Appendix 6: Included studies in PICO question 1, ordered by type of study

Background:

Not all studies fulfilling the inclusion criteria were (directly) considered in the evidence syntheses. Instead, for each outcome, we primarily focused on included studies that directly compared TBLC and SLB in patients with undiagnosed ILD (n=2 studies identified), either by performing both tests in each patient (paired direct comparison), or by randomizing patients to undergo either procedure (unpaired direct comparison). If direct comparisons were not available for a specific outcome, we focused on studies that indirectly compared TBLC and SLB (i.e. a group of patients undergoing TBLC was compared with a group of patients undergoing SLB, without randomization; n=3 studies identified). Finally, in the absence of direct or indirect comparisons for a specific outcome, we focused on non-comparative studies that only evaluated TBLC (n=54 identified) or only evaluated SLB (n=50 identified) in patients with undiagnosed ILD. If available for a specific outcome, we selected a previously published systematic review summarizing non-comparative studies, rather than focusing on individual studies, to avoid duplication of review efforts (n=11 systematic reviews identified). Included studies are reported below. Numbers below add up to 120 instead of 119, because Ravaglia 2016 is both a systematic review and a primary (indirect comparison) study.

Direct comparison of TBLC and SLB (either by applying both tests in the same group of patients (comparative cross-sectional type study), or by randomly assigning a group of patients to undergo TBLC versus SLB (randomized trial)):

(n=2)

- Troy LK, Grainge C, Corte TJ, Williamson JP, Vallely MP, Cooper WA, Mahar A, Myers JL, Lai S, Mulyadi E, Torzillo PJ, Phillips MJ, Jo HE, Webster SE, Lin QT, Rhodes JE, Salamonsen M, Wrobel JP, Harris B, Don G, Wu PJC, Ng BJ, Oldmeadow C, Raghu G, Lau EMT, Cryobiopsy versus Open Lung biopsy in the Diagnosis of Interstitial lung disease alliance I. Diagnostic accuracy of transbronchial lung cryobiopsy for interstitial lung disease diagnosis (COLDICE): a prospective, comparative study. Lancet Respir Med 2020: 8(2): 171-181.
- Romagnoli M, Colby TV, Berthet JP, Gamez AS, Mallet JP, Serre I, Cancellieri A, Cavazza A, Solovei L, Dell'Amore A, Dolci G, Guerrieri A, Reynaud P, Bommart S, Zompatori M, Dalpiaz G, Nava S, Trisolini R, Suehs CM, Vachier I, Molinari N, Bourdin A. Poor Concordance between Sequential Transbronchial Lung Cryobiopsy and Surgical Lung Biopsy in the Diagnosis of Diffuse Interstitial Lung Diseases. Am J Respir Crit Care Med 2019: 199(10): 1249-1256.

Indirect comparisons (studies in whom a group of patients undergoing TBLC was compared with a group of patients undergoing SLB, but in whom the tests were not randomly assigned):

(n=3)

- Ravaglia C, Bonifazi M, Wells AU, Tomassetti S, Gurioli C, Piciucchi S, Dubini A, Tantalocco P, Sanna S, Negri E, Tramacere I, Ventura VA, Cavazza A, Rossi A, Chilosi M, La Vecchia C, Gasparini S, Poletti V. Safety and Diagnostic Yield of Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Diseases: A Comparative Study

versus Video-Assisted Thoracoscopic Lung Biopsy and a Systematic Review of the Literature. Respiration 2016: 91(3): 215-227.

- Tomassetti S, Ravaglia C, Wells AU, Cavazza A, Colby TV, Rossi G, Ley B, Ryu JH, Puglisi S, Arcadu A, Marchi M, Sultani F, Martinello S, Donati L, Gurioli C, Gurioli C, Tantalocco P, Hetzel J, Dubini A, Piciucchi S, Klersy C, Lavorini F, Poletti V. Prognostic value of transbronchial lung cryobiopsy for the multidisciplinary diagnosis of idiopathic pulmonary fibrosis: a retrospective validation study. Lancet Respir Med 2020: 8(8): 786-794.
- Tomassetti S, Wells AU, Costabel U, Cavazza A, Colby TV, Rossi G, Sverzellati N, Carloni A, Carretta E, Buccioli M, Tantalocco P, Ravaglia C, Gurioli C, Dubini A, Piciucchi S, Ryu JH, Poletti V. Bronchoscopic Lung Cryobiopsy Increases Diagnostic Confidence in the Multidisciplinary Diagnosis of Idiopathic Pulmonary Fibrosis. Am J Respir Crit Care Med 2016: 193(7): 745-752.

