oberle et al. 2014 | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 1 (3.03) | N/A | 0 | 0 (0) |
|  | Jabbardarjani et al. 2013 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
|  | Pritchett et al. 2013 | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0(0) | Respiratory failure (1 pt) | 0(0) |
|  | Böing et al. 2012 | 12 (60) | N/A | 11 (55) | 1 (5) | 4 (20) | N/A | 0 | 0 (0) |
|  | Babiak et al. 2009 | 0 (0) | N/A | 0 (0) | 0 (0) | 2 (4.88) | 2 (4.88) | 0 | 0 (0) |

Abbreviation: Mod (moderate), PTX (pneumothorax), N/A (not applicable)

Abbreviation: UIP: Usual Interstitial Pneumonia; NSIP: Non-Specific Interstitial Pneumonia; HP: Hypersensitivity Pneumonia.

**Supplementary Table 2. Summary of Final diagnosis**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Study | n | UIP n (%) | NSIP n (%) | HP n (%) | Sarcoidosis n (%) | Others n (%) | Malignancy n (%) |
| Sriprasart et al. 2017 | 74 | 11 (14.86) | 10 (13.51) | 5 (6.76) | 17 (22.97) | 29 (39.19) | 2 (2.70) |
| Bondue et al. 2017 | 30 | 7 (23.33) | 6 (20) | 8 (26.67) | 2 (6.67) | 6 (20) | 1 (3.33) |
| Cooley et al. 2017 | 57 | NA | (17.39) | NA | (15.22) | NA | NA |
| Bango-Álvarez et al. 2017 | 106 | 22 (20.75) | 11 (10.38) | 5 (4.72) | 7 (6.60) | 59 (55.66) | 2 (1.89) |
| Owuor et al. 2017 | 16 | 2 (12.5) | 4 (25) | 6(37.5) | NA | NA | NA |
| Kronborg-White et al. 2017 | 38 | 10 (26.32) | 2 (5.26) | 6 (15.79) | 2 (5.26) | 18 (47.37) | 0 (0) |
| Fournier et al. 2017 | 10 | 2 (20) | 1(10) | 1(10) | 0(0) | 4(40) | 2(20) |
| Lentz et al. 2017 | 71 | 22 (30.99) | 3 (4.23) | 8 (11.27) | 3 (4.23) | 33 (46.48) | 2 (2.82) |
| Palazon et al. 2016 | 23 | 15 (65.22) | 4 (17.39) | 0 (0) | 0(0) | 4 (17.39) | 0 (0) |
| Ravaglia et al. 2016 | 447 | 166 (37.14) | 48 (10.74) | 31 (6.94) | 30 (6.71) | 172 (38.38) | 0(0) |
| Mikolasch et al. 2015 | 10 | 3 (30) | 2 (20) | 2 (20) | 0 (0) | 3 (30) | 0 (0) |
| Hernández-González et al. 2015 | 33 | 6 (18.18) | 10 (30.30) | 6 (18.18) | 1 (3.03) | 10 (30.30) | 0 (0) |
| Griff et al. 2014 | 52 | 13 (25) | 1 (1.92) | 7 (13.46) | 12 (23.08) | 19 (36.54) | 0 (0) |
| Fruchter et al. 2014 | 75 | 9 (12) | 25 (33.33) | 1 (1.33) | 1 (1.33) | 24 (32) | 1 (1.33) |
| Pajares et al. 2014 | 77 | 8 (10.39) | 23 (29.87) | 6 (7.79) | 6 (7.79) | 28 (36.36) | 2 (2.60) |
| Oberle et al. 2014 | 33 | 12 (36.36) | 2 (6.06) | 0 (0) | 3 (9.09) | 16 (48.48) | 0 (0) |
| Pritchett et al. 2013 | 25 | 7 (28) | 0 (0) | 1 (4) | 0 (0) | 15 (60) | 2 (8) |
| Babiak et al. 2009 | 41 | 16 (39.02) | 11 (26.83) | 3 (7.32) | 6 (14.63) | 5 (12) | 0 (0) |

