Pre-operative imaging assessment prior to resection of pancreatic metastases from renal cell cancer: are computed tomography and endoscopic ultrasound enough?

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Background

- Pancreatic metastases are rare, however renal cell carcinoma (RCC) is thought to be the most common primary tumour [1,2].

- Metastatic spread can occur at the time of initial diagnosis or more frequently after nephrectomy [1,2].

- Most patients with pancreatic metastases are asymptomatic [1,2] and therefore imaging plays a vital role in detecting and characterising these lesions.

Background

- In our tertiary centre, diagnosis is usually made with triple phase computed tomography (CT) and endoscopic ultrasound (EUS).

- On CT, RCC metastases are typically hypervascular (figure 1); EUS usually demonstrates hypoechoic pancreatic lesions (figure 2).
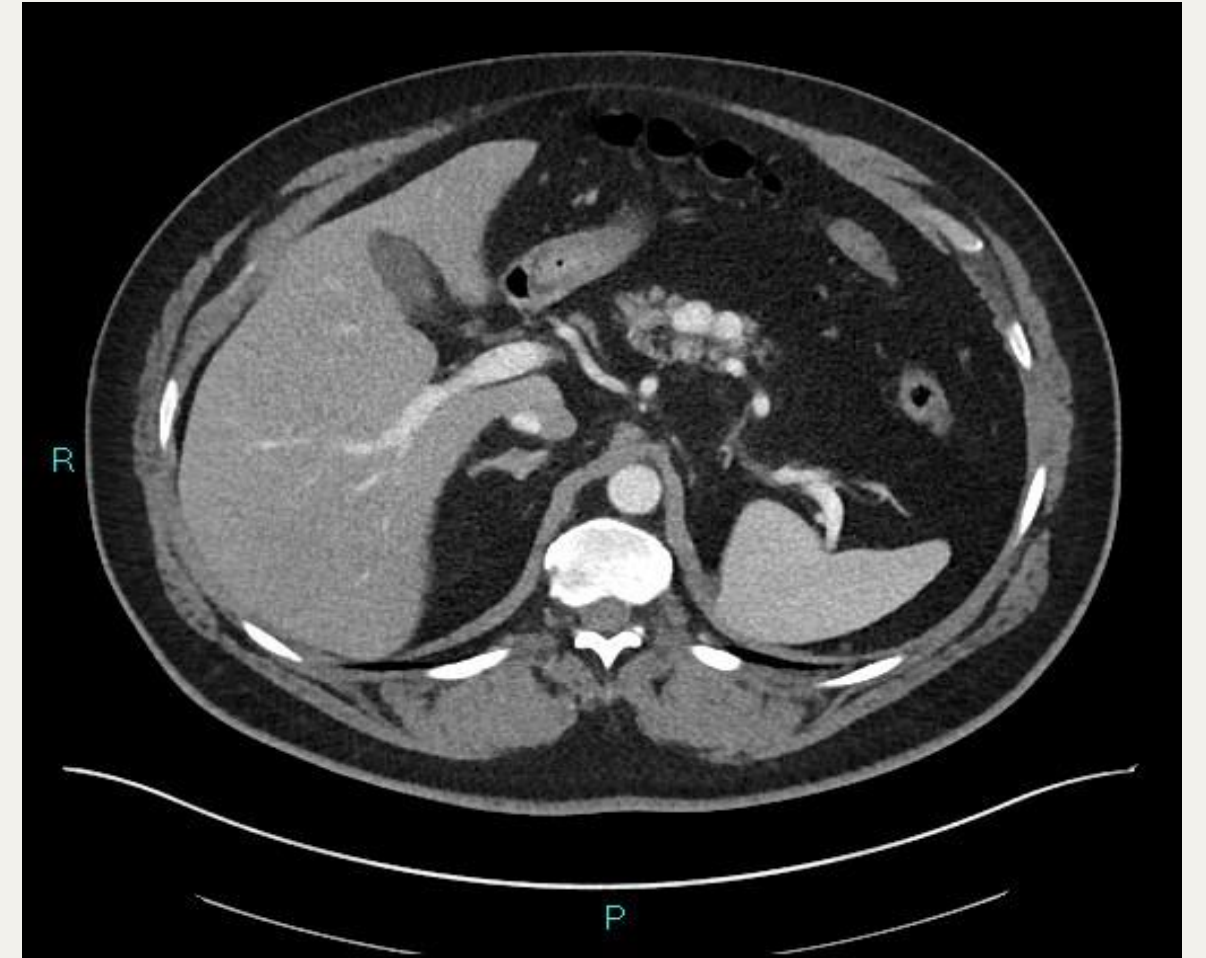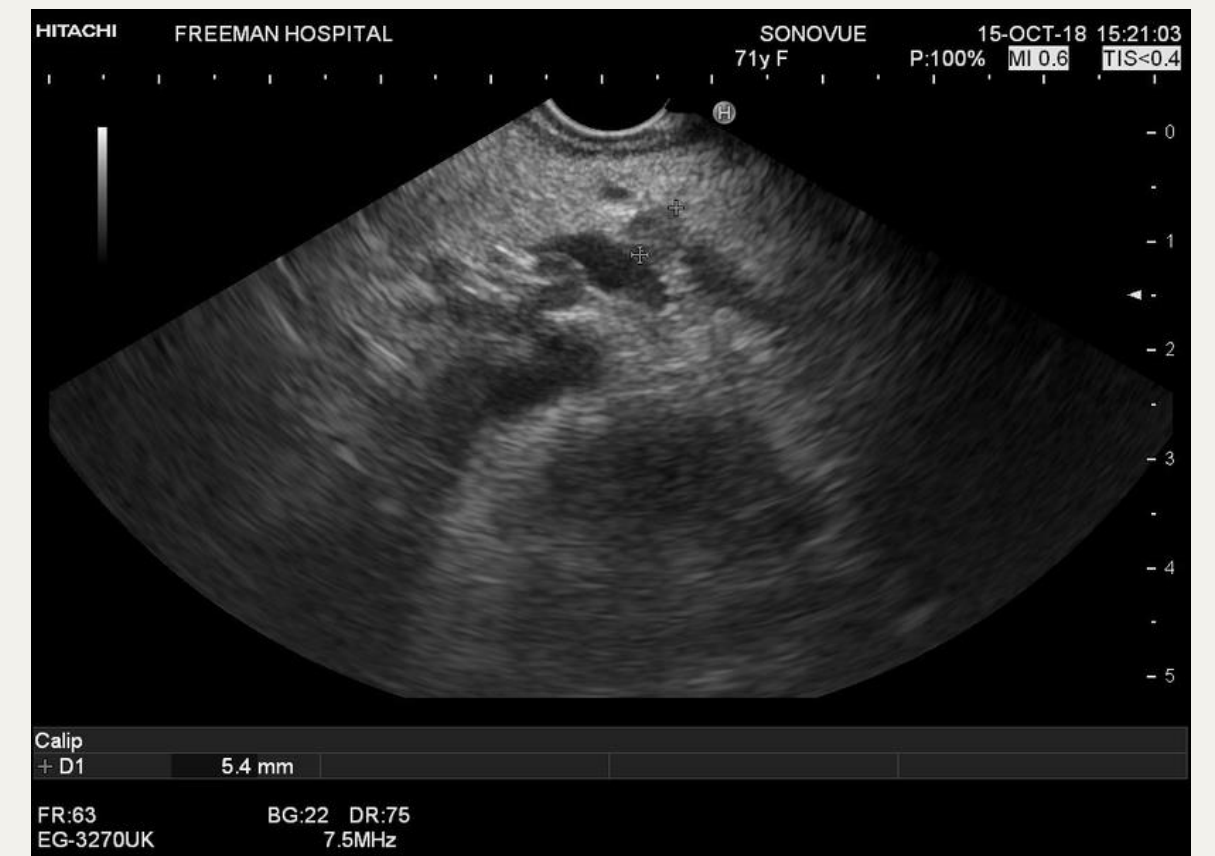

