



Waves

**WAVES: THE OFFICIAL PERIODICAL OF
CALCUTTA ACADEMY OF RADIOLOGY
VOLUME IV, ISSUE III, AUGUST 2023**

INSIDE THIS ISSUE

Dr. Bhavin Jankharia's cases	2-4
Percutaneous tumour ablation Dr. Rajesh Botchu et al	5-7
Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Co-	8-12
Retrocaval Ureter—A case report	13-16
Hyperlinks of CAR YouTube publications	17-18
Last Page	19

Editorial: Pressing Issues In Radiodiagnosis

Dear friends, colleagues, juniors & seniors; we are happy to publish 20th. Edition of CAR periodical.

Radiodiagnosis also faces some pressing issues that need to be addressed urgently. Such as:

- The shortage of qualified and trained radiologists, especially in low- and middle-income countries, where the demand for radiodiagnosis services is increasing rapidly. This leads to long waiting times, poor quality of reports, and increased workload and stress for the existing radiologists.
- The lack of standardization and quality assurance in radiodiagnosis, which results in variability and inconsistency in the interpretation and reporting of images. This can affect the accuracy and reliability of diagnosis, as well as the communication and collaboration among different health care providers.
- The ethical and legal challenges in radiodiagnosis, such as the protection of patient privacy and confidentiality, the informed consent and disclosure of results, the ownership and sharing of data, and the liability and accountability of radiologists. These challenges are amplified by the emergence of new technologies, such as artificial intelligence and telemedicine, that pose new opportunities and risks for radiodiagnosis.
- The environmental and health impacts of radiodiagnosis, such as the exposure to ionizing radiation, the generation of medical waste, and the consumption of energy and resources. These impacts have significant implications for the safety and sustainability of radiodiagnosis, as well as for the global health and climate change.

These pressing issues in radiodiagnosis require urgent attention and action from various stakeholders, such as policy makers, regulators, educators, researchers, practitioners, patients, and society at large. They also call for a multidisciplinary and collaborative approach that integrates scientific evidence, ethical principles, social values, and technological innovations. By addressing these issues effectively, radiodiagnosis can fulfill its potential as a powerful tool for improving health outcomes and quality of life for millions of people around the world.

This issue would not have been possible without the help of Dr. Bhavin Jankharia and Dr. Rajesh Botchu. We are indebted to them.



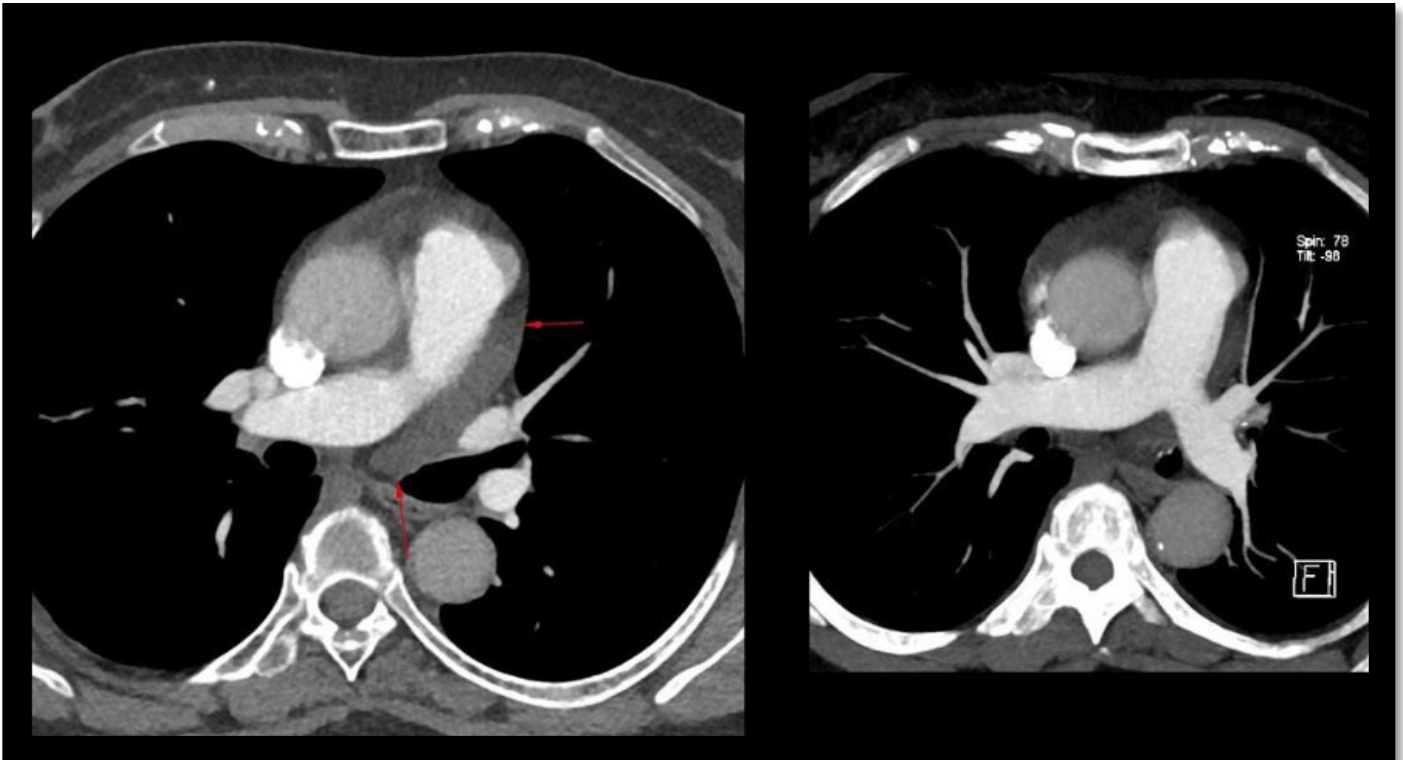
Dr. Bhavin Jankharia,
MBBS, DMRD, MD
Consultant Radiologist.

E mail: bhavin@jankharia.com
www.picture-this.in
www.refindia.net
Insta: bjankharia
Twitter: @bhavinj

Dr. Bhavin Jankharia needs no introduction to the Radiology fraternity. As you all know he is a renowned Radiologist and academician and has contributed immensely in propagating Radiology education. Presently, he is a Consultant Radiologist at Picture This by Jankharia. He is also a Trustee of Radiology Education Foundation. He has consented to share some of his work with us, which will help all the Residents as well as practicing Radiologists. Here is some information about him in brief.

- He has written 5 books, 35 chapters, 57 articles (PubMed listed)
- Presented 32 posters
- More than 1500 invited lectures over 27 years
- Editor-in-Chief, Indian Journal of Radiology & Imaging (2007-2012)
- Latest Book (2019): Computed Tomography of Interstitial Lung Diseases
- Hon. Visiting Consultant – Radiology – Tata Medical Centre, Kolkata

