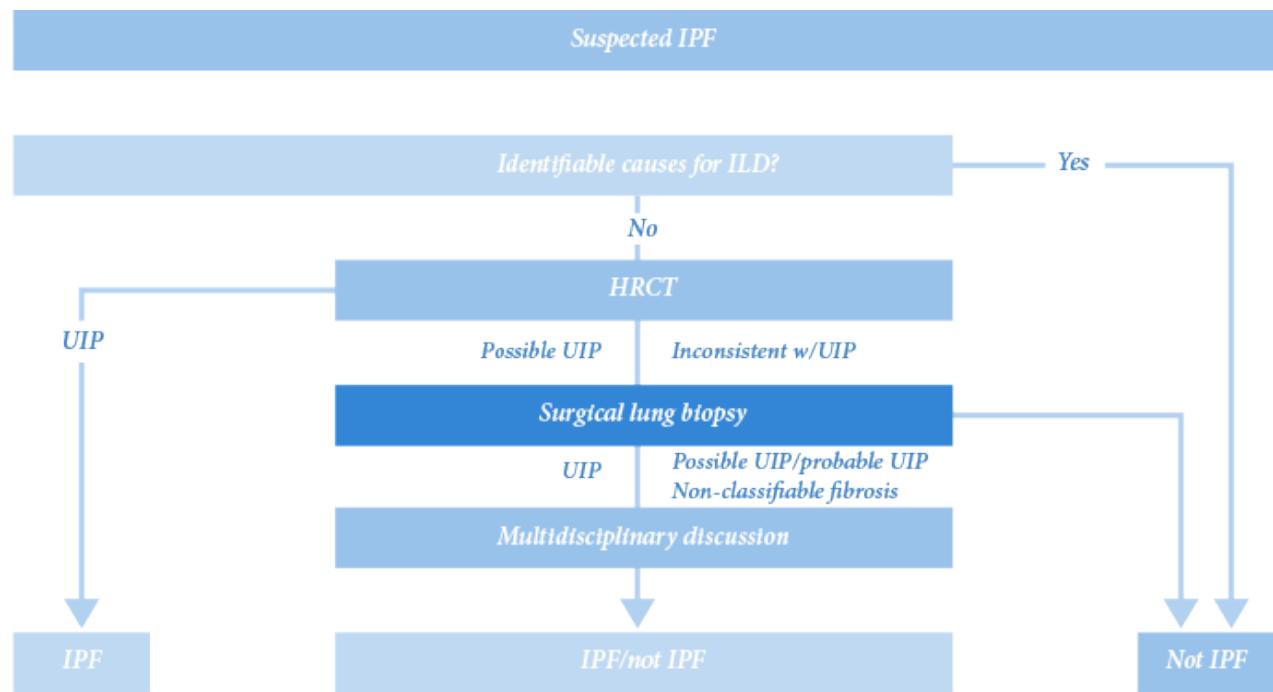


Biopsy

If a pattern of possible usual interstitial pneumonia (UIP) or a pattern inconsistent with UIP is identified on high-resolution computed tomography (HRCT), a surgical lung biopsy should be considered.¹

HRCT in the diagnostic algorithm¹



ILD, interstitial lung disease; IPF, idiopathic pulmonary fibrosis; UIP, usual interstitial pneumonia

Two methods for surgical lung biopsy are available: open thoracotomy and video-assisted thoracoscopic surgery (VATS).¹ Several studies have investigated biopsies obtained with each technique and reported that diagnostic yield is similar between methods, while VATS may also be

associated with certain clinical benefits.²⁻⁵ Which biopsy method should be used is dependent on individual patient characteristics and surgical expertise.¹

Transbronchial cryobiopsy is a new bioptic approach that is being increasingly used as an alternative to surgical lung biopsy to diagnose fibrosing interstitial lung disease (ILD).^{6,7} The technique involves a cryoprobe being delivered to the lung through a bronchoscope to obtain a lung tissue sample.^{6,7} It has been shown that the samples obtained with this method are ~40–50 mm² in size, sufficient to display the architecture of the secondary pulmonary lobules.⁶

Benefits and limitations of transbronchial cryobiopsy^{6,7}

Benefits of transbronchial cryobiopsy

Less invasive than surgical lung biopsy

Recognition of a UIP pattern on large specimens has good inter-observer variability and may be recognised by pathologists with high confidence

Immunohistochemical analysis may be carried out easily in the samples

In combination with other clinical findings, the value of biopsies was similar to that reported for surgical lung biopsy

