

Diagnostic Imaging Pathways - Abscess (Intra-Abdominal)

Population Covered By The Guidance

This pathway provides guidance for imaging adult patients with suspected intra-abdominal abscess, including those with and without a recent surgical operation.

Date reviewed: January 2012

Date of next review: 2017/2018

Published: January 2012

Quick User Guide

Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

Date reviewed: January 2012
Please note that this pathway is subject to review and revision

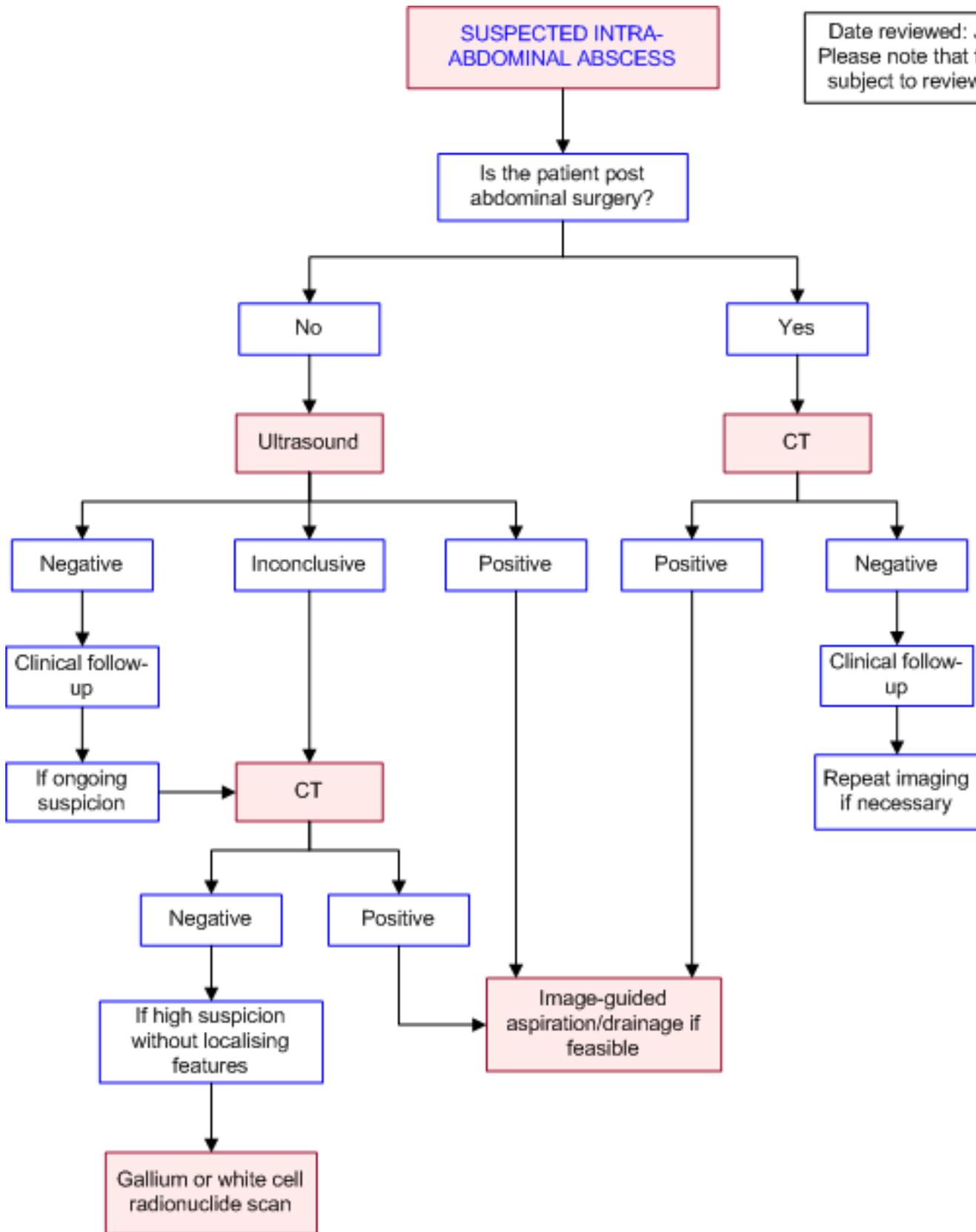


Image Gallery

Note: These images open in a new page

1



Diverticular Abscess

Image 1 (Computed Tomography): Sigmoid diverticulitis complicated by abscess formation (arrow).