Indirect comparisons (systematic reviews of studies that performed only TBLC or only SLB):

Systematic review or guideline of TBLC:

(n=7)

- Dhooria S, Agarwal R, Sehgal IS, Aggarwal AN, Goyal R, Guleria R, Singhal P, Shah SP, Gupta KB, Koolwal S, Akkaraju J, Annapoorni S, Bal A, Bansal A, Behera D, Chhajed PN, Dhamija A, Dhar R, Garg M, Gopal B, Hibare KR, James P, Jindal A, Jindal SK, Khan A, Kishore N, Koul PA, Kumar A, Kumar R, Lall A, Madan K, Mandal A, Mehta RM, Mohan A, Nangia V, Nath A, Nayar S, Patel D, Pattabhiraman V, Raghupati N, Sarkar PK, Singh V, Sivaramakrishnan M, Srinivasan A, Swarnakar R, Talwar D, Thangakunam B. Bronchoscopic lung cryobiopsy: An Indian association for bronchology position statement. Lung India 2019: 36(1): 48-59.
- Dhooria S, Sehgal IS, Aggarwal AN, Behera D, Agarwal R. Diagnostic Yield and Safety of Cryoprobe Transbronchial Lung Biopsy in Diffuse Parenchymal Lung Diseases: Systematic Review and Meta-Analysis. Respir Care 2016: 61(5): 700-712.
- Ganganah O, Guo SL, Chiniah M, Li YS. Efficacy and safety of cryobiopsy versus forceps biopsy for interstitial lung diseases and lung tumours: A systematic review and meta-analysis. Respirology 2016: 21(5): 834-841.
- Johannson KA, Marcoux VS, Ronksley PE, Ryerson CJ. Diagnostic Yield and Complications of Transbronchial Lung Cryobiopsy for Interstitial Lung Disease. A Systematic Review and Metaanalysis. Ann Am Thorac Soc 2016: 13(10): 1828-1838.
- Maldonado F, Danoff SK, Wells AU, Colby TV, Ryu JH, Liberman M, Wahidi MM, Frazer L, Hetzel J, Rickman OB, Herth FJF, Poletti V, Yarmus LB. Transbronchial Cryobiopsy for the Diagnosis of Interstitial Lung Diseases: CHEST Guideline and Expert Panel Report. Chest 2019: 27: 27.
- Ravaglia C, Bonifazi M, Wells AU, Tomassetti S, Gurioli C, Piciucchi S, Dubini A, Tantalocco P, Sanna S, Negri E, Tramacere I, Ventura VA, Cavazza A, Rossi A, Chilosi M, La Vecchia C, Gasparini S, Poletti V. Safety and Diagnostic Yield of Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Diseases: A Comparative Study versus Video-Assisted Thoracoscopic Lung Biopsy and a Systematic Review of the Literature. Respiration 2016: 91(3): 215-227.

- Sethi J, Ali MS, Mohananey D, Nanchal R, Maldonado F, Musani A. Are Transbronchial Cryobiopsies Ready for Prime Time?: A Systematic Review and Meta-Analysis. J Bronchology Interv Pulmonol 2019: 26(1): 22-32.

Systematic review or guideline of SLB:

(n=1)

- Han Q, Luo Q, Xie JX, Wu LL, Liao LY, Zhang XX, Chen RC. Diagnostic yield and postoperative mortality associated with surgical lung biopsy for evaluation of interstitial lung diseases: A systematic review and meta-analysis. J Thorac Cardiovasc Surg 2015: 149(5): 1394-1401.e1391.

Systematic review or guideline of TBLC and SLB:

(n=3)

- Iftikhar IH, Alghothani L, Sardi A, Berkowitz D, Musani AI. Transbronchial Lung Cryobiopsy and Video-assisted Thoracoscopic Lung Biopsy in the Diagnosis of Diffuse Parenchymal Lung Disease. A Meta-analysis of Diagnostic Test Accuracy. Ann Am Thorac Soc 2017: 14(7): 1197-1211.
- Raghu G, Remy-Jardin M, Myers JL, Richeldi L, Ryerson CJ, Lederer DJ, Behr J, Cottin V, Danoff SK, Morell F, Flaherty KR, Wells A, Martinez FJ, Azuma A, Bice TJ, Bouros D, Brown KK, Collard HR, Duggal A, Galvin L, Inoue Y, Gisli Jenkins R, Johkoh T, Kazerooni EA, Kitaichi M, Knight SL, Mansour G, Nicholson AG, Pipavath SNJ, Buendía-Roldán I, Selman M, Travis WD, Walsh S, Wilson KC. Diagnosis of idiopathic pulmonary fibrosis An Official ATS/ERS/JRS/ALAT Clinical practice guideline. American Journal of Respiratory and Critical Care Medicine 2018: 198(5): e44-e68.
- Sharp C, McCabe M, Adamali H, Medford AR. Use of transbronchial cryobiopsy in the diagnosis of interstitial lung disease-a systematic review and cost analysis. Qjm 2017: 110(4): 207-214.

Indirect comparisons (studies that performed only TBLC or only SLB):

Studies performing only TBLC and included in a systematic review:

(n=23)

- Almeida LM, Lima B, Mota PC, Melo N, Magalhaes A, Pereira JM, Moura CS, Guimaraes S, Morais A. Learning curve for transbronchial lung cryobiopsy in diffuse lung disease. Rev Port Pneumol 2017: 22: 22.
- Babiak A, Hetzel J, Krishna G, Fritz P, Moeller P, Balli T, Hetzel M. Transbronchial cryobiopsy: A new tool for lung biopsies. Respiration 2009: 78(2): 203-208.
- Bango-Alvarez A, Ariza-Prota M, Torres-Rivas H, Fernandez-Fernandez L, Prieto A, Sanchez I, Gil M, Pando-Sandoval A. Transbronchial cryobiopsy in interstitial lung disease: experience in 106 cases - how to do it. ERJ open res 2017: 3(1).
- Bondue B, Pieters T, Alexander P, De Vuyst P, Ruiz Patino M, Hoton D, Remmelink M, Leduc D. Role of Transbronchial Lung Cryobiopsies in Diffuse Parenchymal Lung Diseases: Interest of a Sequential Approach. Pulm Med 2017: 2017: 6794343.

