Aster HOSPITALS & CLINICS
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HealthNews DIGEST

JULY 2025

30th Edition

Dr. Sherbaz Bichu

CEO & Specialist Anaesthetist
Aster Hospitals & Clinics, UAE

On behalf of Aster's leadership, I am pleased to welcome you to the 30th edition of HealthNews Digest. As a leading healthcare provider, we have always been committed to innovation and progress. I am excited to announce the latest addition to our healthcare offerings - the launch of the **24/7 Urgent Care Clinic with the availability of Night Doctors at Aster Hospital, Al Qusais, Dubai!**

This clinic is designed to cater to the urgent medical needs of our patients, enabling them to receive expert medical attention and specialised treatment at any time of the day or night. This development will further strengthen our dedication to patient care, enabling us to provide prompt and effective care to those needing urgent medical attention.

Thank you for your unwavering dedication and commitment to our mission of providing exceptional care to all those who entrust us with their health. I encourage you to take pride in the exceptional work you do every day and celebrate the successes and milestones we have achieved together as a team.

Dr. Ramanathan V

Medical Director
Aster Hospitals & Clinics, UAE

As the Group Medical Director of Aster Hospitals and Clinics, I am delighted to welcome you to the 30th edition of HealthNews. The transformation of our Cardiac Department into the **Center of Advanced Cardiac Sciences** reflects our ongoing efforts to strengthen our services and provide our patients with access to the most advanced treatments available.
By incorporating cutting-edge procedures such as transcatheter aortic valve implantation (TAVI), thoracic endovascular aortic repair (TEVAR), and complex cardiothoracic surgeries, we are positioning ourselves at the forefront of comprehensive cardiac care.

Whether a complex intervention or a life-saving surgery, our Cardiac Department has consistently risen to the challenge, providing hope and healing to those in need.

Let's celebrate this significant milestone and continue working together towards our shared goal of delivering exceptional care to our patients and making a positive impact on their lives.

Dr. Sandeep Shrivastava
Cardiothoracic Surgery
(Consultant)

Dr. Shipra Shrivastava
Cardiothoracic Surgery
(Consultant)

Reporting Survival of Two Rare Cases of Post-Myocardial Infarction (MI) Cardiac Rupture with Cardiac Tamponade Repaired Successfully on Beating Heart at Aster Hospital, Al Qusais, Dubai

Life-Saving Cardiac Surgery for Free Wall Myocardial Cardiac Rupture in Post-MI Patients after Successful PTCA (Primary Percutaneous Transluminal Coronary Angioplasty)

PRESENTATION

Case 1:

- 42-year-old male
- Medical history of Diabetes Mellitus and Dyslipidemia
- Admitted with complaints of:
  - Retrosternal chest pain radiating to both forearms and mid-back

Case 2:

- 60-year-old female
- Medical history of Diabetes Mellitus, Hypertension and Dyslipidemia
- Admitted with complaints of:
  - Chest pain
  - Ongoing angina

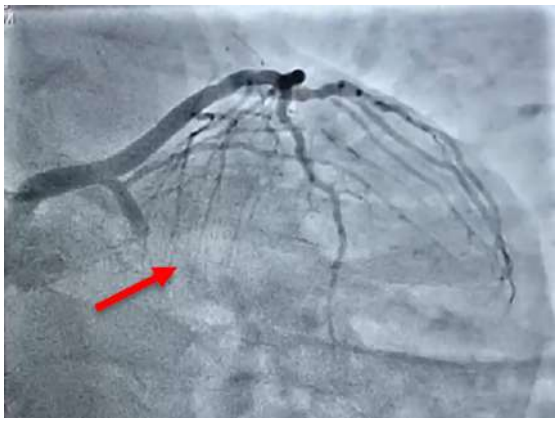
FINDINGS

During Examination:

Case 1:

- Conscious and oriented, afebrile
- Pulse rate: 90/min; BP: 130/80 mmHg; Respiratory rate: 18/min
- Significant ECG changes and elevated Troponin levels
- Acute Myocardial Infarction (MI)

A loading dose of dual antiplatelets was administered for ACS, and the patient was transferred to the Cath lab for an Emergency CAG and revascularisation.