Supplementary Table 3. Summary of Technique and Procedure

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Probe size (mm)** | **Anesthesia** | **Airway** | **Freeze time** | **Number of passes** | **Other measures** |
| Roglic et al. 2017 | 1.9 | GA | Intubation, RB | 5 | 4-5 | No flouro used |
| Schmutz et al. 2017 | 2.4 | GA | Intubation | 3 | 3-5 | NA |
| Sriprasart et al. 2017 | 1.9/2.4 | GA | LMA/Intubation | 5-8 | 2+1 | 2 bronchoscopes technique |
| Bondue et al. 2017 | 2.4 | GA | Intubation, RB | 5-6 | 4 | Fogarty catheter |
| Brueder et al. 2017 | NA | NA | NA | NA | NA | NA |
| Cooley et al. 2017 | NA | NA | NA | NA | NA | 2 bronchoscopes technique |
| Bango-Álvarez et al. 2017 | 1.9 | Versed/fentanyl | Oral/intubated | 5 | 1-5/3 | 2 bronchoscopes technique |
| Owuor et al. 2017 | NA | GA | Intubated, RB | NA | NA | Bronchial blocker |
| DiBardino et al. 2017 | 1.9/2.4 | GA | Intubated | 2-4 | NA |  |
| Kronborg-White et al. 2017 | 1.9/2.4 | GA | Intubated | 5-7 | ~4 | Tranexamic acid, Fogarty balloon |
| Fournier et al. 2017 | 1.9 | GA | Intubated, RB/FB | NA | NA | NA |
| Lentz et al. 2017 | 1.9 | GA | Intubated, | 4-5 | 2-3 | Bronchial blocker |
| Ussavarungsi et al. 2016 | 1.9 | GA | Intubated, | 3-5 | 3 | Bronchial blocker |
| Ramaswamy et al. 2016 | 2.4 | Conscious sedation | Oral | 4-5 | 1-4 | NA |
| Hagmeyer et al. 2016 | NA | Both | Both | 4-5 | 2-4 | NA |
| Palazon et al. 2016 | NA | GA | FB | NA | 3-5 | NA |
| Ravaglia et al. 2016 | 2.4 | Propofol, remifentanil | Intubated, RB | 5 | 1-8 | NA |
| Cortadellas et al. 2016 | NA | GA | Intubated, RB | 3-5 | NA | NA |
| Dalvi et al. 2016 | N/A | GA | Intubated | 3-4 | Variable | Lido/epi and wedge |
| Mikolasch et al. 2015 | 2.4 | GA | Intubated, FB | NA | 1-5 | IV tranexamic acid 1 g + endobronchial adrenaline |
| Gershman et al. 2015 | 2.4 | Versed, alfentanil/propofol | Nasally/orally | 4 | 2-4 | NA |
| Hernández-González et al. 2015 | 1.9 | Propofol, remifentanyl | Intubated | 3-4 | At least 3 | NA |
| López et al. 2015 | NA | GA | Intubated, FB | NA | 1-5/3 | NA |
| Griff et al. 2014 | 1.9 | Disopriva/versed | N/A | 3-5 | 1-2 | NA |
| Fruchter et al. 2014 | 2.4 | Versed, alfentanil | Nasally | 4 | 2-4 | NA |
| Pajares et al. 2014 | 2.4 | Versed, remifentanil propofol | Intubation | 3-4 | At least 3 | NA |
| Oberle et al. 2014 | NA | Sedation | NA | NA | NA | NA |
| Jabbardarjani et al. 2013 | NA | NA | NA | NA | NA | NA |
| Pritchett et al. 2013 | NA | NA | NA | NA | NA | NA |
| Böing et al. 2012 | NA | NA | NA | NA | 2-3 | NA |
| Babiak et al. 2009 | 2.4 | Propofol | Intubation | 4 | variable | NA |

Abbreviations: GA: General anesthesia; RB: Rigid Bronchoscope; FB: Flexible Bronchoscope; Lido: Lidocaine; Epi: Epinephrine