

Progression of Small Intraductal Papillary Mucinous Neoplasms and Undefined Cysts of the Pancreas: A Systematic Review

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Background

- Cystic lesions of the pancreas are recognized as a premalignant precursor of pancreatic ductal adenocarcinoma
- They include intraductal papillary mucinous neoplasms (IPMNs) and undefined cystic lesions
- Differences in society guidelines concerning management demonstrates our limited understanding in the natural history of pancreatic cysts <1 cm in diameter

Methodology

- We conducted a systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines
- We asked, “In patients with small (<1cm) IPMNs and undefined cysts of the pancreas, what is the risk of progression to invasive disease?”
- Inclusion criteria were studies that described small cystic lesions of the pancreas measuring under 1 cm
- The initial stage involved title and abstract screening of 4,092 citations
- 15 studies met full inclusion criteria

Results

- No studies reported mean size of lesion less than 1 cm
- Five studies reported data regarding changes in size
- 41 of 175 cysts (23.4%) grew during surveillance
- 184 of 442 cysts (41.6%) did not change in size
- 26 of 240 cysts (10.8%) disappeared during follow-up
- One study reported that 222 of 338 cysts (57.2%) <1 cm in diameter remained <1 cm in diameter after 5 years of follow-up

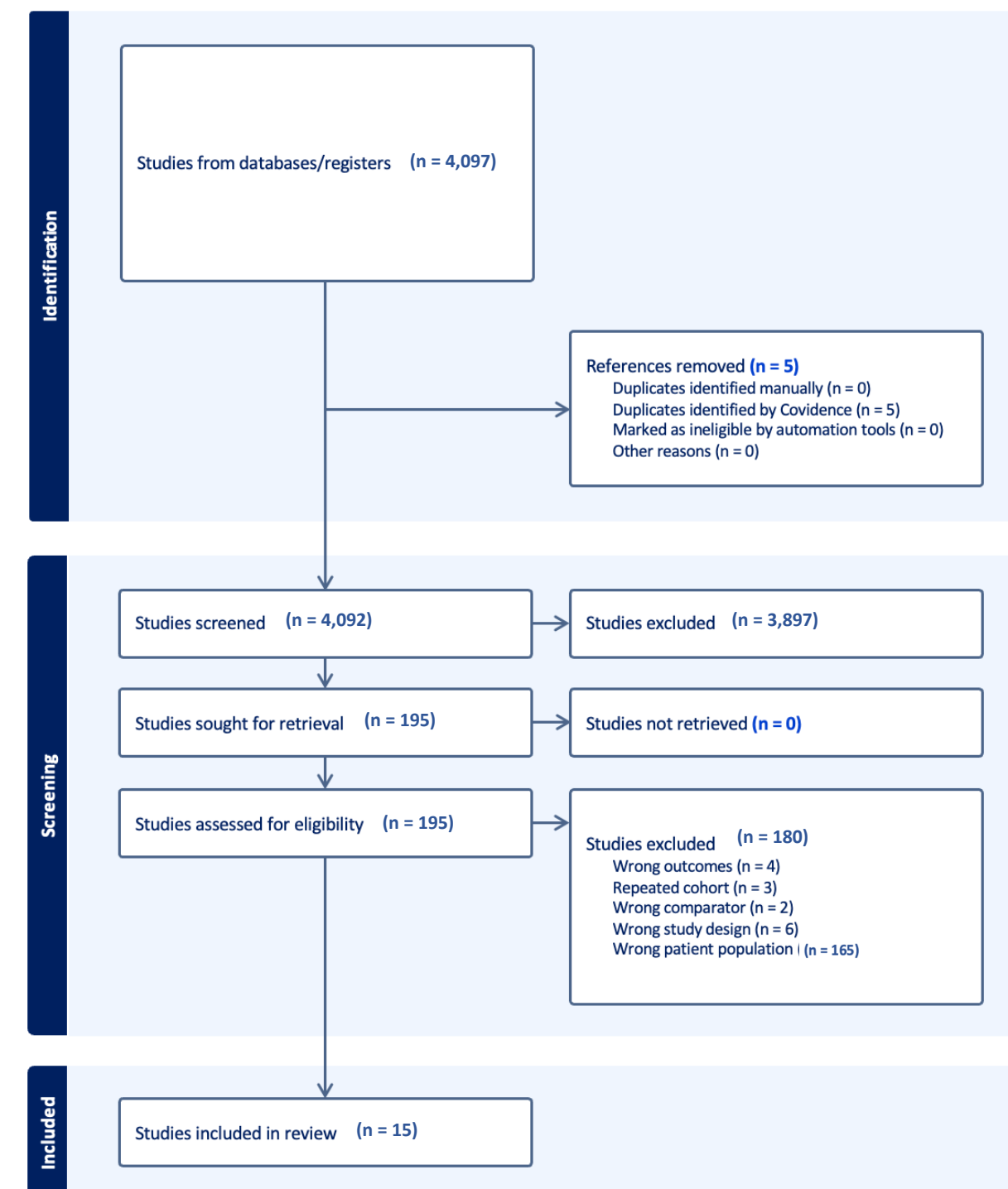


Figure 1. Modified PRISMA Flow Chart

Author	Year	Country	Design	Cysts	Cysts < 1 cm
Guarise	2008	Italy	Retrospective	52	6
Prasad	2010	Australia	Retrospective	58	6
Gaujoux	2011	USA	Retrospective	1424	168
Matsuzaki	2013	Japan	Retrospective	154	119
Wu	2014	USA	Retrospective	1735	328
Mandai	2014	Japan	Retrospective	300	56
Lekkerkerker	2016	Netherlands	Retrospective	146	10
Mukewar	2017	USA	Retrospective	802	395
Kim	2017	Korea	Retrospective	553	203
Menda	2017	USA	Retrospective	342	240
Han	2018	Korea	Retrospective	1369	501
Morelli	2019	Italy	Retrospective	200	97
Oyama	2020	Japan	Retrospective	1404	388
Schweber	2020	USA	Retrospective	442	194
Yamazaki	2021	Japan	Retrospective	283	51
				9264	2762
					28.90%

Table 1. Included Study Characteristics

- Four studies reported data regarding the development of worrisome features
- 42 of 944 lesions (4.4%) developed worrisome features during follow-up
- 2 of 442 cysts (0.5%) developed high-risk stigmata or underwent surgery
- 4 of 451 cysts (0.9%) developed invasive disease during follow-up

Discussion

- Of 944 cystic lesions <1 cm followed for development of worrisome features or high-risk stigmata, only 4.4% of lesions exhibited these findings
- Similarly, only 3 of 395 lesions (0.8%) <1 cm underwent surgical resection during the follow-up period
- While varying growth rates and development of worrisome features exist among these smaller <1 cm lesions during follow-up, the large majority do not become malignant

Conclusions

- The majority of cystic pancreatic lesions <1 cm in diameter remain small throughout surveillance
- A significant minority of lesions exhibit growth and development of worrisome features
- Our findings support the current surveillance guidelines
- Future studies should emphasize reporting data specific to small lesions to facilitate our further understanding regarding management