protocol of "definite and continuous bowel protection" attempts to address this risk and improve procedural safety.

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Received January 29, 2025; final revision received February 20, 2025; accepted February 22, 2025.

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None of the authors have identified a conflict of interest.

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Assessing the Concordance between Imaging Findings and Pathology Results in Image-Guided Biopsies: Insights from the SIR and SAR (Society of Abdominal Radiology) Membership Survey

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https://doi.org/10.1016/j.jvir.2025.03.017

Editor:

Image-guided biopsy is a widely recognized preferred nonsurgical method for diagnosing potential malignancy. However, a small but consequential number of patients have a biopsy result that is nondiagnostic or discordant with imaging findings, potentially resulting in a false-negative result that could cause a delay in diagnosis and treatment (1).

Routine radiology-pathology concordance assessment of biopsy results has been shown to improve resource utilization and decrease delays in diagnosis and patient triage to appropriate management (2). Although some procedural radiologists may assess radiology-pathology concordance for their biopsy results, it is not a standard of practice or required for any biopsies aside from breast biopsies.

A nationwide institutional review board Beth Israel Deaconess Medical Center–approved (IRB number: 2022P000975) with waiver of informed consent survey of members of the 3,398 nontrainee Society of Interventional Radiology (SIR) members and the 405 Society of Abdominal Radiology (SAR) members performing procedures, was performed to obtain information about the current practice of radiology-pathology concordance evaluation and barriers to its adoption. The survey was done through SurveyMonkey between April 16, 2023 and May 31, 2023. The SIR member response rate was 12.4% (424/3,398), and the SAR member response rate was 20% (81/405). Of the respondents, 18 were both SIR and SAR members, with a resultant overall response rate of 12.8% (487/3,785).

Only 276 (57%) of 487 survey respondents currently review nearly all their biopsy results, whereas a larger majority (380/452, 84%) agreed that reviewing biopsy pathology results for concordance with imaging findings should be standard practice in interventional radiology (IR) (**Table**). Potential benefits to the implementation of the radiology-pathology concordance evaluation included improved patient care (409/445, 92%), improved relationships with colleagues of other specialties (388/445, 87%), learning opportunity (383/445, 86%), and job satisfaction (227/445, 51%).

Of 487 respondents, 218 (45%) received an automatic alert of biopsy result, 131 (27%) followed up manually, 31 (6%) had support staff to follow-up on the biopsy results, and 57 (12%) did not follow-up on their biopsy results. It is suspected that the number of people following up on their biopsies is probably falsely elevated due to selection bias, since most respondents who believe in following up on the biopsies are more likely to respond to this survey.

Of 487 respondents, 213 (44%) had organizational help with workflow and follow-up of biopsies. There was a significant positive association between availability of organization help and years of practice, with organizational help more likely to be available to the more senior practitioners: from 32 (37%) of 87 respondents with 1–5 years to 108 (51%) of 212 with greater than 15 years in practice had organizational help ($P = .003$). The availability of organizational help was positively associated with the likelihood that radiology-pathology concordance assessment would be

