

RadPath

Automated Radiology-Pathology Notification System and Breast Procedure Addendum Turnaround Time

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Background

- Radiology has long been interested in correlating imaging findings and reports with pathology reports.
- Historically, correlation of radiology and pathology findings has been a time-consuming process.
- Recent methods have automated the process of matching pathology reports to radiology reports, streamlining and improving this important feedback loop.



Objectives

- **Histopathological results are particularly scrutinized in breast imaging for radiologic-pathologic concordance, which is added to the final reports.**
- **Expedient notification and documentation of these results is important for patients and referring clinicians as well as for quality assurance purposes.**
- **We have a user-friendly, automated, semi-intelligent radiology-pathology correlation system (**RadPath**) for all radiology reports and procedures in our enterprise and have recently initiated automated email notifications of results.**
- **These emails link the user directly to the RadPath system, present the radiology and pathology reports, and allow direct launch of images aiding assessment of radiology-pathology concordance.**
- **Our hypothesis is that these notifications result in improved turnaround time (TAT) for documentation of pathology results on breast imaging procedures, resulting in more timely radiologic-pathologic concordance.**



Biopsy to Addendum Pre "RadPath"

Biopsy

Specimen sent to Pathology

Radiologist dictates report in PACS

Pathology Analyzes

Pathology Report Generated

Resident Report Signed off by Attending Pathologist

Available in EMR

EMAIL NOTIFICATION

Radiology Manually Checks EMR for results

Notification of Results to Patient/Referring Clinician

Addendum

Radiologist Dictates Pathology Addendum to Biopsy Report in PACS

Flow chart illustrates the steps that occur between biopsy and addendum



“RadPath” Notification

EMAIL NOTIFICATION

The screenshot shows an Outlook interface for an email from 'radpath'. The email is titled 'Pathbot Update' and is from 'pathbot@radserver.io', dated 'Thu 5/9'. The body of the email states: 'You have 1 new radpath matches last week - you may want to login at <https://guhrad01v.medstar.net/radpath> to check them out'. The interface includes standard Outlook navigation elements like 'New message', 'Delete', 'Archive', 'Junk', 'Move to', and 'Categorize'.

REPORT MATCHING

The screenshot displays the Radpath report matching interface. At the top, there is a search bar for 'Radpath:' and a 'Logout' button. Below this, filters are set for 'From: 2019-04-01' to 'To: 2019-04-30'. The 'Filters' section includes 'Concordant', 'Discordant', 'Irrelevant', 'Biopsy', 'Diagnostic', and 'DR'. The main content area shows a list of reports with columns for 'Concordant', 'Discordant', and 'Irrelevant'. The selected report is for 'STEREOTACTIC CORE BX, RT, BX US IMG 1ST LES W DEVICE RT, POST BIOPSY MAMMO RIGHT'. The report details include:

- Patient:** [Redacted]
- ACCESSION:** [Redacted]
- Addendum Report:**
 - Addendum: Immunohistochemical ER/PgR Assay
 - CAP Posting December 2014
- Specimen:** Right breast (A1)
- Estrogen Receptor (ER) :** POSITIVE
 - Percentage of cells with nuclear positivity: Approximately 100%
 - Average Intensity of Staining: Strong
- Progesterone Receptor (PgR) :** POSITIVE
 - Percentage of cells with nuclear positivity: 60% -70%
 - Average Intensity of Staining: Moderate to strong
- All controls show appropriate immunoreactivity.**

The 'CLINICAL HISTORY' section notes: 'year-old female, calcifications and mass recommended, for biopsy in the right breast.' The 'COMPARISON' and 'TECHNIQUE' sections provide further procedural details.

Report Addendum

BIOPSY REPORT ADDENDUM

***** A D D E N D U M *****

ADDENDUM:

Pathology from stereotactic biopsy 4/2/2019:

A: Right breast, specimen with calcifications, stereotactic-guided 7-gauge core biopsy: - Ductal carcinoma in situ, solid type associated with central necrosis and microcalcifications, intermediate nuclear grade. - There is no evidence of invasive carcinoma.

B: Right breast, specimen without calcifications, stereotactic-guided 7-gauge core biopsy:
- Fibrocystic change characterized by stromal fibrosis and cysts. -
There is no evidence of carcinoma.

C Breast, 12 o'clock, ultrasound-guided 14-gauge core biopsy:
- Benign breast tissue showing stromal fibrosis only. - There is no evidence of carcinoma.

Radiology and pathology findings are concordant.