Figure 1

Figure 2

Background

- With increasing popularity of Magnetic Resonance Imaging (MRI), some clinicians favour the use of MRI in addition to both CT and EUS.

- On MRI, RCC pancreatic metastases typically demonstrate hypointense T1-weighted signal relative to pancreatic parenchyma (figure 3) with homogenous enhancement (figure 4).
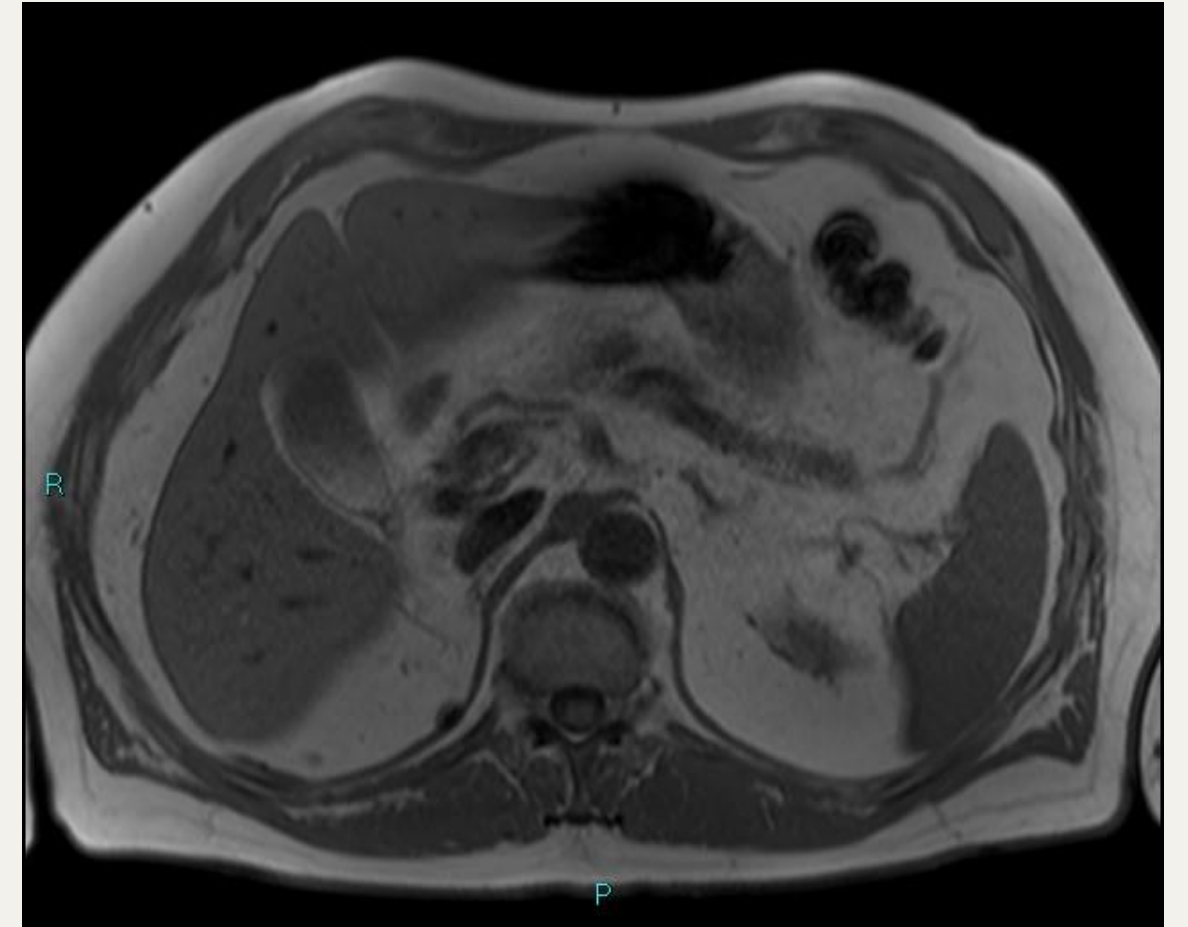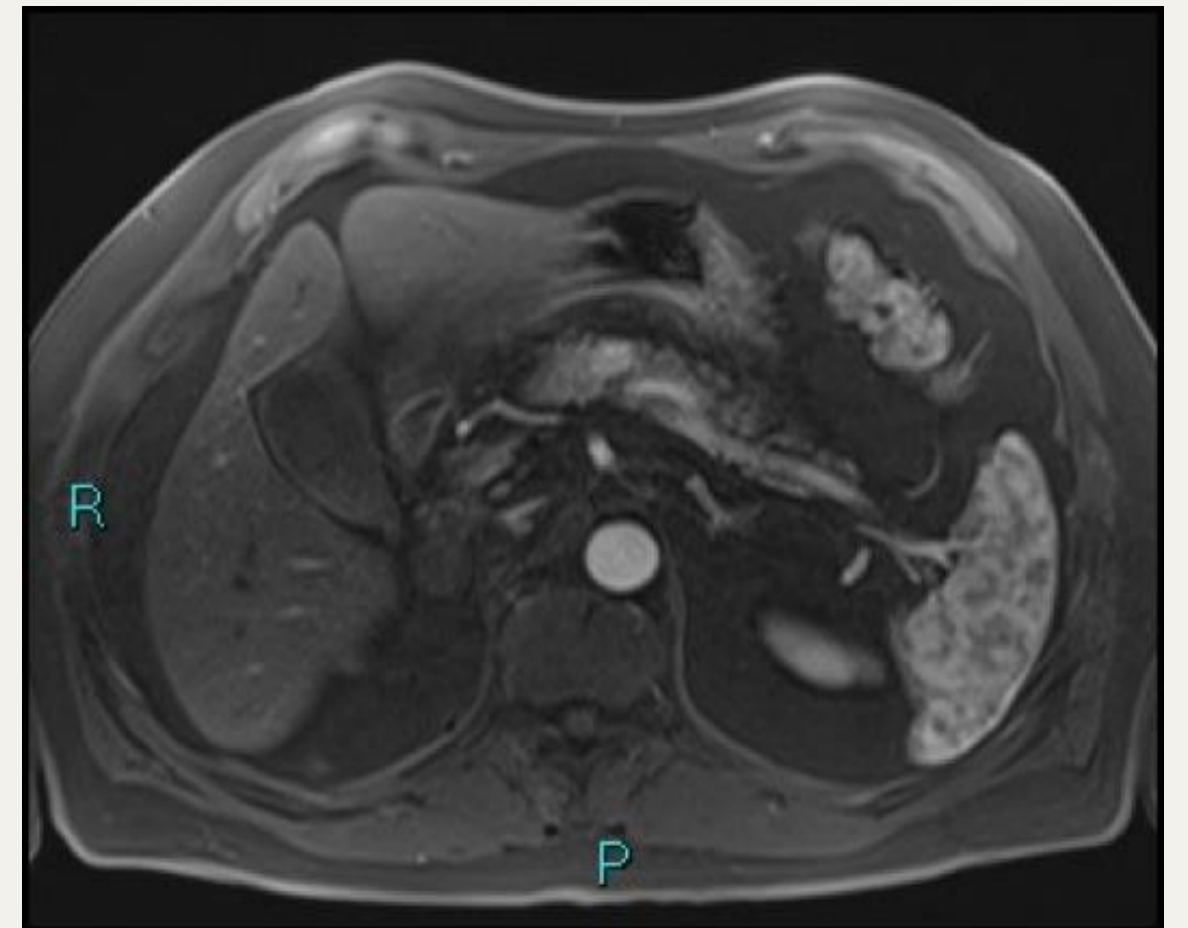