Case I : Pericardial Recess Fluid Simulating a Mass on Echo



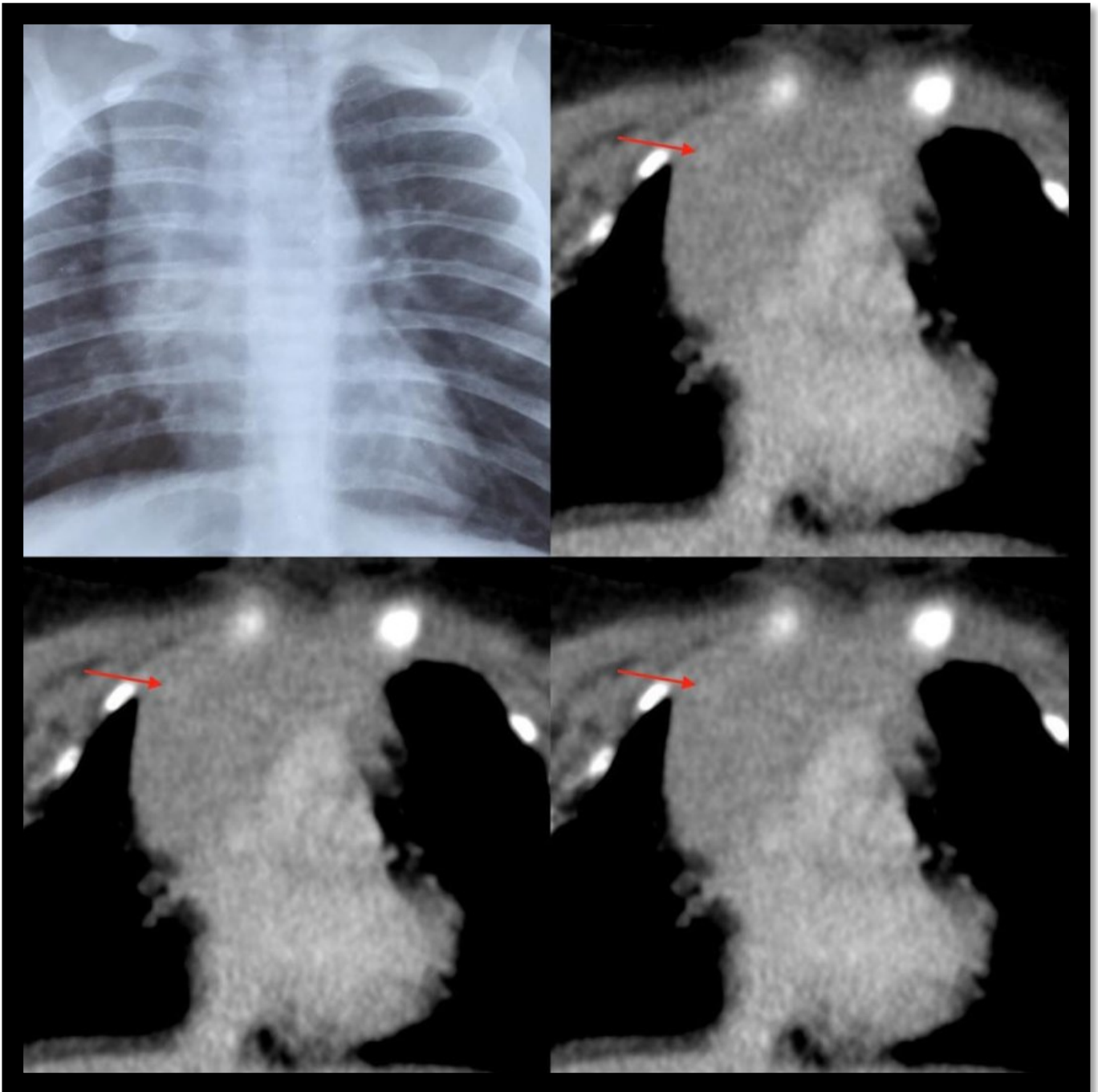
This lady underwent a routine pre-op echo and was reported to have a mass at the pulmonary artery bifurcation.

A CT pulmonary angiogram (CTPA) was performed. It shows normal pulmonary arteries.

The "mass" on echo is actually an ovoid fluid pocket in the left pulmonary recess (arrow) of the transverse sinus.

Pericardial recess fluid can simulate nodes, masses and other similar conditions and if we are not aware can lead to diagnostic errors on echo and CT scan.

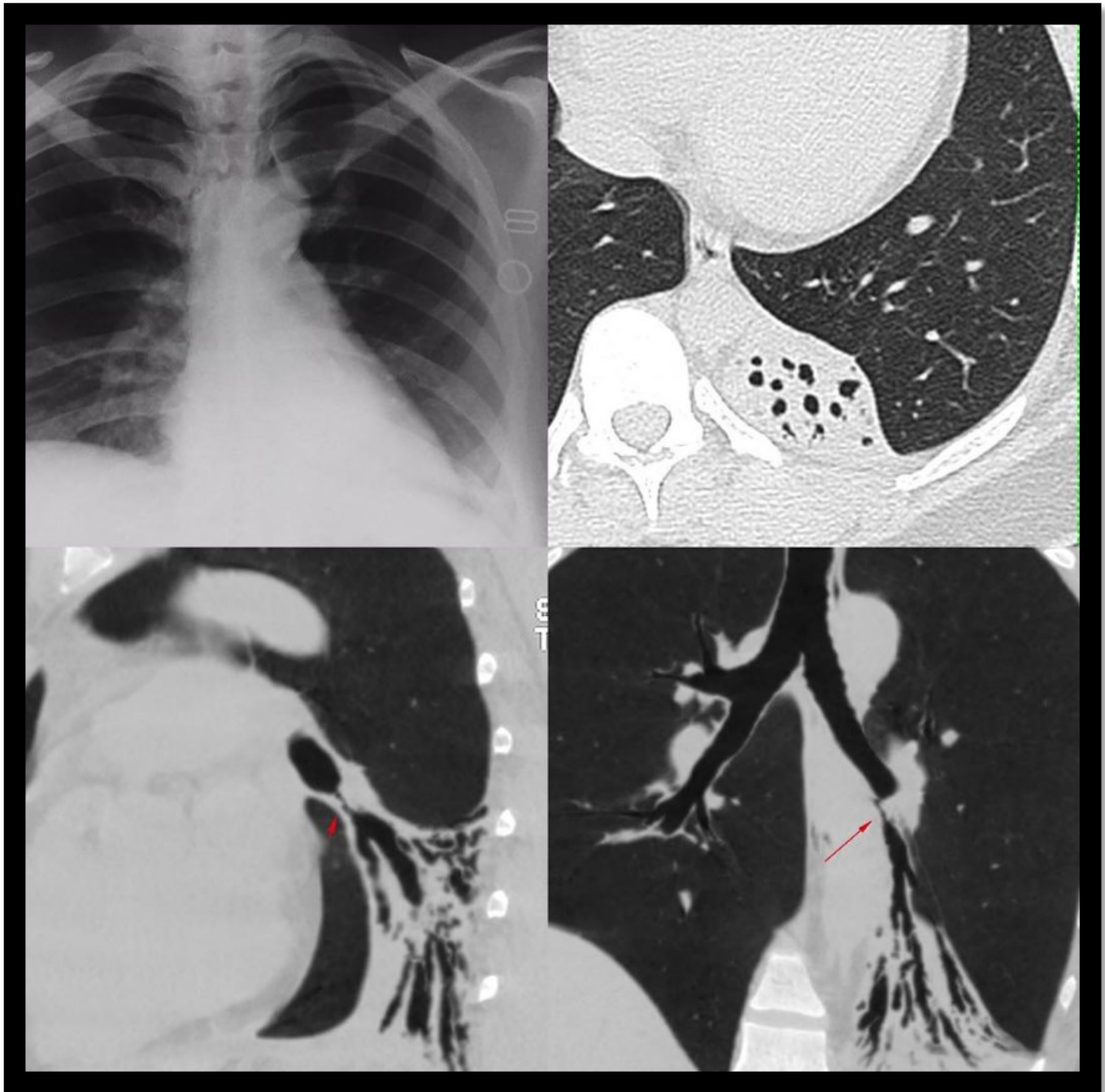
Case II - What Does One Biopsy - Bone or Lung ?



As people lose the ability to interpret chest radiographs, even routine situations like a prominent thymus now requires a CT scan for confirmation.

A few years ago, this radiograph would not have invited comment. Now, no one wants to commit that this is just a prominent thymus and a CT scan was done to confirm.

Case III:



Long-Standing Collapse and the Proximal Bronchus on Minimum IP (minIP)

This lady has a long-standing left lower lobe collapse. The CT scan even shows air bronchograms.

She had a bronchoscopy that showed left lower lobe narrowing. We then did this CT scan to demonstrate the narrowing. The minimum IP (minIP) images show a short-segment, high grade stenosis with the collapsed left lower lobe as if hanging from



Corresponding author
Dr Rajesh Botchu
Department of Musculoskeletal Radiology,
The Royal Orthopedic Hospital
Bristol Road South
Northfield, Birmingham, UK
Ph-00441216854000

Percutaneous tumour ablation

1Faymarie Wilson, 2 Christine Azzopardi, 2 Rajesh Botchu,
1John Henry Newman Catholic College, Chelmsley Wood, Birmingham, UK
2 Department of Musculoskeletal Radiology, Royal Orthopedic Hospital, Birmingham, UK

Introduction:

Percutaneous tumour ablation is being utilised more and more in the treatment of both benign and malignant primary and secondary tumours, due to these image-guided interventions being minimally invasive, thus reducing morbidity. The research and practice of tumour ablations continues to advance as these beneficial procedures are well-established and effective in targeting lesions, aiding in the management of tumours.