Table. Survey Questions and Results

Question (No. of responders)	No.	%
Do you perform imaging-guided targeted biopsies? (487)		
Yes	461	95%
No	26	5%
What part of your clinical duties do you spend doing procedures? (487)		
>75% of time	17	3%
50%–74% of time	66	14%
25%–49% of time	227	47%
<25% of time	177	36%
How many years have you practiced after training? (487)		
1–5 y	87	18%
6–10 y	98	20%
11–15 y	90	18%
>15 y	212	44%
In what type of institution do you work? (487)		
Academic	156	32%
Private practice	216	44%
Hybrid	66	14%
Government/public hospital	30	6%
Military hospital	3	1%
Other	16	3%
Do you have someone who helps you with organization of workflow and/or follow-up of imaging-guided biopsies? (487)		
No	274	56%
Yes	213	44%
Do you see biopsy patients in clinic? (487)		
Yes, before biopsy	54	11%
Yes, after biopsy	3	1%
Yes, before and after biopsy	13	3%
No	417	86%
Are you regularly notified about pathology results for the biopsies you perform? (487)		
Yes, via a medical records system alert	218	45%
Yes, via automated email/text/other alert	50	10%
I follow-up manually	131	27%
My support staff follows up manually	31	6%
No, I do not follow-up on the pathology results	57	12%
In the last 3 mo, how many pathology results of the biopsies that you performed did you review? (487)		
Nearly all (>90% of them)	276	57%
75%–90% of them	54	11%
50%–74% of them	58	12%
25%–49% of them	36	7%
1%–24% of them	55	11%
None	8	2%
Who participates in the radiology-pathology concordance assessment? (multiple options) (412)		
The radiologist who performed the procedure	324	79%
A radiologist experienced in the procedure (not necessarily the one who performed the procedure)	45	11%
Diagnostic radiologist who interpreted the original imaging study or their designee	24	6%
A pathologist	121	29%
Referring physician	129	31%
Multidisciplinary tumor board	110	27%
Fellows/residents	26	6%
For the last 3 mo, what do you usually do when the pathology result was discordant with imaging findings or inconclusive? (432)		
Nothing	56	13%
Bring patient back for repeat biopsy	180	42%
Discuss with the pathologist	138	32%
Discuss with the referring physician	328	76%
Notify the referring physician	109	25%
Discuss with the patient	37	9%
Place an addendum to the original biopsy report	42	10%
Document in the medical records	31	7%
Consider the following scenario: If you call a referring physician with a management plan that differs from their initial plan (ie, repeat biopsy instead of imaging follow-up or surgical biopsy), how often do they follow your recommendations? (487)		
>90%	201	57%
75%–90%	92	26%
50%–74%	41	12%
25%–49%	9	3%
1%–24%	8	2%
Never	4	1%
What are the potential benefits to procedural radiologists from the review of biopsy pathology results? (445)		
Better patient care	409	92%
Improved relationships with colleagues of other specialties	388	87%
Learning opportunity	383	86%
Job satisfaction	227	51%
What are the reasons you would not perform review of the biopsy pathology results? (392)		
Lack of dedicated time	303	77%
Lack of resources, no dedicated system or personnel to support the process	276	70%
Not impactful on patient management	31	8%
Lack of interest from referring physicians	37	9%
Do you agree that review of biopsy pathology results for concordance should be standard practice in IR? (452)		
Yes, I agree	380	84%
No, I don't agree	72	16%

performed. Organizational help was available for 12 (22%) of 55 responders who reviewed 1%–24% of their biopsies, 28 (52%) of 54 who reviewed 75%–90% of their biopsies, and 136 (49%) of 276 who reviewed nearly all of their biopsies (P = .001). However, experience level was not associated with the frequency of performance of radiology-pathology concordance assessment (P = .98).

Most survey respondents (380/452, 84%) agreed that reviewing biopsy pathology results for concordance with imaging findings should be standard practice in IR, with support for this practice strongest among academic proceduralists (130/139, 94%) but also high among private practice proceduralists (166/208, 80%) and in hybrid practices (44/57, 77%) (P = .01).

Procedural radiologists are perhaps the most well equipped to evaluate the biopsy images and determine concordance with pathology, since they can assess both the technical adequacy of the biopsy and whether imaging

findings are congruent with pathology, with specific considerations for each clinical area of interest. Proceduralist awareness of factors impacting diagnostic yield, such as tissue or tumor type and location, as well as imaging and clinical predictors of malignancy, is helpful in determining when a repeat percutaneous or surgical biopsy is needed or when benign result can be accepted (3).

The most common barriers to implementation reported by respondents included lack of dedicated time (303/392, 77%) and resources (276/392, 70%). Although organizational personnel support is clearly beneficial, a streamlined workflow within the electronic medical record is likely to be the optimal approach for completing timely and efficient radiology-pathology concordance assessment (4). In a retrospective evaluation of a weekly radiology-pathology concordance assessment meeting, Camacho et al (1) found that patient care decisions were already made for 49% of cases prior to the weekly meeting, highlighting the importance of timely concordance assessment.

This survey represented only a minority of SAR and SIR members and may not have captured the variability in clinical and procedural practices comprehensively, and certain questions aimed to gather opinions rather than objective facts. Nevertheless, it shows that most procedural radiologists who responded to the survey agreed that radiology-pathology correlation should be performed routinely. It also highlights the challenges for its routine implementation. Therefore, increased organizational support, either via nonphysician support staff or, ideally, via automated electronic medical record tools, has a substantial potential to positively impact patient care.

ACKNOWLEDGMENTS

The authors thank the SIR Quality and Performance Improvement Division and Quality Data Analytics Committee as well as the Society of Abdominal Radiology Cross-Sectional Interventional Radiology Emerging Technology Commission for their significant contributions to this study.

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Received November 1, 2024; final revision received March 18, 2025; accepted March 20, 2025.

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F.R. reports grant from GE Healthcare paid to the institution for support to project on DECT. M.G.L. reports that spouse is consultant at Elephas Biosciences. O.R.B. reports principal investigator on an industry grant from GE Healthcare that was paid to the institution. None of the other authors have identified a conflict of interest.

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