Limitations of transbronchial cryobiopsy

Pneumothorax is reported in up to 33% of cases

Strategies used to obtain samples are not yet standardised

Further studies are needed

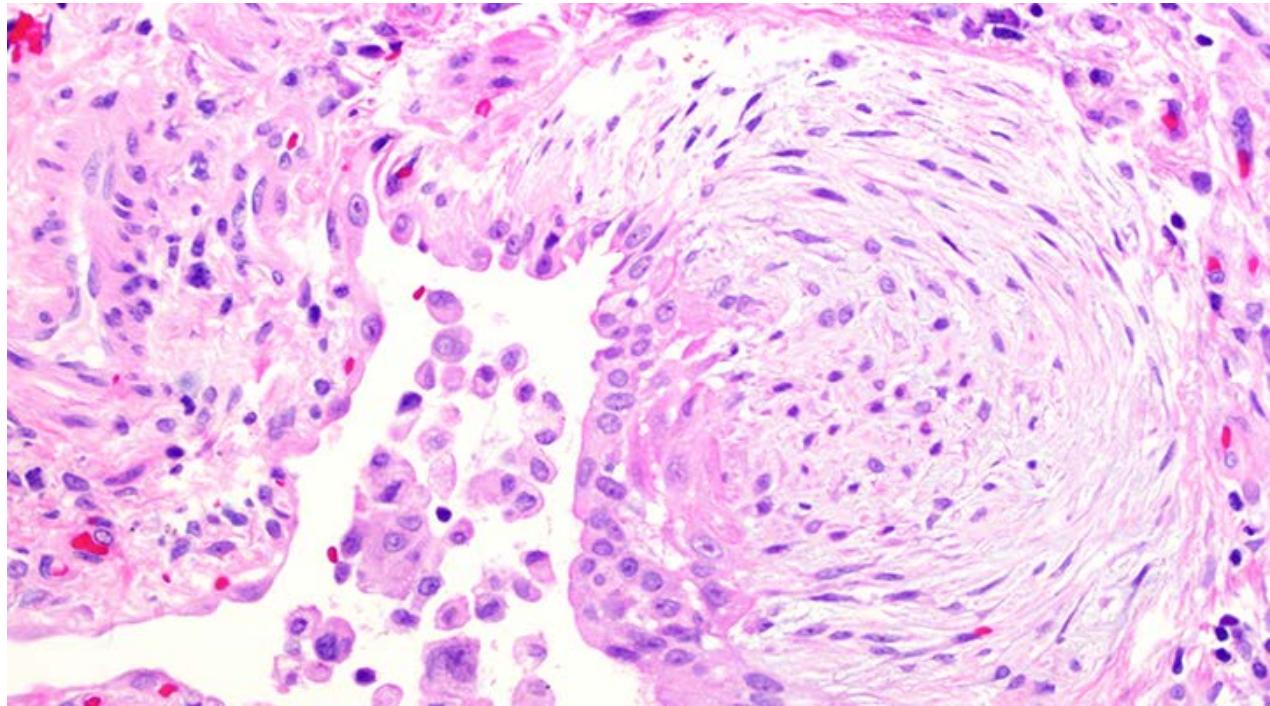
A histological diagnostic criteria for UIP pattern requires the presence of the following four criteria^{1*}:

1. Marked fibrosis/architectural distortion, +/- honeycombing in a predominantly subpleural/paraseptal distribution
2. Patchy involvement of lung parenchyma by fibrosis
3. Presence of fibroblast foci
4. Absence of features against a diagnosis of UIP.

*If all four criteria cannot be confirmed, the histological result is classified as ‘probable’, ‘possible’ or ‘not UIP’.

Following biopsy, idiopathic pulmonary fibrosis (IPF) is diagnosed by looking for specific combinations of patterns between the HRCT scan and lung biopsy.¹

Histological pattern in IPF⁸



Safety

Surgical lung biopsy carries a high risk of mortality in patients with suspected IPF with a reported frequency of death within 30 days of the biopsy of 3–17%.^{9,10}

It has also been suggested that patients with possible idiopathic UIP, who present with atypical features, may be at higher risk for death following surgical biopsy than patients presenting with more typical features or patients with other ILDs.^{9,10}

VATS has improved the safety of lung biopsy compared with the more traditional, and now less frequently used, open lung thoracotomy.¹ VATS biopsies are associated with reduced morbidity, operative time and hospital stay compared with open lung thoracotomy.^{1,2,4,5}

Clinical investigation in 117 patients reported that transbronchial cryobiopsy has safety benefit over surgical lung biopsy.⁷ Due to the nature of the procedure, pneumothorax occurred in 100% of patients who underwent surgical lung biopsy, and all cases required chest tube drainage. In comparison, 33% of patients who underwent transbronchial cryobiopsy had pneumothorax, and only 25% required chest tube drainage. Transbronchial cryobiopsy also resulted in shorter hospital stays than surgical lung biopsy.⁷

Due to the risks associated with lung biopsy, the risks of performing a lung biopsy in patients with severe impairment of general health or significant comorbidities must be weighed carefully against the potential benefits of establishing an accurate diagnosis of IPF to ensure the benefits outweigh the risks.¹

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