STANDARD TREATMENT WORKFLOW (STW)

IMAGE GUIDED DRAINAGE OF INTRA ABDOMINAL ABSCESS

Sanjiv Sharma[1], Amar Mukund[2], Pushpinder Singh Khera[3], Rengarajan Rajagopal[4], Pankaj Banode[5], N Shyam Kumar[6], Sanjeev Kumar[7], Manish Shaw[8], Pradeep Hatimota[9], Niraj Pandey[10]

[1]All India Institute of Medical Sciences Delhi; [2]Institute of Liver and Biliary Sciences, New Delhi; [3]All India Institute of Medical Sciences Jodhpur; [4]All India Institute of Medical Sciences Jodhpur; [5]Jawaharlal Nehru Medical College Wardha, Maharashtra; [6]Christian Medical College Vellore Tamil Nadu; [7]All India Institute of Medical Sciences Delhi; [8]NIMS University, Jaipur, Rajasthan; [9]Apollo Hospital, Guwahati, Assam; [10]All India Institute of Medical Sciences Delhi

CORRESPONDING AUTHOR
Sanjiv Sharma, All India Institute of Medical Sciences Delhi
Email: meetisv@yahoo.com

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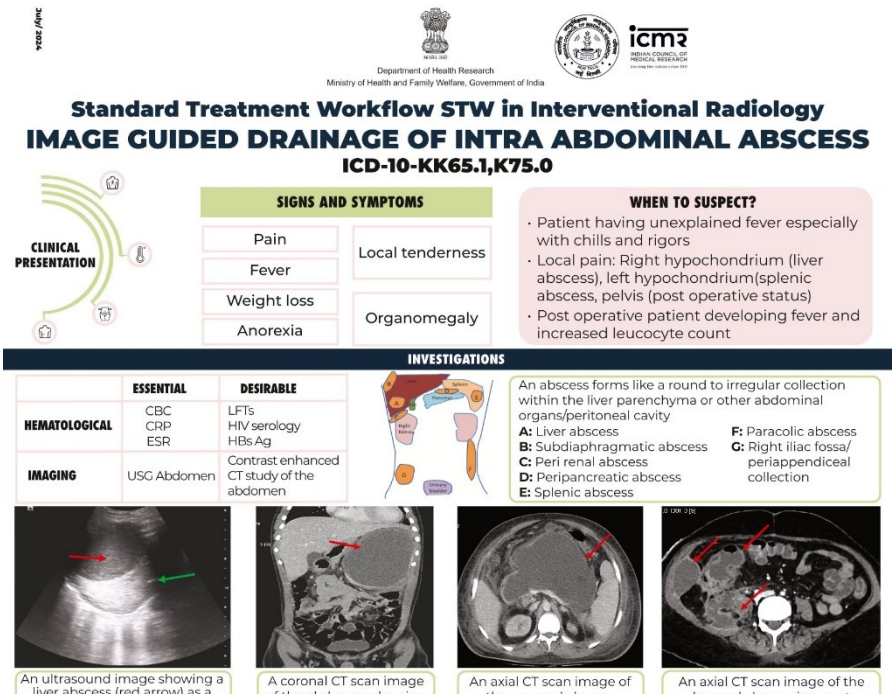

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Standard Treatment Workflow STW in Interventional Radiology

IMAGE GUIDED DRAINAGE OF INTRA ABDOMINAL ABSCESS

ICD-10-KK65.1,K75.0

CLINICAL PRESENTATION

SIGNS AND SYMPTOMS

- Pain
- Fever
- Weight loss
- Anorexia
- Local tenderness
- Organomegaly

WHEN TO SUSPECT?