- Cascante JA, Cebollero P, Herrero S, Yague A, Echegoyen A, Elizalde J, Hueto J. Transbronchial Cryobiopsy in Interstitial Lung Disease: Are We on the Right Path? J Bronchology Interv Pulmonol 2016: 23(3): 204-209.
- Casoni GL, Tomassetti S, Cavazza A, Colby TV, Dubini A, Ryu JH, Carretta E, Tantalocco P, Piciucchi S, Ravaglia C, Gurioli C, Romagnoli M, Gurioli C, Chilosi M, Poletti V. Transbronchial lung cryobiopsy in the diagnosis of fibrotic interstitial lung diseases. PLoS ONE 2014: 9(2): e86716.
- Cooley J, Balestra R, Aragaki-Nakahodo AA, Caudell Stamper DN, Sriprasart T, Swank Z, Baughman RP, Benzaquen S. Safety of performing transbronchial lung cryobiopsy on hospitalized patients with interstitial lung disease. Respir Med 2018: 140: 71-76.
- Dhooria S, Mehta RM, Srinivasan A, Madan K, Sehgal IS, Pattabhiraman V, Yadav P, Sivaramakrishnan M, Mohan A, Bal A, Garg M, Agarwal R. The safety and efficacy of different methods for obtaining transbronchial lung cryobiopsy in diffuse lung diseases. Clin Respir J 2018: 12(4): 1711-1720.
- Echevarria-Uraga JJ, Perez-Izquierdo J, Garcia-Garai N, Gomez-Jimenez E, Aramburu-Ojembarrena A, Tena-Tudanca L, Miguelez-Vidales JL, Capelastegui-Saiz A. Usefulness of an angioplasty balloon as selective bronchial blockade device after transbronchial cryobiopsy. Respirology 2016: 21(6): 1094-1099.
- Fruchter O, Fridel L, El Raouf BA, Abdel-Rahman N, Rosengarten D, Kramer MR. Histological diagnosis of interstitial lung diseases by cryo-transbronchial biopsy. Respirology 2014: 19(5): 683-688.
- Gershman E, Fruchter O, Benjamin F, Nader AR, Rosengarten D, Rusanov V, Fridel L, Kramer MR. Safety of Cryo-Transbronchial Biopsy in Diffuse Lung Diseases: Analysis of Three Hundred Cases. Respiration 2015: 90(1): 40-46.
- Griff S, Schonfeld N, Ammenwerth W, Blum TG, Grah C, Bauer TT, Gruning W, Mairinger T, Wurps H. Diagnostic yield of transbronchial cryobiopsy in non-neoplastic lung disease: a retrospective case series. BMC polm 2014: 14: 171.
- Hagmeyer L, Theegarten D, Wohlschlager J, Treml M, Matthes S, Priegnitz C, Randerath WJ. The role of transbronchial cryobiopsy and surgical lung biopsy in the diagnostic algorithm of interstitial lung disease. Clin Respir J 2016: 10(5): 589-595.
- Hernandez-Gonzalez F, Lucena CM, Ramirez J, Sanchez M, Jimenez MJ, Xaubet A, Sellares J, Agusti C. Cryobiopsy in the diagnosis of diffuse interstitial lung disease: yield and cost-effectiveness analysis. Archivos de Bronconeumologia 2015: 51(6): 261-267.
- Kronborg-White S, Folkersen B, Rasmussen TR, Voldby N, Madsen LB, Rasmussen F, Poletti V, Bendstrup E. Introduction of cryobiopsies in the diagnostics of interstitial lung diseases - experiences in a referral center. Eur Clin Respir J 2017: 4(1): 1274099.
- Kropski JA, Pritchett JM, Mason WR, Sivarajan L, Gleaves LA, Johnson JE, Lancaster LH, Lawson WE, Blackwell TS, Steele MP, Loyd JE, Rickman OB. Bronchoscopic cryobiopsy for the diagnosis of diffuse parenchymal lung disease. PLoS ONE 2013: 8(11): e78674.
- Lentz RJ, Taylor TM, Kropski JA, Sandler KL, Johnson JE, Blackwell TS, fdonado F, Rickman OB. Utility of Flexible Bronchoscopic Cryobiopsy for Diagnosis of Diffuse Parenchymal Lung Diseases. J Bronchology Interv Pulmonol 2018: 25(2): 88-96.