Figure 3

Figure 4

Aim

- The aim of this project was to determine the accuracy with which CT, EUS, and MRI correlate with pancreatic resection histology in terms of number of metastases and location within the pancreas.

Methods

- Retrospective analysis of all pathology reports of patients with RCC metastases resected from the pancreas were identified from September 2007 to August 2018.

- Pathology, radiology, and endoscopy reports were then reviewed to determine the number and location of metastases.

- The total number of lesions reported on CT and EUS were compared to resection histology and correlation coefficients were calculated using Pearson Rho.

Methods

- Pearson's r values were interpreted as: 0 meaning no relationship, >+0.30 as a weak positive relationship, >+0.50 as a moderate positive relationship, and +1.0 as a perfect positive relationship.

- To assess agreement of radiology reported locations with surgical procedure locations, Cohen's Kappa was used. Kappa value was interpreted as <0 indicating no agreement, 0 to 0.20 as poor, 0.21 to 0.40 as fair, 0.41 to 0.60 as moderate, 0.61 to 0.80 as good, and 0.81 to 1 as almost perfect agreement.

- Data was analysed using MedCalc (MedCalc Software, Ostend, Belgium).

Results

- 22 pathology specimens from 21 patients identified.

- Out of the 21 patients, there was a demographic of 11 males, 10 females, and a mean age of 67.3.

- Two specimens were excluded from analysis: one due to lack of available pre-operative investigations, and one due to unavailability of pre-operative imaging.

- 20 pathology specimens from 20 patients were included in the study of which 10 patients had a total pancreatectomy, 7 patients had a distal pancreatectomy, and 3 had pancreatic head resections.

Results

	Pearson correlation coefficient (r)	Cohen's Kappa	
CT	0.45 (Rho 0.958)	0.77	Good
EUS	0.18 (Rho 0.829)	0.65	Good

Only six patients had pre-operative MRI, preventing accurate assessment of this modality.

Conclusion

- Our data has shown that when assessing RCC pancreatic metastases, both CT and EUS underestimated the number of lesions.

- Both modalities have good agreement with lesion locations as reported on histology.