Teaching Points

- Ultrasound or Computed Tomography (CT) may be useful in the investigation of suspected intra-abdominal abscess. There have been relatively few studies that have looked at the diagnostic accuracy of both tests in the same cohort of patients. However, both CT and US have a high diagnostic yield for the detection of abdominal abscess
- Ultrasound is recommended in patients who have not undergone recent surgery
- CT is recommended in patients who have undergone recent surgery
- Percutaneous drainage is indicated in the following circumstances
 - All simple abscesses with a safe drainage route
 - Most complex abscesses with a safe drainage route
 - Pyogenic liver abscesses (single or few in number)
 - Infected pancreatic pseudocysts
 - Amoebic abscesses

Image Guided Aspiration / Drainage

- If an abscess is detected, CT- or US- guided percutaneous drainage, may be performed in the following [15,16](#)
 - All simple abscesses with safe drainage route
 - Most complex abscesses with safe drainage route
 - Pyogenic liver abscesses (single or few in number.
 - Infected pancreatic pseudocysts [17,18,19](#)
 - Amoebic abscess (although usually not necessary, can be drained. Most amoebic abscesses resolve on medical treatment and do not require percutaneous drainage unless causing symptoms related to large size)
- Abscesses not suitable for percutaneous drainage include [15,16](#)
 - Hydatid liver abscesses (usually secondarily infected hydatid cyst)
 - Multiple small liver abscesses
 - Hepatic or other deeply situated abscesses in the presence of coagulopathy and/or ascites
- Uncertain role of percutaneous drainage in
 - Pancreatic and splenic abscesses
 - Infected necrotic tumours
- There are no prospective randomised controlled trials to support above recommendations. These recommendations are mainly based on retrospective studies (level III evidence)

Computed Tomography (CT)

- "Gold standard" for the diagnosis of intra-abdominal abscess (superior diagnostic accuracy compared to ultrasound and nuclear medicine scan) [6,7,8,9](#)

- Initial imaging study of choice in the post-operative patient [7,10](#)
- Water-soluble contrast may be given orally or rectally to determine whether there is an ongoing leak at the anastomosis in patients who have undergone a bowel anastomosis
- In non-operative patients, CT is indicated if ultrasound is negative or inconclusive and there is a high clinical suspicion of abscess [11](#)
- Advantages: provides high anatomical resolution, allows visualisation of retroperitoneal structures and intraluminal fluid collections [9](#)

Nuclear Medicine Scan

- Useful in detection of intra-abdominal abscess when there are no localised signs and in cases of occult sepsis or fever of unknown origin [2,12](#)
- Gallium or white cell labelled scan may be performed, when a satisfactory CT and/or US scan have yielded negative results but early infection cannot be excluded [2,12,13,14](#)
- Advantages - allows detection of sites of infection beyond the abdominal region and can help distinguish normal post-operative inflammation from infection
- Disadvantages - long waiting period to allow appropriate concentration of isotope

Ultrasound

- Initial imaging investigation of choice in certain circumstances, including suspected liver abscess post cholecystectomy [1,2,3](#)
- 85-95% diagnostic accuracy for detection and localisation of intra-abdominal abscess [4,5,6](#)
- Advantages - rapid, non-invasive, readily available and portable (preferred initial method in ICU patients).
- Limitations: Not suitable in obese patients and post-operative patients with surgical dressings, large wounds and/or ileus [3](#)

References

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

- 1.** Kochel JQ, Koehler PR, Lee TG, et al. **Diagnosis of abdominal abscesses with computed tomography, ultrasound, and 111-In leucocyte scans.** Radiology. 1980;137:425-32. (Level II/III evidence)
- 2.** Carter CR, McKillop JH, Gray HW, et al. **Indium-111 leucocyte scintigraphy and ultrasound in the detection of intra-abdominal abscesses in patients without localizing signs.** J R Coll Surg Edinb. 1995;40:380-2. (Level II/III evidence)
- 3.** Weldon MJ, Joseph AE, French A, et al. **Comparison of 99m-technetium hexamethylpropylene-amine oxime labelled leucocyte with 111-indium tropolonate labelled granulocyte scanning and ultrasound in the diagnosis of intra-abdominal abscess.** Gut. 1995;37:557-64. (Level III evidence)
- 4.** Taylor KJW, Wasson JF, De Graff C, et al. **Accuracy of grey scale ultrasound diagnosis of abdominal and pelvic abscesses in 220 patients.** Lancet. 1978;1:83-4. (Level II/III evidence)
- 5.** Korobkin M, Callen PW, Filly RA, et al. **Comparison of computed tomography, ultrasonography, and gallium-67- scanning in the evaluation of suspected abdominal**