- Marcoa R, Linhas R, Apolinario D, Campainha S, Oliveira A, Nogueira C, Loureiro A, Almeida J, Costa F, Wen X, Neves S. Diagnostic yield of transbronchial lung cryobiopsy in interstitial lung diseases. Rev Port Pneumol 2017: 23(5): 296-298.
- Pajares V, Puzo C, Castillo D, Lerma E, Angeles Montero M, Ramos-Barbõn D, Amor-Carro O, De Bernabé AG, Franquet T, Plaza V, Hetzel J, Sanchis J, Torrego A. Diagnostic yield of transbronchial cryobiopsy in interstitial lung disease: A randomized trial. Respirology 2014: 19(6): 900-906.
- Ramaswamy A, Homer R, Killam J, Pisani MA, Murphy TE, Araujo K, Puchalski J. Comparison of Transbronchial and Cryobiopsies in Evaluation of Diffuse Parenchymal Lung Disease. J Bronchology Interv Pulmonol 2016: 23(1): 14-21.
- Ravaglia C, Wells AU, Tomassetti S, Dubini A, Cavazza A, Piciucchi S, Sverzellati N, Gurioli C, Gurioli C, Costabel U, Tantalocco P, Ryu JH, Chilosi M, Poletti V. Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Disease: Comparison between Biopsy from 1 Segment and Biopsy from 2 Segments - Diagnostic Yield and Complications. Respiration 2017: 93(4): 285-292.
- Sriprasart T, Aragaki A, Baughman R, Wikenheiser-Brokamp K, Khanna G, Tanase D, Kirschner M, Benzaquen S. A Single US Center Experience of Transbronchial Lung Cryobiopsy for Diagnosing Interstitial Lung Disease With a 2-Scope Technique. J Bronchology Interv Pulmonol 2017: 24(2): 131-135.
- Ussavarungsi K, Kern RM, Roden AC, Ryu JH, Edell ES. Transbronchial Cryobiopsy in Diffuse Parenchymal Lung Disease: Retrospective Analysis of 74 Cases. Chest 2017: 151(2): 400-408.

Studies performing only TBLC and <u>NOT</u> included in a systematic review:

(n=31)

- Abdelghani R, Thakore S, Kaphle U, Lasky JA, Kheir F. Radial Endobronchial Ultrasound-guided Transbronchial Cryobiopsy. J Bronchology Interv Pulmonol 2019: 26(4): 245-249.
- Aburto M, Pérez- Izquierdo J, Agirre U, Barredo I, Echevarria-Uraga JJ, Armendariz K, García S, Bronte O, Gorordo I, Egurrola M, Aramburu A, España PP, Esteban C. Complications and hospital admission in the following 90 days after lung cryobiopsy performed in interstitial lung disease, M. Aburto, Servicio de Neumología, Hospital Universitario de Galdakao-Usansolo, Barrio Labeaga 46A, Galdakao, Bizkaia, Spain, 2020.
- Bondue B, Leduc D, Froidure A, Pieters T, Taton O, Heinen V, Alexander P, Hoton D, Dome F, Remmelink M. Usefulness of surgical lung biopsies after cryobiopsies when pathological results are inconclusive or show a pattern suggestive of a nonspecific interstitial pneumonia. Respiratory Research 2020: 21(1): 231.
- Bondue B, Schlossmacher P, Allou N, Gazaille V, Taton O, Gevenois PA, Vandergheynst F, Remmelink M, Leduc D. Trans-bronchial lung cryobiopsy in patients at high-risk of complications. BMC polm 2021: 21(1): 135.
- Cho R, Zamora F, Gibson H, Dincer HE. Transbronchial Lung Cryobiopsy in the Diagnosis of Interstitial Lung Disease: A Retrospective Single-center Experience. J Bronchology Interv Pulmonol 2019: 26(1): 15-21.
- Cirak AK, Katgi N, Erer OF, Cimen P, Tuksavul FF, Hakoglu B. Diagnostic approach in parenchymal lung diseases: transbronchial lung biopsy or cryobiopsy? Turkish Journal of Medical Sciences 2020: 50(6): 1535-1539.