RECOMMENDATIONS:

Surgical/oncologic consultation.

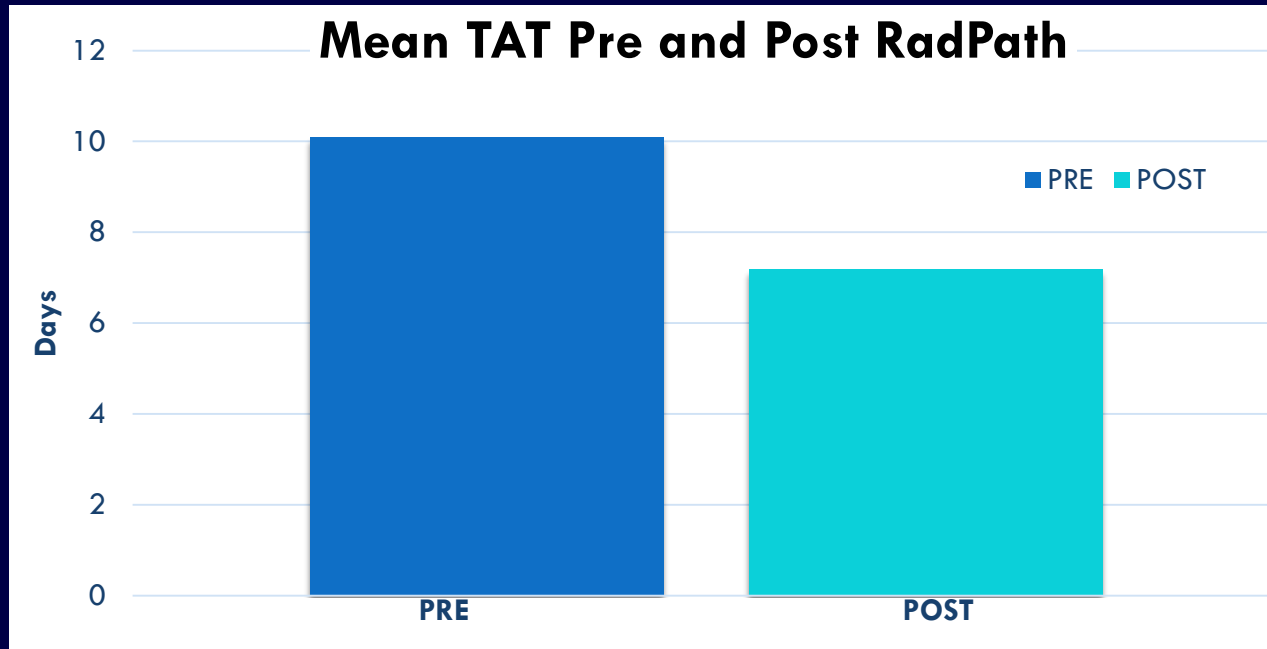
Methods

- IRB exemption was obtained.
- We searched our RadPath system for pathology matches corresponding to image-guided breast interventions at our flagship academic site during a 3 month period before and after the initiation of our notification system.
- To test our hypothesis, we analyzed turnaround time (TAT) from finalized report to finalized addendum based on automatically generated report timestamps for these breast procedures.
 - We excluded reports addended < 2 days after the final reports as our pathology results are not returned that quickly; this was felt to be reasonable exclusion of addenda not related to pathology concordance documentation.

Results

- 44 image-guided breast biopsies were performed in the 3 month period prior to the initiation of RadPath notifications with a mean turnaround time of 10.1 days from finalized report to finalized addendum.
- 38 image-guided breast biopsies were performed in the 3 month period after initiation of RadPath notifications with a decreased mean turnaround time of 7.2 days.
- Two-sample unequal variance t-test showed this to be a statistically significant decrease with a p-value of 0.045.

Results



	Pre	Post	
Total Biopsies	44	38	
Mean (days)	10.1	7.2	P=0.045



Conclusion

- ❑ We have shown a statistically significant decrease in turnaround time from procedure report finalization to pathology addendum in image-guided breast biopsies following initiation of the RadPath notification system.
- ❑ Timely notification and documentation of pathology results and establishment of radiologic-pathologic concordance is crucial for patient care and quality assurance.
- ❑ We believe patient and referring clinician satisfaction will also be improved and that this pattern will hold true across our enterprise.
- ❑ We also plan to implement our RadPath system across our enterprise to further explore our hypotheses regarding improvement in turnaround time and patient/clinician satisfaction.