Radiofrequency ablation:

Radiofrequency ablation (or RFA) is a form of thermal ablation, using extreme temperatures to produce tissue damage within the tumour. As complications during RFA are infrequent, it is one of the most used ablations in the treatment or palliation of tumours, aside from cryotherapy. Used percutaneously since the 1990s, in an RFA procedure the tumour tissue is introduced to extreme temperatures with high electromagnetic frequency current via electrodes. The diffusion of heat throughout the tumour results in the permanent death of tumour cells due to coagulation necrosis of the cellular proteins. RFA is most commonly used in the treatment of osteoid osteomas. This involves percutaneous biopsy followed by a RF cycle at 90 degrees for 1min with success rates over 96-99%. Complications are infrequent but include skin/tract burns.

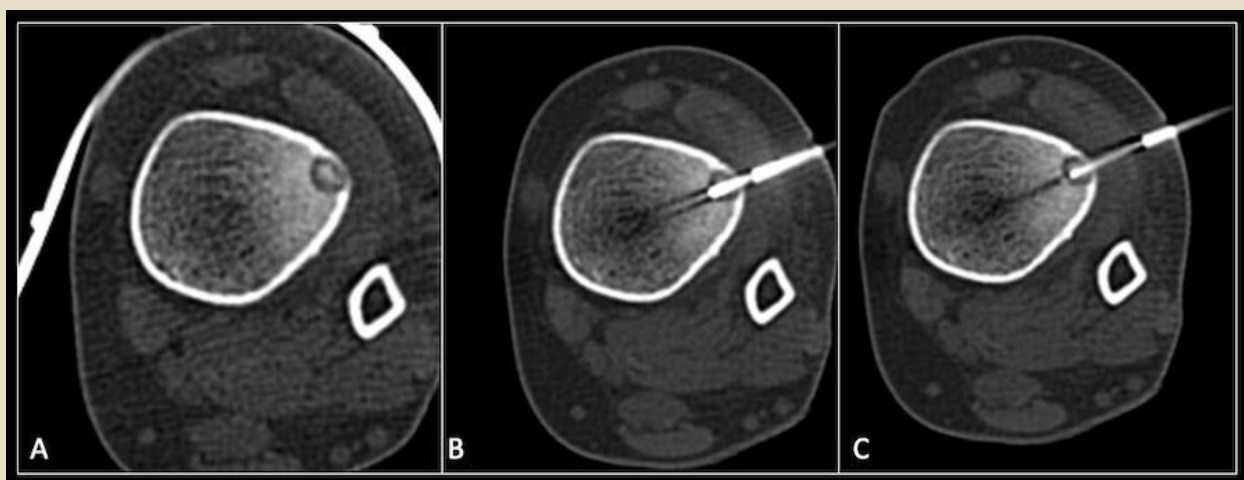


Fig 1: A: Planning scan with grid over presumed osteoid osteoma, B,C: Axial Ct images showing biopsy needle and RF needle in osteoid osteoma.

Sclerotherapy:

Sclerotherapy is used for lesions such as aneurysmal bone cysts (ABC) and is an alternative to open curettage for these lesions. A bone biopsy needle is introduced to the lesion under image-guidance to aspirate and decompress the cyst. A sclerosing agent will subsequently be injected into the cavity. Various sclerosing agents include alcohol, polidocanol, sodium tetradecyl sulphate, doxycycline and human albumin foam mixture. In our centre we use a mixture of 200mg doxycycline and 5ml of 20% human albumin. Percutaneous sclerotherapy has now evolved as a first line management with low recurrence rate (5%-6% in 18-24 months) and lower post-procedure morbidity and complication rate than en block resection or surgical curettage with quoted recurrence rate of 10-30%.



Fig 2: A: Axial PD image of the ankle demonstrates an ABC of talus with fluid- fluid levels. B: Axial CT biopsy image followed by sclerotherapy. C: Axial PD image post sclerotherapy demonstrates reduction in the fluid-fluid levels and moderate consolidation.



Fig 3: Mixing of the sclerosants during the sclerotherapy procedure

Percutaneous tumour ablation

1Faymarie Wilson, 2 Christine Azzopardi, 2 Rajesh Botchu,

1John Henry Newman Catholic College, Chelmsley Wood, Birmingham, UK

2 Department of Musculoskeletal Radiology, Royal Orthopedic Hospital, Birmingham, UK

Cryotherapy:

Cryotherapy is another form of thermal ablation in which percutaneous cryoprobes which are placed into pathological tissues using imaging guidance and forming an “ice-ball” which expands to cover the abnormal tissue. The ice-ball is created using Joule-Thompson effect using rapidly expanding argon gas. The temperature within the ice-ball drops to as low as -40 degrees in the centre of the lesion. Cryotherapy results in both direct cell death and apoptosis of tissues and in musculoskeletal tumour ablation is now an established treatment for desmoid fibromatosis. Other indications for cryotherapy include solitary metastases and benign lesions such as ABC. Complications include skin necrosis and injury to adjacent neurovascular bundles. Careful planning and techniques such as hydro or pneumodissection can help avoid these complications.

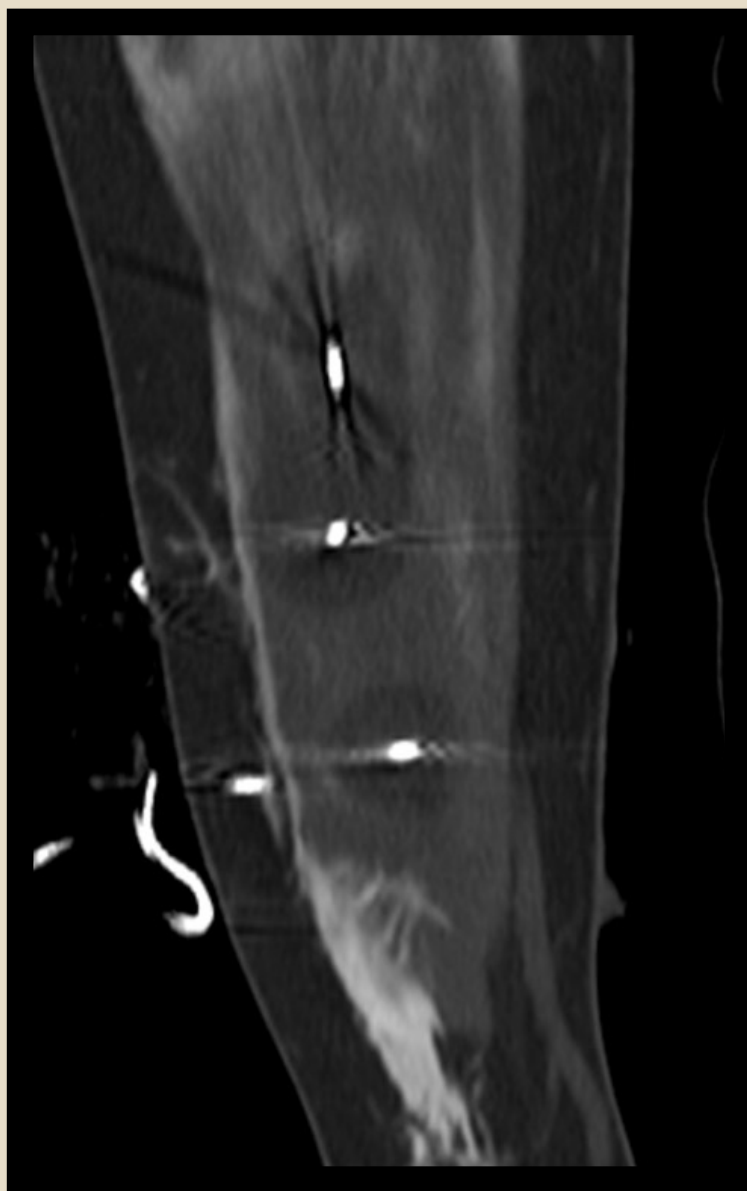


Fig 4: Intra-procedural CT demonstrating cryotherapy probes in desmoid fibromatosis with surround ‘ice ball’ formation

References:

References:

1. Rajakulasingam R, Botchu R. Current progress and future trends in imaging of musculoskeletal bone tumours. *J Clin Orthop Trauma*. 2021 Oct 7;23:101622.
2. Al-Assam H, Botchu R, Azzopardi C, Stevenson JD, James SL, Patel A. Measurement Analysis of Ice Ball Size during CT-Guided Cryoablation Procedures for Better Prediction of Final Ice Ball Size and Avoidance of Complications. *Indian J Radiol Imaging*. 2023 Mar 20;33(3):321-326.
3. Adlan A, Alaqeel M, Evans S, Sumathi V, Davies AM, Botchu R. Does the histological presence of a nidus correlate with improved outcomes in osteoid osteoma treated with percutaneous radiofrequency ablation (RFA)? *J Clin Orthop Trauma*. 2023 Jan 14;37:102108. doi: 10.1016/j.jcot.2023.102108.