- Davidsen JR, Skov IR, Louw IG, Laursen CB. Implementation of transbronchial lung cryobiopsy in a tertiary referral center for interstitial lung diseases: a cohort study on diagnostic yield, complications, and learning curves. BMC polm 2021: 21(1): 67.
- Gnass M, Filarecka A, Pankowski J, Soja J, Bugalho A, Szlubowski A. Transbronchial lung cryobiopsy guided by endobronchial ultrasound radial miniprobe in interstitial lung diseases: preliminary results of a prospective study. Pol Arch Intern Med 2018: 128(4): 259-262.
- Hagmeyer L, Theegarten D, Wohlschlager J, Hager T, Treml M, Herkenrath SD, Hekmat K, Heldwein M, Randerath WJ. Transbronchial cryobiopsy in fibrosing interstitial lung disease: modifications of the procedure lead to risk reduction. Thorax 2019: 74(7): 711-714.
- Harari S, Cereda F, Pane F, Cavazza A, Papanikolaou N, Pelosi G, Scarioni M, Uslenghi E, Zompatori M, Caminati A. Lung Cryobiopsy for the Diagnosis of Interstitial Lung Diseases: A Series Contribution to a Debated Procedure. Medicina (B Aires) 2019: 55(9): 19.
- Hetzel J, Eberhardt R, Petermann C, Gesierich W, Darwiche K, Hagmeyer L, Muche R, Kreuter M, Lewis R, Ehab A, Boeckeler M, Haentschel M. Bleeding risk of transbronchial cryobiopsy compared to transbronchial forceps biopsy in interstitial lung disease - a prospective, randomized, multicentre cross-over trial. Respiratory Research 2019: 20(1): 140.
- Hetzel J, Wells AU, Costabel U, Colby TV, Walsh SLF, Verschakelen J, Cavazza A, Tomassetti S, Ravaglia C, Bockeler M, Spengler W, Kreuter M, Eberhardt R, Darwiche K, Torrego A, Pajares V, Muche R, Musterle R, Horger M, Fend F, Warth A, Heusel CP, Piciucchi S, Dubini A, Theegarten D, Franquet T, Lerma E, Poletti V, Hantschel M. Transbronchial cryobiopsy increases diagnostic confidence in interstitial lung disease: a prospective multicentre trial. European Respiratory Journal 2020: 56(6): 12.
- Hussein S, Elhadidy A, Amin H, Tantawy A, Negm M. Transbronchial cryobiopsy as a new tool for lung biopsies in diagnosis of diffuse parenchymal lung diseases, S. Hussein, Department of Pulmonology, Faculty of Medicine, Cairo University, Cairo, Egypt, 2020.
- Ikeda T, Nakao A, Igata F, Kinoshita Y, Kushima H, Matsumoto T, Ishii H, Nabeshima K, Fujita M. Feasibility, utility, and safety of transbronchial cryobiopsy for interstitial lung diseases in Japan. Multidiscip 2021: 16(1): 731.
- Koslow M, Edell ES, Midthun DE, Mullon JJ, Kern RM, Nelson DR, Sakata KK, Moua T, Roden AC, Yi ES, Reisenauer JS, Decker PA, Ryu JH. Bronchoscopic Cryobiopsy and Forceps Biopsy for the Diagnostic Evaluation of Diffuse Parenchymal Lung Disease in Clinical Practice. Mayo Clinic Proceedings Innovations, Quality & Outcomes 2020: 4(5): 565-574.
- Kronborg-White S, Sritharan SS, Madsen LB, Folkersen B, Voldby N, Poletti V, Rasmussen TR, Bendstrup E. Integration of cryobiopsies for interstitial lung disease diagnosis is a valid and safe diagnostic strategy-experiences based on 250 biopsy procedures. Journal of Thoracic Disease 2021: 13(3): 1455-1465.
- Linhas R, Marcoa R, Oliveira A, Almeida J, Neves S, Campainha S. Transbronchial lung cryobiopsy: Associated complications. Rev Port Pneumol 2017: 23(6): 331-337.

- Matta A, Gupta E, Swank Z, Aragaki-Nakahodo A, Cooley J, Caudell-Stamper DN, Benzaquen S. The use of transbronchial cryobiopsy for diffuse parenchymal lung disease in critically ill patients with acute hypoxemic respiratory failure-A case series. Clin Respir J 2021: 18: 18.
- O'Mahony AM, Burke L, Cavazza A, Maher MM, Kennedy MP, Henry MT. Transbronchial lung cryobiopsy (TBLC) in the diagnosis of interstitial lung disease: experience of first 100 cases performed under conscious sedation with flexible bronchoscope. Irish Journal of Medical Science 2021: 20: 20.
- Pajares V, Núñez-Delgado M, Bonet G, Pérez-Pallarés J, Martínez R, Cubero N, Zabala T, Cordovilla R, Flandes J, Disdier C, Torrego A. Transbronchial biopsy results according to diffuse interstitial lung disease classification. Cryobiopsy versus forceps: MULTICRIO study, V. Pajares, Respiratory Medicine, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain, 2020.
- Pannu J, Roller LJ, Maldonado F, Lentz RJ, Chen H, Rickman OB. Transbronchial cryobiopsy for diffuse parenchymal lung disease: 30- and 90-day mortality. European Respiratory Journal 2019: 54(4).
- Ravaglia C, Wells AU, Tomassetti S, Gurioli C, Gurioli C, Dubini A, Cavazza A, Colby TV, Piciucchi S, Puglisi S, Bosi M, Poletti V. Diagnostic yield and risk/benefit analysis of trans-bronchial lung cryobiopsy in diffuse parenchymal lung diseases: a large cohort of 699 patients. BMC polm 2019: 19(1): 16.
- Samitas K, Kolilekas L, Vamvakaris I, Gkogkou C, Filippousis P, Gaga M, Zervas E. Introducing transbronchial cryobiopsies in diagnosing diffuse parenchymal lung diseases in Greece: Implementing training into clinical practice. PLoS ONE 2019: 14(6): e0217554.
- Shafiek H, Elbialy S, El Achy SN, Gad AYS. Transbronchial cryobiopsy validity in diagnosing diffuse parenchymal lung diseases in Egyptian population. J Multidiscip Healthc 2019: 12: 719-726.
- She S, Steinfort DP, Ing AJ, Williamson JP, Leong P, Irving LB, Jennings BR, Saghaie T. Transbronchial Cryobiopsy in Interstitial Lung Disease: Safety of a Standardized Procedure. J Bronchology Interv Pulmonol 2020: 27(1): 36-41.
- Shkeiri R, Schneer S, Avarmovich A, Adir Y. Transbronchial Cryobiopsy in Diffuse Parenchymal Lung Diseases in a Community Medical Center. Israel Medical Association Journal: Imaj 2020: 22(12): 781-783.
- Turan D, Ugur Chousein EG, Koc AS, Cortuk M, Yildirim Z, Demirkol B, Ozgul MA, Cinarka H, Akalin N, Yardimci AH, Cetinkaya E. Transbronchial cryobiopsy for diagnosing parenchymal lung diseases: real-life experience from a tertiary referral center. Sarcoidosis Vasc Diffuse Lung Dis 2021: 38(1): e2021004.
- Viglietta L, Inchingolo R, Pavano C, Tomassetti S, Piciucchi S, Smargiassi A, Ravaglia C, Dubini A, Gurioli C, Gurioli C, Poletti V. Ultrasonography for the Diagnosis of Pneumothorax after Transbronchial Lung Cryobiopsy in Diffuse Parenchymal Lung Diseases. Respiration 2017: 94(2): 232-236.
- Wälscher J, Gro B, Eberhardt R, Heussel CP, Eichinger M, Warth A, Lasitschka F, Herth FJF, Kreuter M. Transbronchial Cryobiopsies for Diagnosing Interstitial Lung Disease: Real-Life Experience from a Tertiary Referral Center for Interstitial Lung Disease. Respiration 2019: 97(4): 348-354.
- Wijmans L, Bonta PI, Rocha-Pinto R, de Bruin DM, Brinkman P, Jonkers RE, Roelofs J, Poletti V, Hetzel J, Annema JT. Confocal Laser Endomicroscopy as a Guidance Tool for Transbronchial Lung Cryobiopsies in Interstitial Lung Disorder. Respiration 2019: 97(3): 259-263.