- abscess.** Radiology. 1978;129:89-93. (Level III evidence)
6. Dobrin PB, Gully PH, Greenlee HB, et al. **Radiologic diagnosis of an intra-abdominal abscess. Do multiple tests help?** Arch Surg. 1986;10:111-4. (Level III evidence)
 7. Lundstedt C, Hederstrom E, Brismar J, et al. **Prospective investigation of radiologic methods in the diagnosis of intra-abdominal abscesses.** Acta Radiol Diagn. 1986;27:49-54. (Level II/III evidence)
 8. Roche J. **Effectiveness of computed tomography in the diagnosis of intra-abdominal abscess: a review of 111 patients.** Med J Aust. 1981;2:85-8. (Level II/III evidence)
 9. Gazelle GS, Mueller PR. **Abdominal abscess: imaging and intervention.** Radiol Clin North Am. 1994;32(5):913-32. (Review article)
 10. Bearcroft PW, Miles KA. **Leucocyte scintigraphy or computed tomography for the febrile post-operative patients?** Eur J Radiol. 1996;23:126-9. (Level II/III evidence). [View the reference](#)
 11. Paling MR, Gouse JC. **Efficacy of abdominal computed tomography in evaluation of possible abdominal abscess.** J Comput Tomogr. 1986;10:111-4. (Level III evidence)
 12. Baldwin JE, Wraight EP. **Indium labelled leucocyte scintigraphy in occult infection: comparison with ultrasound and computed tomography.** Clin Radiol. 1990;42:199-202. (Level III evidence)
 13. Tsai SC, Chai TH, Lin WY, et al. **Abdominal abscesses in patients having surgery: an application of Ga-67 scintigraphic and computed tomographic scanning.** Clin Nucl Med. 2001;26(9):761-4. (Level III evidence)
 14. Goldman M, Ambrose NS, Drolc Z, et al. **Indium-111-labelled leucocytes in the diagnosis of abdominal abscess.** Br J Surg. 1987;74:184-6. (Level II evidence). [View the reference](#)
 15. VanSonnenberg E, Wittich GR, Goodcare BW, et al. **Percutaneous abscess drainage: update.** World J Surg. 2001;25:362-72. (Review article)
 16. ACR appropriateness criteria. **Percutaneous catheter drainage of infected intra-abdominal fluid collections.** American College of Radiology, Reston, 1996. (Guidance statement)
 17. Mithofer K, Mueller PK, Warshaw AI. **Interventional and surgical treatment of pancreatic abscess.** World J Surg. 1997;21:162. (Level III evidence)
 18. VanSonnenberg E, Wittich GR, Casola G, et al. **Percutaneous drainage of infected and non infected pancreatic pseudocysts: experience in 101 cases.** Radiology. 1989;170:757-61. (Level III evidence)
 19. VanSonnenberg E, Wittich GR, Chon KS, et al. **Percutaneous radiologic drainage of pancreatic abscesses.** AJR Am J Roentgenol. 1997;168:979-84. (Level III evidence)

Information for Consumers

Information from this website	Information from the Royal Australian and New Zealand College of Radiologists' website
<p>Consent to Procedure or Treatment</p> <p>Radiation Risks of X-rays and Scans</p> <p>Computed Tomography (CT)</p> <p>Ultrasound</p>	<p>Computed Tomography (CT)</p> <p>Contrast Medium (Gadolinium versus Iodine)</p> <p>Gadolinium Contrast Medium</p>

[Iodine-Containing Contrast Medium](#)

[Plain Radiography/X-rays](#)

[Radiation Risk of Medical Imaging During Pregnancy](#)

[Radiation Risk of Medical Imaging for Adults and Children](#)

[Ultrasound](#)

[Nuclear Medicine](#)

Copyright

© Copyright 2015, Department of Health Western Australia. All Rights Reserved. This web site and its content has been prepared by The Department of Health, Western Australia. The information contained on this web site is protected by copyright.

Legal Notice

Please remember that this leaflet is intended as general information only. It is not definitive and The Department of Health, Western Australia can not accept any legal liability arising from its use. The information is kept as up to date and accurate as possible, but please be warned that it is always subject to change

File Formats

Some documents for download on this website are in a Portable Document Format (PDF). To read these files you might need to download Adobe Acrobat Reader.



[Legal Matters](#)