Percutaneous tumour ablation

1Faymarie Wilson, 2 Christine Azzopardi, 2 Rajesh Botchu,

1John Henry Newman Catholic College, Chelmsley Wood, Birmingham, UK

2 Department of Musculoskeletal Radiology, Royal Orthopedic Hospital, Birmingham, UK

Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Colitis - a case report.

Keywords: Persistent descending mesocolon, ulcerative colitis

Authors: Dr. Amit Singh¹, Dr. Nitin Vasisth², Dr. Lalit Bhandari³, Dr. Farheena Sk.⁴,
Dr. Viral Parekh⁵.

1-4: 2nd. year post graduate DMRD residents, Woodlands Multispecialty Hospital Kolkata, India.

5: Senior Consultant Radiologist & Faculty: Woodlands Multispecialty Hospital Kolkata, India.

Abstract:

This is a case of an uncommon and seldom reported large bowel anatomical variant i.e., persistent descending mesocolon presenting in a 27-year-old male patient with complaints of chronic pain in abdomen. Patient presented to primary physician with complaints of cramps and abdominal pain for the past 15 years, later referred to radiology department in view of no significant clinical findings for primary contrast CT abdomen. The scan revealed medially displaced descending colon and sigmoid colon almost approaching the ileo-caecal junction along with thickened, enhancing colonic wall and loss of haustrations in descending colon, with similar findings in retrospectively performed Barium enema, which were suggestive of inflammatory bowel disease. Persistent descending mesocolon, though said to be and commonly reported entity in European population is seldom seen and reported in Asian population. PDM in itself is a rare finding, and this might be the first case presenting with ulcerative colitis.

PDM is an anatomical variant caused due to failure of mesenteric fusion with posterior and lateral peritoneum which happens by the 5th month of intrauterine life. PDM usually is asymptomatic, however it may complicate the condition of a patient as it has increased chance of volvulus, increased surgical duration, colonic intussusception, internal hernia and in some case primary bowel obstruction.

Introduction:

The entire length of colon has a mesocolon that continues with small bowel mesentery proximally and mesorectum distally. It is fat embedded and contains nerves and vessels. Toldt's fascia, a loose connective tissue, lies posterior to mesocolon adherent to retroperitoneum of posterior abdominal wall. PDM is an anomaly occurring due to non-adherence of mesocolon to posterior and lateral peritoneal wall.

Though radiologically diagnosed ulcerative colitis may not be an uncommon phenomenon but ulcerative colitis presenting in a case of persistent descending mesocolon with variant anatomical configuration is a rare one. The entity can be easily diagnosed based on the anatomical position of descending colon and the characteristic image on a double contrast enema. Also, there is no available literature stating the association between PDM and inflammatory bowel disease or any case report presenting the same.

Narrative:

This is a case of 27-year-old male patient, presenting with complaints of chronic, diffuse crampy abdominal pain, with occasional blood in stool, dyschezia, tenesmus and occasionally constipation to gastroenterologist, and post clinical assessment was referred to radiology department for diagnostic imaging due to lack of any conclusive clinical signs. He had not

Plain and IV CECT abdomen was done with MIP and MPR revealing medially displaced descending colon from left paracolic gutter with sigmoid colon displaced towards right iliac fossa. Also, most of the bowel loops are noted in the right hypochondriac and lumbar regions. The descending colon also showed some internal wall thickening with contrast enhancement and loss of haustrations.

Retrospectively, a double contrast enema was done, which revealed loss of haustral sacculations in sigmoid colon and lower descending colon with multiple fine ulcers and pseudopolyps. The descending colon was displaced centrally from the left paracolic gutter with sigmoid colon displaced towards right iliac fossa. Splenic flexure, transverse colon, ascending colon, and caecum appear normal with preserved haustral sacculataion and normal mucosal pattern without any filling defects. Terminal ileum, ileo-caecal junction and caecum appeared normal.

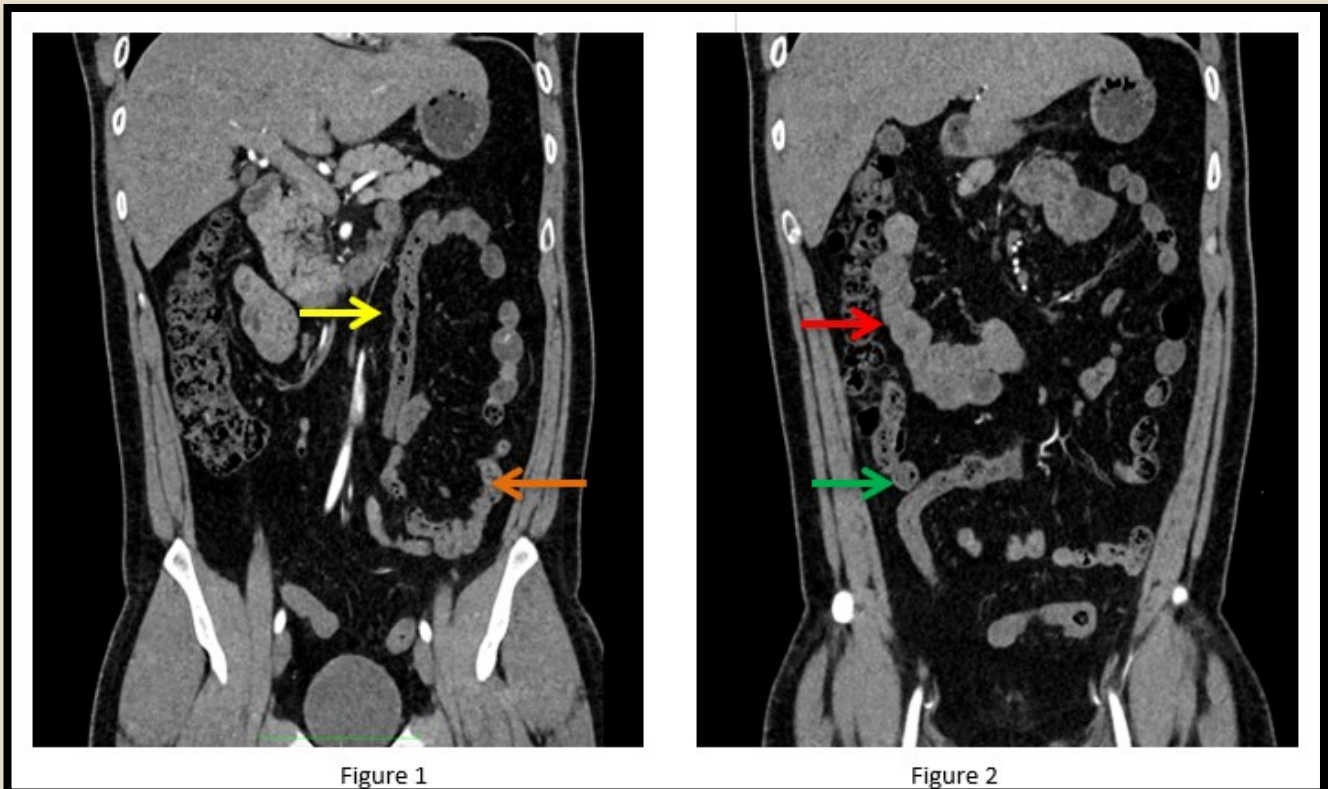


Figure 1: Medially displaced descending colon (yellow arrow), with small bowel in left paracolic gutter (orange arrow).