- Zhou G, Ren Y, Li J, Yang T, Su N, Zhao L, Wang S, Wang D, Li Y, Tian Z, Liu R, Dai H, Wang C. The effect of 1.9-mm versus 2.4-mm probes in transbronchial cryobiopsies for interstitial lung diseases: a prospective analysis. Annals of Translational Medicine 2021: 9(1): 20.

Studies performing only SLB and included in a systematic review:

(n=27)

- Ambrogi V, Mineo TC. VATS biopsy for undetermined interstitial lung disease under non-general anesthesia: comparison between uniportal approach under intercostal block vs. three-ports in epidural anesthesia. Journal of Thoracic Disease 2014: 6(7): 888-895.
- Ayed AK, Raghunathan R. Thoracoscopy versus open lung biopsy in the diagnosis of interstitial lung disease: a randomised controlled trial. J R Coll Surg Edinb 2000: 45(3): 159-163.
- Bando M, Ohno S, Hosono T, Yanase K, Sato Y, Sohara Y, Hironaka M, Sugiyama Y. Risk of Acute Exacerbation After Video-assisted Thoracoscopic Lung Biopsy for Interstitial Lung Disease. J Bronchology Interv Pulmonol 2009: 16(4): 229-235.
- Blackhall V, Asif M, Renieri A, Civitelli S, Kirk A, Jilaihawi A, Granato F. The role of surgical lung biopsy in the management of interstitial lung disease: experience from a single institution in the UK. Interact Cardiovasc Thorac Surg 2013: 17(2): 253-257.
- Blanco M, Obeso GA, Duran JC, Rivo JE, Garcia-Fontan E, Pena E, Rodriguez M, Albort J, Canizares MA. Surgical lung biopsy for diffuse lung disease. Our experience in the last 15 years. Rev Port Pneumol 2013: 19(2): 59-64.
- Blewett CJ, Bennett WF, Miller JD, Urschel JD. Open lung biopsy as an outpatient procedure. Annals of Thoracic Surgery 2001: 71(4): 1113-1115.
- Fibla JJ, Brunelli A, Allen MS, Wigle D, Shen R, Nichols F, Deschamps C, Cassivi SD. Do the number and volume of surgical lung biopsies influence the diagnostic yield in interstitial lung disease? A propensity score analysis. Archivos de Bronconeumologia 2015: 51(2): 76-79.
- Fibla JJ, Molins L, Blanco A, Royo I, Martinez Vallina P, Martinez N, Garcia Barajas S, Gomez A, Estors M, Moldes M, Fernandez E, Xaubet A. Video-assisted thoracoscopic lung biopsy in the diagnosis of interstitial lung disease: a prospective, multi-center study in 224 patients. Archivos de Bronconeumologia 2012: 48(3): 81-85.
- Guerra M, Miranda JA, Leal F, Vouga L. Interstitial lung disease: diagnostic accuracy and safety of surgical lung biopsy. Rev Port Pneumol 2009: 15(3): 433-442.
- Ishie RT, Cardoso JJ, Silveira RJ, Stocco L. Video-assisted thoracoscopy for the diagnosis of diffuse parenchymal lung disease. J Bras Pneumol 2009: 35(3): 234-241.
- Kayatta MO, Ahmed S, Hammel JA, Fernandez F, Pickens A, Miller D, Staton G, Jr., Veerarghavan S, Force S. Surgical biopsy of suspected interstitial lung disease is superior to radiographic diagnosis. Annals of Thoracic Surgery 2013: 96(2): 399-401.