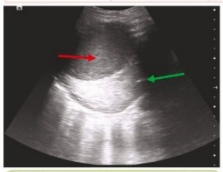
- Patient having unexplained fever especially with chills and rigors
- Local pain: Right hypochondrium (liver abscess), left hypochondrium(splenic abscess, pelvis (post operative status)
- Post operative patient developing fever and increased leucocyte count

INVESTIGATIONS

	ESSENTIAL	DESIRABLE
HEMATOLOGICAL	CBC CRP ESR	LFTs HIV serology HBs Ag
IMAGING	USG Abdomen	Contrast enhanced CT study of the abdomen

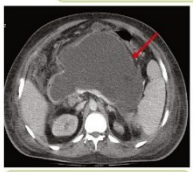
An abscess forms like a round to irregular collection within the liver parenchyma or other abdominal organs/peritoneal cavity

A: Liver abscess
B: Subdiaphragmatic abscess
C: Peri renal abscess
D: Peripancreatic abscess
E: Splenic abscess
F: Paracolic abscess
G: Right iliac fossa/ periappendiceal collection



An ultrasound image showing a liver abscess (red arrow) as a well-defined round area appearing less bright than the surrounding liver (green arrow)

A coronal CT scan image of the abdomen showing a large intrasplenic abscess (arrow)



An axial CT scan image of the upper abdomen showing a peripancreatic collection (arrow)

An axial CT scan image of the lower abdomen in a post cholecystectomy patient showing multiple collections (arrows)

MANAGEMENT

Treatment of an abscess depends on its:

- Location
- Size
- Degree of clinical symptoms (patient with septicaemia (tachycardia, hypotension) should be treated aggressively whereas a stable patient can be discharged on oral medical treatment)

- **Medical management**
  - Send the aspirate for microbiological analysis but don't defer treatment for the result of the same
- **Drug dosages:**
  - Inj Metronidazole 500mg IV 6-8 hourly plus inj Ceftriaxone 2gm IV OD for 10-14 days (for liver and splenic abscess)
  - For pancreatic and pelvic/lower abdominal abscesses:
    - Meropenem 1-2gm IV 8 hourly plus Levofloxacin 500-750mg IV daily and Ofloxacin 200 mg for 5-7 days
    - Cefoperazone 1000-2000 mg plus Sulbactam 500-1000 mg (as a combination) IV BD for 5-7 days
- **Surgical management:**
  - To be done in cases of ruptured/impending rupture into the pericardium, peritoneal cavity and pleural cavity
- **Options include:**
  - Laparotomy
  - Chest tube placement/Video-assisted thoracoscopic surgery (VATS)

LIVER ABSCESS

- Right upper quadrant pain
- May present with pleuritic right sided chest pain
- Tender hepatomegaly on examination

RED FLAG SIGNS

- Left lobe abscess
- Segment VIII abscess: can rupture into pleura
- Superficially located abscess
- Abscess volume>100 ml

SPLENIC ABSCESS

- Left upper quadrant pain
- Tender Splenomegaly on examination

PERIPANCREATIC ABSCESS

- Upper abdominal pain
- Patient usually has underlying acute/acute exacerbation of chronic pancreatitis

RED FLAG SIGN
May deteriorate rapidly if splenic vein thrombosis occurs

PELVIC ABSCESS

- Deep seated pelvic abscess
- Common in post operative patients after bowel/ gynaecological surgeries
- Tender lower abdomen/ signs of peritonitis on examination

IMAGE GUIDED DRAINAGE

Consider image guided drainage if the patient has the following despite medical treatment:

- Persistent leucocytosis
- Signs of septicaemia: tachycardia, hypotension
- Impending signs of abscess rupture on imaging

Involves Ultrasound/CT guided placement of catheter in the abscess cavity

INDICATIONS

- Patient developing tachycardia and hypotension
- Persistent leucocytosis
- Impending signs of rupture of abscess into adjacent cavity(pleural/peritoneal/pericardial)

CONTRAINDICATIONS

- Uncorrectable coagulopathy
- Vital structures in the approach path (large vessel, bowel)

- **Days of required hospitalisation:** 2-5 days
- **Expected outcome:**
  - Relief in pain and tenderness within 6-8 hrs
  - Resolution of fever within 24 hours
- **Associated adverse events that may occur:**
  - Vasovagal syncope (manifested as sweating, hypotension, bradycardia and loss of consciousness)

An ultrasound image showing a drainage catheter (arrow) placed within a liver abscess

How to prevent vasovagal syncope: Ensure the following

- Reassure the patient about the procedure
- Place a large bore(18G/20G) IV cannula in the arm before the procedure
- Keep normal saline infusion bag ready
- Atropine IV to be available for use