Figure 2: Most of jejunal loops displace to right (red arrow), Sigmoid colon in right with thickened and hyperemic wall (green arrow)

Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Colitis - a case report.

Authors: Dr. Amit Singh¹, Dr. Nitin Vasisth², Dr. Lalit Bhandari³, Dr. Farheena Sk.⁴,
Dr. Viral Parekh⁵.

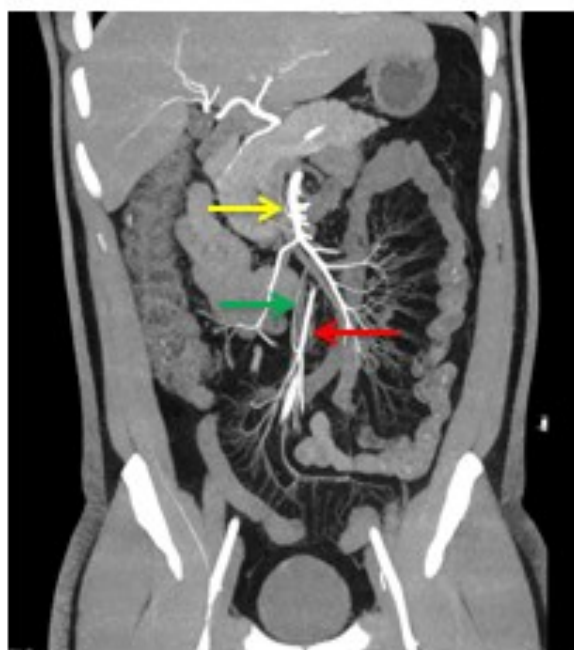


Figure 3

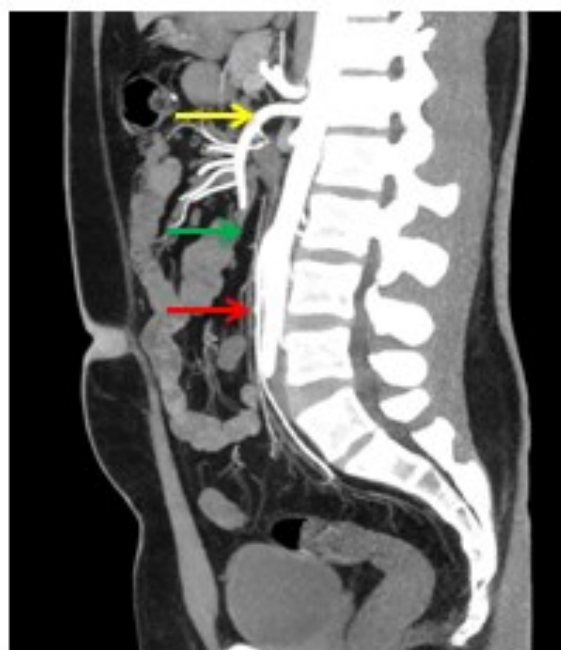


Figure 4



Figure 5



Figure 6

Figure 3 & 4: Arterial supply, showing radially originating arteries; SMA (yellow arrow), IMA (red arrow) and descending colon branch (green arrow).

Figure 5 & 6: Double contrast barium enema images showing medially displaced descending colon and sigmoid colon in right iliac fossa approaching the caecum, with loss of haustrations in descending colon and filling defects indicating colonic pseudo polyps and ulcers.

Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Colitis - a case report.

Authors: Dr. Amit Singh¹, Dr. Nitin Vasisth², Dr. Lalit Bhandari³, Dr. Farheena Sk.⁴,
Dr. Viral Parekh⁵.

Discussion:

Persistent descending mesocolon is a congenital anomaly characterized by failure of mesenteric fusion to the posterior and lateral peritoneal wall in intra uterine life. This causes the colon to be mobile and indirectly leading to variation in anatomical location. The grades of displacement depend upon the length of persisting mesentery. Embryologically post arterial segment returns in abdominal cavity by 10th week of intrauterine life and colon takes its normal configuration, formation of hepatic flexure and descent of cecum towards right lower quadrant and lateral displacement of splenic flexure and descending colon by jejunal loop in left. By the end of 4th to 5th month there is fusion of dorsal mesentery to the posterior abdominal wall, but selectively retained in transverse and sigmoid colon. The fusion differs in all individuals giving rise to a variety of configurations. The posterior part of ascending and descending colon remains bare while being covered by the peritoneum on other three sides. PDM is found in anthropoids i.e., man and apes, and more prevalent in ascending more than descending colon.

Literature describes PDM into three types based on degree of displacement, Type A has fixation defect in both ascending and descending colon with absence of transverse colon, type B moderate displacement medially and marked displacement with paracaecal fixation in type C. PDM is also categorized into long-S and short-S based on length of sigmoid colon and adhesion of descending colon. Short-S has straight sigmoid colon, long-S has adhesions of sigmoid and descending colon. In this case it is type C or long-S PDM.

PDM though asymptomatic, but can lead to primary obstruction, intussusception (a mobile mass, with anal protrusion and intussusception should raise suspicion for PDM), colonic and splenic volvulus, and increased prevalence of colorectal carcinoma, Colonic varices due to local hypertension caused by adhesions between loops of sigmoid colon and caecum and internal herniation of small bowel through the defects in mesocolon. However, detection rate is low as it is usually asymptomatic.

CT findings suggestive of PDM are medially present descending colon and shift of sigmoid colon to right with Sigmoid colon artery descending colon artery and superior rectal artery branching radially from IMA. Intraoperative no Toldt's fascia fusion and lack of adhesion between descending mesocolon and posterior abdominal wall. Typical contrast image on barium study with medial displacement and a large space in left paracolic gutter, where small bowel may be present.

Ulcerative colitis is an inflammatory bowel disease primarily affecting the large bowel in young adults. The symptomatic presentations and imaging features are closely related to Crohn's disease and need to be differentiated as it can be sometimes difficult to differentiate the two. Ulcerative colitis is diagnosed by various modalities, each showing specific findings. Abdominal X-ray can be helpful to diagnose any perforations in acute presentation, or toxic megacolon, features of acute inflammation like air fluid levels and loss of haustrations, irregular contour etc.

A double contrast Barium enema may show features of mucosal granularity, Featureless bowel- "lead pipe sign" in chronic case, "button-shaped" ulcer due to undermining of mucosa which in late case looks like pseudo polyps because most of the mucosa has been lost, the remanent mucosa may grow into thin worm like structures called filiform polyp.

Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Colitis - a case report.

Authors: Dr. Amit Singh¹, Dr. Nitin Vasisth², Dr. Lalit Bhandari³ Dr. Farheena Sk.⁴
Dr. Viral Parekh⁵.

show submucosal fat deposition- "Fat halo sign," more in rectum, there may also be an extramural fat deposition in rectal region causing loss of presacral space.

CT also has an increased advantage to visualize any perforations or abscess.

MRI may not be extensively used in diagnosis of UC, but literature suggests that DWI imaging may be helpful in diagnosing active colitis in relevant clinical scenarios and other imaging findings. MRI might help pick up loss of haustral markings and backwash ileitis.

Differentiating imaging features between Crohn's and UC, contrast study best differentiates the two as shown in table 1. a constellation of features makes unequivocal diagnosis possible. However, some features may overlap like continuous distal involvement and mucosal granularity, hence unequivocal diagnosis cannot be made on barium enema. In case if the diagnosis points more towards Crohn's, TB lymphoma must be ruled out. Ct helps determine wall thickness more increased in Crohn' mean thickness >13mm vs 8mm in UC and normal being 3mm. USG can differentiate individual bowel wall layer more reliably than CT or MRI which are more visible in UC than Crohn's. CT can pick up stratification seen more in UC but not specific.

Conclusion:

PDM is a rare and seldom diagnosed anatomical variant which itself being asymptomatic can lead to many complications for patients and becomes essential to be diagnosed. It seems that a case of PDM with concomitant Ulcerative colitis has not been reported so far, so this might be the first case.