- Khalil M, Cowen M, Chaudhry M, Loubani M. Single versus multiple lung biopsies for suspected interstitial lung disease. Asian Cardiovasc Thorac Ann 2016: 24(8): 788-791.
- Kreider ME, Hansen-Flaschen J, Ahmad NN, Rossman MD, Kaiser LR, Kucharczuk JC, Shrager JB. Complications of video-assisted thoracoscopic lung biopsy in patients with interstitial lung disease. Annals of Thoracic Surgery 2007: 83(3): 1140-1144.
- Lettieri CJ, Veerappan GR, Helman DL, Mulligan CR, Shorr AF. Outcomes and safety of surgical lung biopsy for interstitial lung disease. Chest 2005: 127(5): 1600-1605.
- Luo Q, Han Q, Chen X, Xie J, Wu L, Chen R. The diagnosis efficacy and safety of video-assisted thoracoscopy surgery (VATS) in undefined interstitial lung diseases: a retrospective study. Journal of Thoracic Disease 2013: 5(3): 283-288.
- Miller JD, Urschel JD, Cox G, Olak J, Young JE, Kay JM, McDonald E. A randomized, controlled trial comparing thoracoscopy and limited thoracotomy for lung biopsy in interstitial lung disease. Annals of Thoracic Surgery 2000: 70(5): 1647-1650.
- Morris D, Zamvar V. The efficacy of video-assisted thoracoscopic surgery lung biopsies in patients with Interstitial Lung Disease: a retrospective study of 66 patients. J Cardiothorac Surg 2014: 9: 45.
- Ooi A, Iyenger S, Ferguson J, Ritchie AJ. VATS lung biopsy in suspected, diffuse interstitial lung disease provides diagnosis, and alters management strategies. Heart Lung Circ 2005: 14(2): 90-92.
- Pompeo E, Rogliani P, Cristino B, Schillaci O, Novelli G, Saltini C. Awake thoracoscopic biopsy of interstitial lung disease. Annals of Thoracic Surgery 2013: 95(2): 445-452.
- Qureshi RA, Ahmed TA, Grayson AD, Soorae AS, Drakeley MJ, Page RD. Does lung biopsy help patients with interstitial lung disease? Eur J Cardiothorac Surg 2002: 21(4): 621-626; discussion 626.
- Rotolo N, Imperatori A, Dominioni L, Facchini A, Conti V, Castiglioni M, Spanevello A. Efficacy and safety of surgical lung biopsy for interstitial disease. Experience of 161 consecutive patients from a single institution in Italy. Sarcoidosis Vasc Diffuse Lung Dis 2015: 32(3): 251-258.
- Samejima J, Tajiri M, Ogura T, Baba T, Omori T, Tsuboi M, Masuda M. Thoracoscopic lung biopsy in 285 patients with diffuse pulmonary disease. Asian Cardiovasc Thorac Ann 2015: 23(2): 191-197.
- Sheth JS, Belperio JA, Fishbein MC, Kazerooni EA, Lagstein A, Murray S, Myers JL, Simon RH, Sisson TH, Sundaram B, White ES, Xia M, Zisman D, Flaherty KR. Utility of Transbronchial vs Surgical Lung Biopsy in the Diagnosis of Suspected Fibrotic Interstitial Lung Disease. Chest 2017: 151(2): 389-399.
- Sigurdsson MI, Isaksson HJ, Gudmundsson G, Gudbjartsson T. Diagnostic surgical lung biopsies for suspected interstitial lung diseases: a retrospective study. Annals of Thoracic Surgery 2009: 88(1): 227-232.
- Sonobe M, Handa T, Tanizawa K, Sato M, Sato T, Chen F, Omasa M, Bando T, Date H, Mishima M. Videothoracoscopy-assisted surgical lung biopsy for interstitial lung diseases. Gen Thorac Cardiovasc Surg 2014: 62(6): 376-382.
- Yamaguchi M, Yoshino I, Suemitsu R, Osoegawa A, Kameyama T, Tagawa T, Fukuyama S, Maehara Y. Elective video-assisted thoracoscopic lung biopsy for interstitial lung disease. Asian Cardiovasc Thorac Ann 2004: 12(1): 65-68.

- Zhang D, Liu Y. Surgical lung biopsies in 418 patients with suspected interstitial lung disease in China. Intern Med 2010: 49(12): 1097-1102.

Studies performing only SLB and <u>NOT</u> included in a systematic review:

(n=23)