How to treat vasovagal syncope

- Raise the legs of the patient to prevent peripheral venous pooling
- Inject Atropine 0.6 mg IV if the heart rate is < 60/min (usually responds to this otherwise the same dose can be repeated after 5 min)

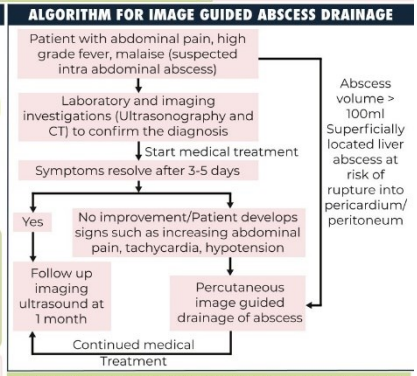
COMPLICATIONS

- Injury to vessels in vicinity of the abscess
- Injury to the pleura in case of liver and splenic abscesses

WHEN TO TAKE OUT THE CATHETER:

- When the output is < 10 ml/24 hours

ALGORITHM FOR IMAGE GUIDED ABSCESS DRAINAGE



- Immediate step to be taken if warning signs (as shown in red flag) occur: Clamp the drainage catheter (Do not take it out), fast fluid infusion to be started
- Steps to be taken once complication is recognised:
  - Appropriate imaging to look for source of bleeding (CT angiography followed by DSA if necessary)
  - CT thorax if pleural breach is suspected

POST PROCEDURE WARNING SIGNS SIGNIFYING COMPLICATIONS

- Frank blood in the drainage tube (haemorrhage)
- Drop in BP with tachycardia (haemorrhage)
- Patient developing breathlessness/desaturation (pneumothorax)

AFTER CARE IN CASE OF UNCOMPLICATED CASES
Continue with standard medical treatment as mentioned above
Investigation: Ultrasound on day 1 and day 3 post drainage

PATIENT SUITABLE FOR DISCHARGE
Afebrile patient with resolved leucocytosis

FOLLOW UP
Repeat ultrasound at 1 month to look for residual abscess

ABBREVIATIONS

CBC: Complete Blood Count
CRP: C-reactive protein
CT: Computed Tomography
ESR: Erythrocyte Sedimentation Rate
HBs Ag: Hepatitis B surface Antigen
HIV: Human Immunodeficiency Virus
LFT: Liver Function Test
USG: Ultrasonography

REFERENCES

1. De Filippo M, Pugliai S, D'Amuri F, Gentili F, Paladini I, Carrafiello G, Maestroni U, Del Rio P, Ziglioli F, Pagnini F. CT-guided percutaneous drainage of abdominopelvic collections: a pictorial essay. Radiol Med. 2021 Dec;126(12):1561-1570. doi: 10.1007/s11547-021-01426-z. Epub 2021 Aug 20. PMID: 34410607; PMCID: PMC8592646.
2. Robert B, Yzet T, Regimbeau JM. Radiologic drainage of post-operative collections and abscesses. J Visc Surg. 2013 Jun;150(3 Suppl):S11-8. doi: 10.1016/j.jviscsurg.2013.05.005. Epub 2013 Jun 20. PMID: 23790718.
3. Jaffe TA, Nelson RC. Image guided percutaneous drainage: a review. Abdom Radiol (NY). 2016 Apr;41(4):629-36. doi: 10.1007/s00261-016-0649-3. PMID: 26826910.
4. Zhao N, Li Q, Cui J, Yang Z, Peng T. CT-guided special approaches of drainage for intraabdominal and pelvic abscesses: One single center's experience and review of literature. Medicine (Baltimore). 2018 Oct;97(42):e12906. doi: 10.1097/MD.0000000000012505. PMID: 30335030; PMCID: PMC6211865.
5. Lorenz JM, Al-Refaie WB, Cash BD, Galea RC, Gervais DA, Gipson MG, Kolbeck KJ, Kouri BE, Marshalleck FE, Nair AV, Ray CE Jr, Rohenwalter EJ. ACR appropriateness criteria radiologic management of infected fluid collections. J Am Coll Radiol. 2015 Aug;12(8):791-9. doi: 10.1016/j.jacr.2015.04.025. Epub 2015 Jul 2. PMID: 26145248.

DRAIN THE ABSCESS BEFORE IT DRAINS A LIFE