- Our findings were discussed at our local hepatopancreatobiliary (HBP) radiology team meeting and a new diagnostic pathway was proposed (figure 5) to ensure the best chance of identifying lesions, so none are left behind in pancreas sparing surgery.
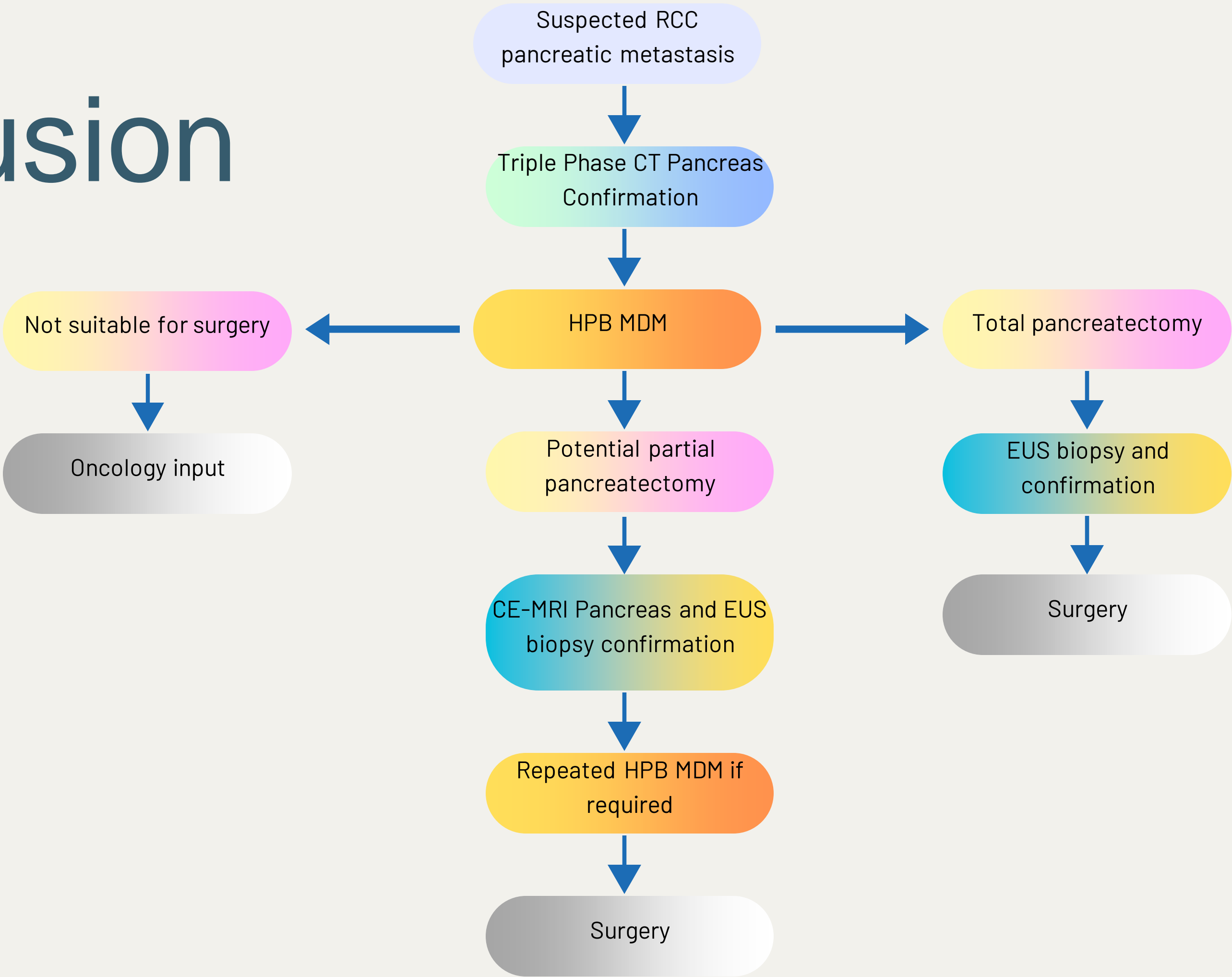
Conclusion

Figure 5

Conclusion

- The role of MRI within this patient group requires more data.

- In the future when there is a sufficient sample size of MRI studies within this distinct patient subgroup, another study should be completed to analyse the accuracy of MRI modality with pancreatic resection histology.

References

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2. Butturini, Giovanni & Marchegiani, Giovanni & Malleo, Giuseppe & Bassi, Claudio. (2016). Chapter 64 - Pancreas as a site of metastatic cancer. 10.1016/B978-0-323-34062-5.00064-9.