- Ahmed S, El Hindawi A, Mashhour S. Spectrum of diffuse parenchymal lung diseases using medical thoracoscopic lung biopsy: An experience with 55 patients during 2013–2015. Egyptian Journal of Chest Diseases and Tuberculosis 2016: 65(3): 717-722.
- Akl Y, Elhendway A, Elnady MA, Moussa H, Abdelsalam E, Abuelhassan UE. Medical thoracoscopic lung biopsy in undiagnosed non-UIP-DPLD: Diagnostic yield, complication rate, and cost-effectiveness, a single-experience study in Egypt. Egyptian Journal of Chest Diseases and Tuberculosis 2020: 69(1): 178-182.
- Biancosino C, Welker L, Kruger M, Bolukbas S, Bittmann I, Kirsten D. Diagnostic Gain from Surgical Biopsy for Interstitial Lung Disease - When is it Worth the Risk? Pneumologie 2016: 70(3): 205-210.
- Carrillo Rodríguez JG, Estrada A, Pedroza J, Aragón B, Mejía M, Navarro C, Selman M. Preoperative risk factors associated with mortality in lung biopsy patients with interstitial lung disease. Journal of Investigative Surgery 2005: 18(1): 39-45.
- Cherchi R, Grimaldi G, Pinna-Susnik M, Riva L, Sarais S, Santoru M, Perra R, Allieri R, Porcu GS, Nemolato S, Mameli A, Loi F, Ferrari PA. Retrospective outcomes analysis of 99 consecutive uniportal awake lung biopsies: a real standard of care? Journal of Thoracic Disease 2020: 12(9): 4717-4730.
- Durheim MT, Kim S, Gulack BC, Burfeind WR, Gaissert HA, Kosinski AS, Hartwig MG. Mortality and Respiratory Failure After Thoracoscopic Lung Biopsy for Interstitial Lung Disease. Annals of Thoracic Surgery 2017: 104(2): 465-470.
- Elhadidy T, Ibrahim M, Moustafa FEH, fathy A, Abd El- Maksoud A. Video-assisted medical thoracoscopic (VAMT) lung biopsy in the diagnosis of diffuse pulmonary infiltrates. Egyptian Journal of Chest Diseases and Tuberculosis 2017: 66(1): 153-156.
- Esme H, Sezer M, Solak O, Şahin Ö. Importance of open lung biopsy in patients suspected interstitial lung disease. European Journal of General Medicine 2007: 4(1): 16-18.
- Fibla JJ, Brunelli A, Cassivi SD, Deschamps C. Aggregate risk score for predicting mortality after surgical biopsy for interstitial lung disease. Interact Cardiovasc Thorac Surg 2012: 15(2): 276-279.
- Hutchinson JP, Fogarty AW, McKeever TM, Hubbard RB. In-Hospital Mortality after Surgical Lung Biopsy for Interstitial Lung Disease in the United States. 2000 to 2011. Am J Respir Crit Care Med 2016: 193(10): 1161-1167.
- Hutchinson JP, McKeever TM, Fogarty AW, Navaratnam V, Hubbard RB. Surgical lung biopsy for the diagnosis of interstitial lung disease in England: 1997-2008. European Respiratory Journal 2016: 48(5): 1453-1461.

- Jeon CS, Yoon DW, Moon SM, Shin S, Cho JH, Lee SM, Ahn HJ, Kim JA, Yang M. Non-intubated video-assisted thoracoscopic lung biopsy for interstitial lung disease: a single-center experience. Journal of Thoracic Disease 2018: 10(6): 3262-3268.
- Kurihara C, Tolly B, Dewolf A, Nader A, Kim S, Odell DD, Argento AC, Budinger GRS, Bharat A. Thoracoscopic lung biopsy under regional anesthesia for interstitial lung disease. Regional Anesthesia and Pain Medicine 2020.
- Nagano M, Miyamoto A, Kikunaga S, Suzuki S, Takaya H, Fujii T, Fujimori S. Outcomes of Video-Assisted Thoracic Surgical Lung Biopsy for Interstitial Lung Diseases. Ann Thorac Cardiovasc Surg 2021: 8: 08.
- Pastre J, Khandhar S, Barnett S, Ksovreli I, Mani H, Brown AW, Shlobin OA, Ahmad K, Khangoora V, Aryal S, Morris DL, King CS, Nathan SD. Surgical Lung Biopsy for Interstitial Lung Disease. Safety and Feasibility at a Tertiary Referral Center. Ann Am Thorac Soc 2021: 18(3): 460-467.
- Pompeo E, Rogliani P, Atinkaya C, Guerrera F, Ruffini E, Iñiguez-Garcia MA, Peer M, Voltolini L, Caviezel C, Weder W, Opitz I, Cavalli F, Sorge R. Nonintubated surgical biopsy of undetermined interstitial lung disease: A multicentre outcome analysis. Interactive Cardiovascular and Thoracic Surgery 2019: 28(5): 744-750.
- Rocco G, Khalil M, Jutley R. Uniportal video-assisted thoracoscopic surgery wedge lung biopsy in the diagnosis of interstitial lung diseases. J Thorac Cardiovasc Surg 2005: 129(4): 947-948.
- Rotolo N, Imperatori A, Poli A, Nardecchia E, Castiglioni M, Cattoni M, Dominioni L. Assessment of the aggregate risk score to predict mortality after surgical biopsy for interstitial lung disease. Eur J Cardiothorac Surg 2015: 47(6): 1027-1030; discussion 1030.
- Sugino K, Otsuka H, Matsumoto Y, Nakamura Y, Matsumoto K, Azuma Y, Makino T, Iyoda A, Shibuya K, Homma S. The role of video-assisted thoracoscopic surgery in the diagnosis of interstitial lung disease. Sarcoidosis Vasculitis and Diffuse Lung Diseases 2019: 36(2): 148-156.
- Takamori S, Hayashi A, Matsuo T, Mitsuoka M, Tanigawa H, Fukunaga M, Miwa K, Sueyasu Y, Hotta M, Shirouzu K. Thoracoscopic lung biopsy for diffuse infiltrative lung disease. Kurume Med J 2000: 47(4): 263-265.
- Theegarten D, Muller HM, Bonella F, Wohlschlaeger J, Costabel U. Diagnostic approach to interstitial pneumonias in a single centre: report on 88 cases. Diagn Pathol 2012: 7: 160.
- Vaszar LT, Larsen BT, Swanson KL, Ryu JH, Tazelaar HD. Diagnostic utility of surgical lung biopsies in elderly patients with indeterminate interstitial lung disease. Respirology 2018: 23(5): 507-511.
- Yi E, Lee JH, Lee JH, Chung JH, Lee Y, Lee S. Perioperative risk factors in surgical lung biopsy for the diagnosis of interstitial lung disease: a single-centre experience. ANZ Journal of Surgery 2021: 91(3): 291-297.