References:

1. Popky, G. L., & Lapayowker, M. S. (1966). Persistent Descending Mesocolon. Radiology, 86(2), 327–331. doi:10.1148/86.2.327
2. Hamada K, Sumida Y, Ozeki K, Kiya S, Hashimoto S, Nishimuta M, Shibuya A, Kugiyama T, Wakata K, Araki M. Persistent Descending Mesocolon as An Intraoperative Risk Factor in Laparoscopic Surgery for Left-Sided Colon, and Rectal Cancer. Asian J Endosc Surg. 2022 Apr;15(2):306-312. doi: 10.1111/ases.13004. Epub 2021 Dec 19. PMID: 34927384.
3. Kato H, Kinoshita H, Sakata Y. Acute abdominal pain due to sigmoid volvulus with persistent descending mesocolon: a case report. J Med Case Rep. 2022 Oct 1;16(1):349. doi: 10.1186/s13256-022-03598-y. PMID: 36180925; PMCID: PMC9526257.
4. Matsuo T, Otsuka K, Kimura T, Yaegashi M, Takashimizu K, Hirata Y, Nakamura Y, Sasaki A. Laparoscopic colectomy for persistent descending mesocolon in sigmoid colon cancer: A case report. Int J Surg Case Rep. 2021 Jan; 78:307-309. doi: 10.1016/j.ijscr.2020.12.036. Epub 2020 Dec 17. PMID: 33383287; PMCID: PMC7779540.
5. Deepak P, Bruining DH. Radiographical evaluation of ulcerative colitis. Gastroenterol Rep (Oxf). 2014 Aug;2(3):169-77. doi: 10.1093/gastro/gou026. Epub 2014 May 19. PMID: 24843072; PMCID: PMC4124269.

Persistent descending mesocolon a Radiological diagnosis complicated by Ulcerative Colitis - a case report.

Authors: Dr. Amit Singh¹, Dr. Nitin Vasisth², Dr. Lalit Bhandari³, Dr. Farheena Sk.⁴,
Dr. Viral Parekh⁵.

CIRCUMCAVAL / RETROCAVAL URETER - A CASE REPORT

Authors: Dr. Suprotik Basu¹, Dr. Viral K. Parekh²

1: MBBS

Radiology resident, Ramakrishna Mission Seva Pratishthan, Kolkata.

2: MBBS, DMRD, DNB

Radiologist, Woodlands Multispeciality Hospital & Ramakrishna Mission Seva Pratishthan, Kolkata.

Abstract

Retrocaval ureter is a rare congenital anomaly and a rare cause of hydronephrosis. Its non-specific presentation is what makes it a challenge in making the correct diagnosis. Differentiation from other causes of urinary tract obstruction, such as urolithiasis, is important for successful management. Current practice of using multislice computed tomography (MSCT) rapidly replaces intravenous urography (IVU) in the assessment of patients with hydronephrosis. However, this entails radiation as well as exposure to iodinated contrast material. Magnetic Resonance Urography (MRU) as an imaging modality is free of radiation, no contrast needed and gives exquisite soft tissue resolution. We reported a case that illustrates this scenario and highlights the importance of MRU in the assessment of a complex congenital disorder involving the urinary tract.

Keywords

Retrocaval ureter, Ultrasonography, Magnetic resonance urography, Hydrouretero-nephrosis, Congenital anomaly, Flank pain

Introduction

Retrocaval ureter (RCU) is a rare congenital anomaly and a rare cause of hydronephrosis. Patients with this anomaly are mostly asymptomatic.[1] Depending on the degree of compression patients may develop partial right ureteral obstruction or recurrent urinary tract infections. This non-specific presentation is what makes it a challenge in making the correct diagnosis. Differentiation from other causes of urinary tract obstruction, such as urolithiasis, is important for successful management. Current practice of using multislice computed tomography (MSCT) rapidly replaces intravenous urography (IVU) in the assessment of patients with hydronephrosis.[2]

However, this entails exposure to radiation as well as to iodinated contrast material. Magnetic Resonance Urography (MRU) as an imaging modality is free of radiation and contrast usage along with exquisite soft tissue resolution. We want to illustrate this scenario and highlight the importance of MRU in the assessment of a complex congenital disorder involving the urinary tract.

Case Report

A 59-year-old male patient was admitted in the hospital with history of Jaundice. A routine Ultrasonography was performed which revealed Cholecystolithiasis but no features of obstructive jaundice. Patient was found to have Hepatitis A and improved slowly over time and was stable in the hospital.

Ultrasonography revealed moderate hydronephrosis of right kidney with dilated right upper ureter. Rest of the ureter could not be traced.

Cholecystolithiasis was also found on ultrasonography. His laboratory investigations revealed unconjugated hyperbilirubinemia. His Serum Glutamic Pyruvic Transaminase and SGOT were raised.

Though, patient used to have occasional mild dull aching pain in right lumbar region but had no other urinary complaints. A MR urography was performed to find out the cause of hydronephrosis, which revealed retrocaval ureter (Figure 1) (Figure 2). For retrocaval ureter, since patient was not having any major problems, no surgical intervention was done.

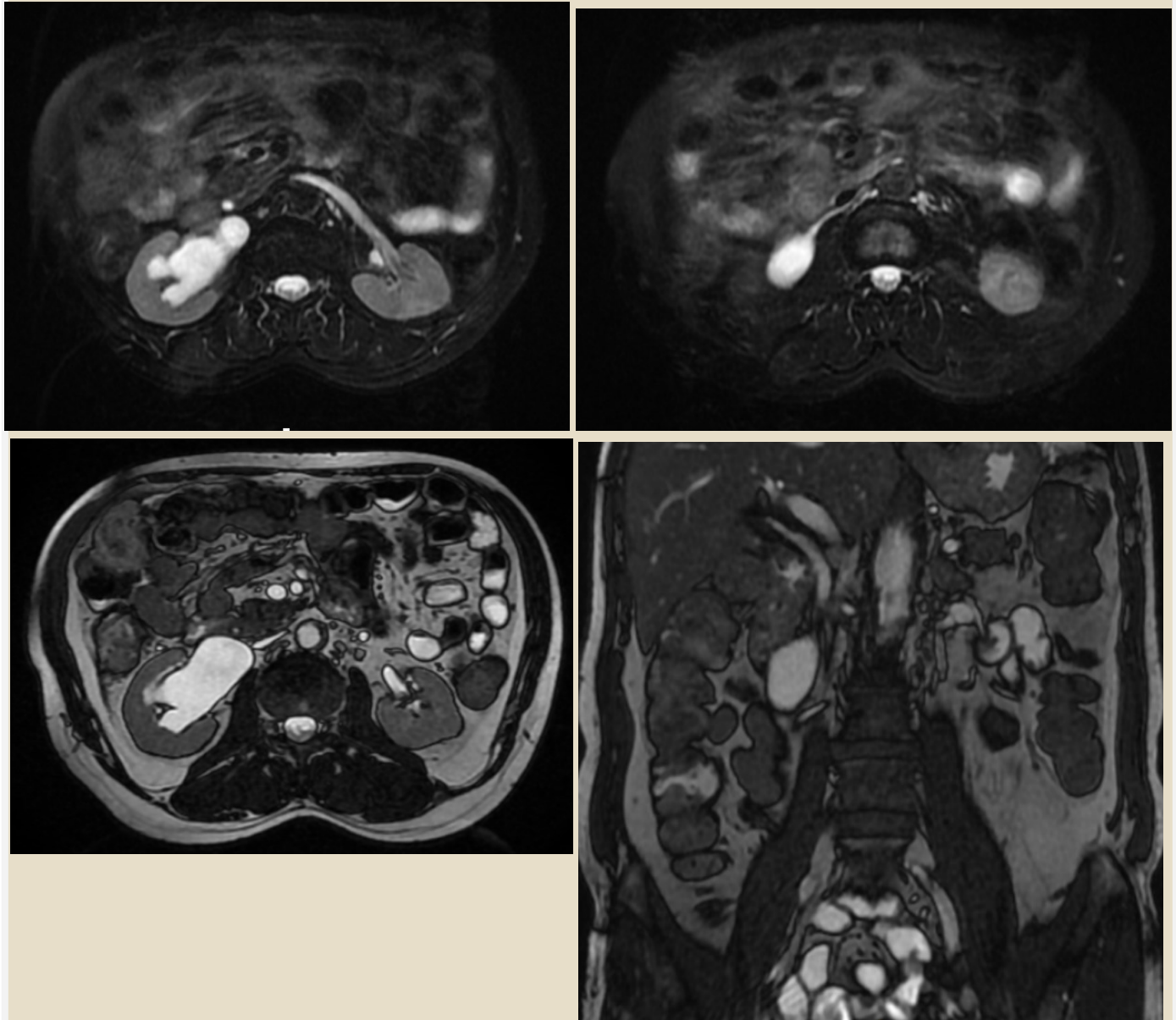


Figure 1: 59 year old man with hydronephrosis who presented with flank pain. (a) STIR axial MR shows dilated pelvicalyceal system. (b) STIR axial MR shows retrocaval course of right ureter with proximal dilatation. (c) T2 weighted axial MR shows narrow course of the right ureter posterior to the IVC. (d) T2 weighted coronal MR shows narrowed retrocaval ureteric segment.

Discussion

Except mild occasional dull aching pain in right lumbar region, this patient had no other complaints. If the ureteral obstruction is not prominent, the patient may be almost asymptomatic. Sometimes secondary to obstruction there might be calculus formation and sometimes there might haematuria also.[1] There are no specific pathognomonic signs or symptoms, and preoperative diagnosis depends on the demonstration of the abnormal course of the ureter. The anomaly always occurs on the right side, as this is the side of the normal Inferior vena cava (IVC).[3]

RCU is a rare congenital anomaly in which the ureter passes posterior to the IVC. A little over two hundred cases have been reported worldwide. This anomaly occurs between the 4th and 8th weeks of intrauterine development and is due to abnormal formation of infrarenal IVC from anteriorly located subcardinal vein instead of supracardinal vein which are located posteriorly. In normal circumstances, the infrarenal IVC originates from dorsally located supracardinal vein, but when it develops from ventrally located subcardinal vein, the ureter is trapped posteriorly leading to pre-ureteral vena cava.[4]

There are 2 types of retrocaval ureter.

Type 1 or the low loop variety: with the classical depiction of a fishhook-shaped or S-shaped deformity of the ureter.

Type 2 or the high loop variety: where the retrocaval segment is at the same level as the renal pelvis; the sickle-shape appearance of the involved ureter can be identified on imaging.

Type 2 causes mild hydronephrosis and is less common than type 1.

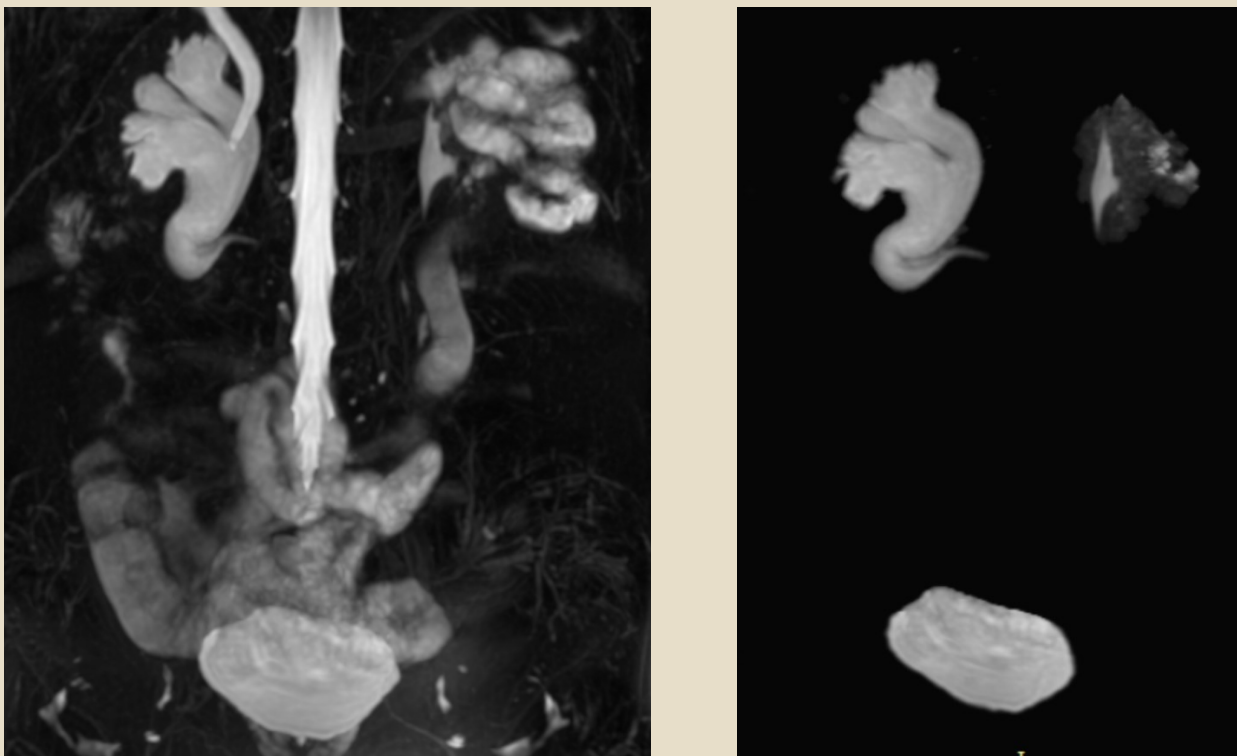


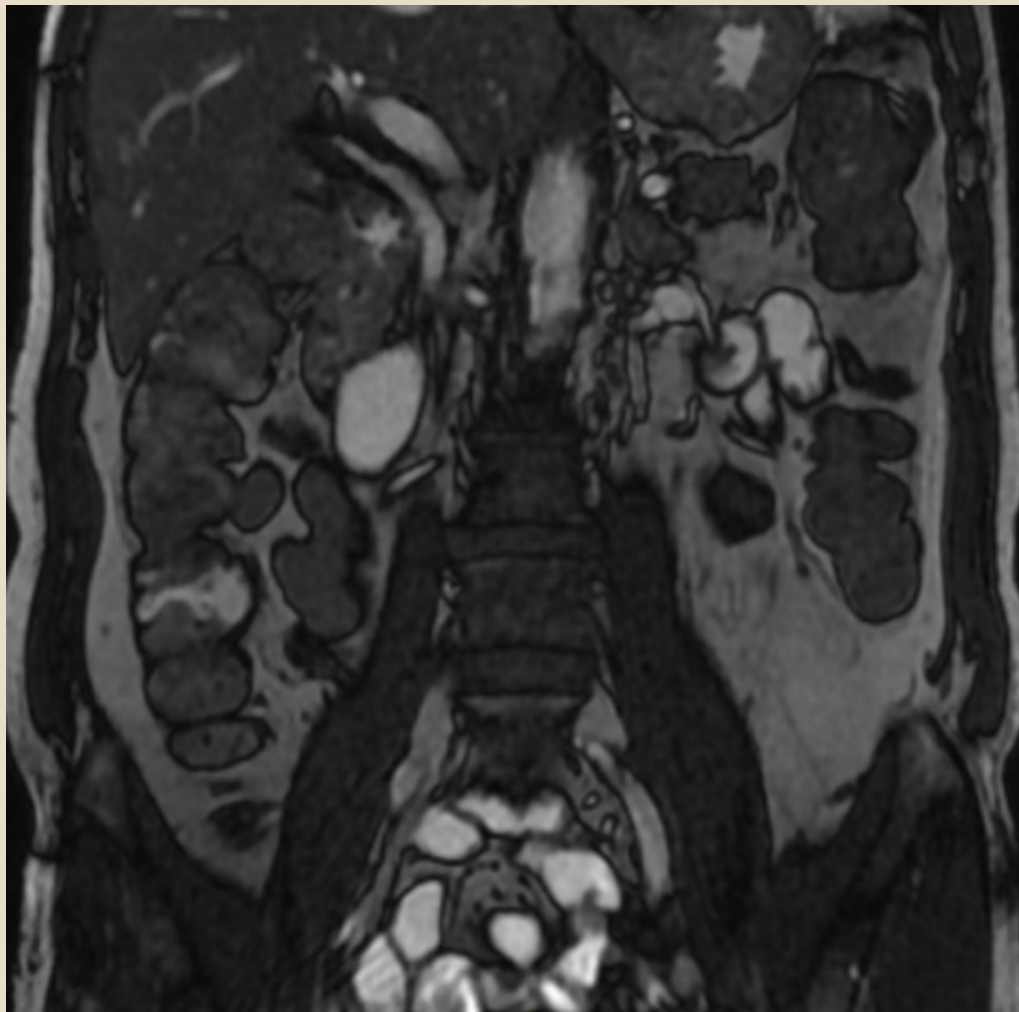
Figure 2: 59 year old man with hydronephrosis who presented with flank pain. **(a)** MR Urography coronal thick slab of abdomen shows the typical fish hook appearance of Type 1 retrocaval ureter. **(b)** MRU coronal thick slab with post processing removal of background signals showing the fish hook appearance of Type 1 retrocaval ureter

Conclusion

MRU can be used for the evaluation of renal parenchyma, the pelvicalyceal system, and the rest of the urinary tract in a single imaging study, like in MSCT, but without radiation exposure and IV contrast administration. It also has better contrast resolution thus making it more suitable for examination of paediatric and pregnant patients and patients with renal impairment. MRU is as effective as excretory urography, ultrasound, and nuclear medicine techniques for the investigation of congenital anomalies.[5]

References

1. Spectrum of Congenital Anomalies of the Inferior Vena Cava: Cross-sectional Imaging Findings J. Edward Bass, Michael D. Redwine, Larry A. Kramer, Phan T. Huynh, and John H. Harris, Jr Radiographic 2000 20:3, 639-652
2. Kemper J, Adam G, Nolte-Ernsting C. Moderne Diagnostik des oberen Harntraktes mittels Mehrschicht-CT-Urographie [Modern diagnostic assessment of the upper urinary tract using multislice CT urography]. Rofo. 2006 Nov;178(11):1086-94. German. doi: 10.1055/s-2006-926957. PMID: 17133669.
3. Chuang VP, Mena CE, Hoskins PA. Congenital anomalies of the inferior vena cava. Review of embryogenesis and presentation of a simplified classification. Br J Radiol. 1974 Apr;47(556):206-13. doi: 10.1259/0007-1285-47-556-206. PMID: 4824552.
4. Lesma A, Bocciardi A, Rigatti P. Circumcaval ureter: embryology. European Urology Supplements. 2006 Apr 1;5(5):444-8.



**Hyperlinks of academic material published on YouTube by
Calcutta Academy of Radiology**

- 1 **Imaging of acute Pancreatitis—Dr. Anirudh Kohli**
- 2 **USG of rotator cuff - Dr. P. K. Srivastava**
- 3 **PET CT Physics - Dr. Sikandar Sk.**
- 4 **PET CT in Neurology - Dr. Sikandar Sk.**
- 5 **CAR - Case of the week - Case 1 - Megalencephalic leukoencephalopathy with subcortical cysts. - Dr. Viral Parekh**
- 6 **CAR - Case of the week - Case 2 - Adenocarcinoma of terminal ileum - Dr. Viral Parekh**
- 7 **CAR - Case of the week - Case 3 - Stener lesion - Dr. Nivedita Chakraborty**
- 8 **CAR - Case of the week - Case 4 - Anterior shoulder dislocation - Dr. Nivedita Chakraborty**
- 9 **CAR - Case of the week - Case 5 - Secondary intracranial hypotension. - Dr. Viral Parekh**
- 10 **CAR - Case of the week - Case 6 - Intramyocardial Dissection - Dr. Ritu Agarwal**
- 11 **CAR - Case of the week - Case 7 - Radiation Necrosis and BT - RADS - Dr. Nivedita Chakraborty**
- 12 **CAR - Case of the week - Case 8 - Undisplaced right ulnar styloid base fracture - Dr. Nivedita Chakraborty**
- 13 **CAR - Case of the week - Case 9 - Hypoglycaemic encephalopathy. - Dr. Viral Parekh**
- 14 **CAR - Case of the week - Case 10 - Myocardial annular dysjunction - Dr. Ritu Agarwal**
- 15 **CAR - Tribute to Wilhelm Conrad Roentgen - Immortal Roentgen.**
- 16 **CAR - Case of the week - Case 11 - Dacryocystocele with anatomy of Nasolacrimal apparatus. - Dr. Viral Parekh**
- 17 **CAR - Case of the week - Case 12 - Tubercular osteomyelitis - Dr. Nivedita Chakraborty**
- 18 **CAR - Case of the week - Case 13 - Marchiafava Bignami disease - Dr. Viral Parekh**
- 19 **CAR - Case of the week - Case 14 - Parosteal Sarcoma - Dr. Nivedita Chakraborty**
- 20 **CAR - Case of the week—Case 15 - Adrenal haemangioma - Dr. Viral Parekh**

**Hyperlinks of academic material published on YouTube by
Calcutta Academy of Radiology**

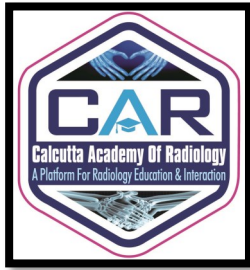
- 21 CAR - Case of the week - Case 16 Patellar GCT - Dr. Nivedita Chakrabarty
- 22 CAR - Case of the week - Case 17 - MEN Syndrome - Dr. Sayan Sarkar
- 23 CAR - Case of the week - Case 18 - Langerhans cell histiocytosis - Dr. Sayan Sarkar
- 24 CAR - Case of the week—Case 19 - Hepatic angiomyolipoma - Dr. Viral Parekh.
- 25 CAR— Case of the week - Case 20 - Cirroid aneurysm - Dr. Viral Parekh
- 26 CAR CME - Heart Anatomy
- 27 CAR— Case of the week - Case 21 - Pancreatic metastases - Dr. Viral Parekh
- 28 CAR - Case of the week - Case 22 - Intrapulmonary teratoma - Dr. M. Bhattacharya
- 29 CAR— Case of the week - Case 23 - Gall stone ileus - Dr. Viral Parekh

We have a new blog , where
we publish cases, quizzes and
various other education

We are on
WhatsApp and
Telegram

We are on YouTube
You can send your good
case to us. We will
publish it in our channel.





Calcutta Academy of Radiology

34B, Harish Mukherjee Road,
Kolkata 700025,
WB, INDIA

Phone:

98310 42543

98310 01650

98300 92244

Email:

calcuttaacademyofradiology@gmail.com

**A Platform For Radiology
Education & Interaction**

Calcutta Academy of Radiology was formed on international day of Radiology in 2019, that is on 8th. November, 2019 to promote Radiology education, keeping in mind Residents as well practicing Radiologists.

Since then we are on WhatsApp and Telegram, where thousands of cases have been discussed by members from all over the world and in the process we are sharing our experiences and helping each other. These social media platforms have turned out to be great learning tools.

We had organized a half day CME also on GI Radiology in February, 2020. Another CME on Neuroradiology was organized in July 2022, We have plans to organize more such CME programmes in future .

We are on YouTube also where we regularly post teaching videos and in the process try to propagate Radiology as much as possible.

Next issue will be published in October 2023

We will be bringing out such Newsletters with a frequency of one issue every two months. So, next issue will be published in October 2023.

We are hereby inviting good interesting cases and original work from our fellow Radiologists, which will be published on merit basis.

So, I request all of you to contribute to this Newsletter. Please send your material in Word format with good quality images. Please send your photograph and details of your place of work with email address also.

Your material should reach us by 15th. Of September, 2023. You can send the word file to our abovementioned email address or you can WhatsApp it to above-mentioned three phone numbers.

On our YouTube channel, we are presenting a new case every week and there is good response to such teaching videos. I hereby request all Radiologists to share their teaching videos with us and if they contain good teaching material, we will surely publish it on our channel. So friends, during this trying time , stay away from depression by engaging yourself in academic activities.

Our Telegram group is lagging behind in academic activities as compared to two WhatsApp groups, so I request all of

you to join our Telegram group.

Telegram can add up to whopping 200,000 members. So, if we post our study material there; it will reach to and benefit huge number of members.

So friends, take care and be safe.

So, see you all in next issue of CAR newsletter.

So long,

Anup Sadhu, Bijon Kundu and Viral Parekh.



**We are thankful to all the contributors
for sharing their experiences and
literature with us and in the process
helping the Radiological fraternity.**