LCX – Acute Thrombotic Occlusion

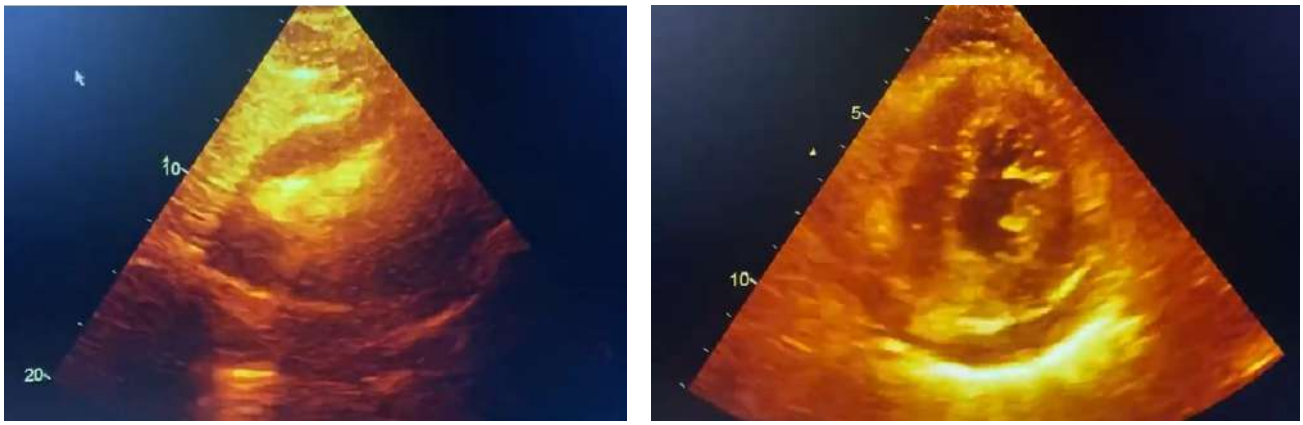
Echo showing Cardiac Tamponade

Case 2:

- Conscious and oriented, afebrile
- Pulse rate: 76/min; BP: 116/70 mmHg; Respiratory rate: 18/min
- Significant ECG changes with signs of Anterior Wall MI

A loading dose of dual antiplatelets was administered for ACS, and the patient was transferred to the Cath lab for an Emergency CAG and revascularisation.

CAG showing Triple Vessel Disease and LAD CTO



Echo showing Right Atrium Collapse and Cardiac Tamponade

PROCEDURE

Case 1:

1. Primary PTCA to LCX

- Patient presented with Acute Myocardial Infarction.
- Primary PTCA to the Left Circumflex Artery (LCX) was done.
- In spite of successful PTCA, the patient became haemodynamically unstable and developed hemopericardium with cardiac tamponade.
- Echocardiography confirmed the diagnosis of lateral wall cardiac rupture with cardiac tamponade.

The surgical team was immediately informed for the needful. The patient was promptly taken to the operating room for emergency high-risk surgery.

2. Emergency Cardiac Surgery

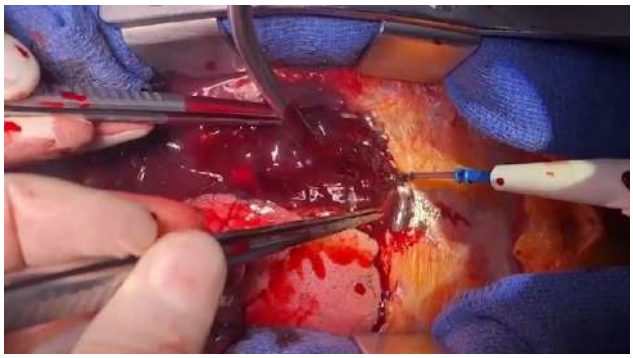
The patient had severe hypotension, high Central Venous Pressures (CVP) and high Pulmonary Artery Pressures (PAP).

Relief of cardiac tamponade and repair of lateral wall cardiac rupture on beating heart:

- Emergency median sternotomy was carried out.
- During surgery, tense hemorrhagic pericardial collection was evident.
- Haemorrhagic pericardial fluid came out with a gush, suggesting high intra-pericardial pressure, causing cardiac compression and significant haemodynamic compromise. Approximately 300 ml of haemorrhagic fluid was sucked out.
- On relieving cardiac tamponade, haemodynamics improved remarkably.
- Aortic and venous purse string sutures were taken; and all preparations were made to institute CPB if needed.
- Heart was then lifted, and clots were evacuated.
- The site of rupture and bleeding was identified.
- Myocardial haematoma with lateral wall rupture was detected.
- Suture repair of lateral wall rupture was done on the beating heart.
- Compression pressure was applied over the repair for a considerable time.

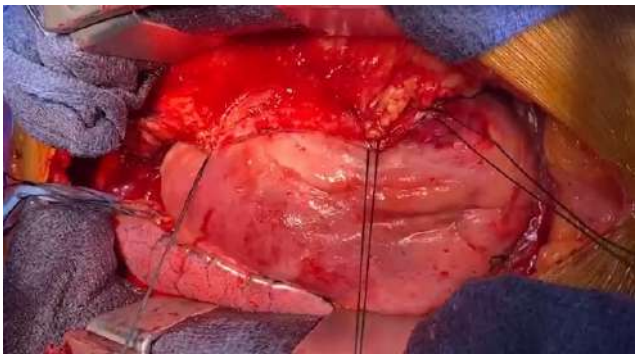
- Pericardial lavage was done.
- The bleeding point was checked to ensure that the bleeding was completely controlled.
- Haemostasis was secured.
- Chest was closed in layers over two mediastinal and one right pleural drainage tubes.
- Patient was shifted to the ICU with a plan for elective overnight ventilation and strict control of blood pressure.

Monitor revealing Hypotension (77 mmHg systolic), very high CVP (28 mmHg) and raised PASP (32 mmHg), suggesting Cardiac Tamponade



Intra-op image showing Gush of Blood

Improved Haemodynamics after evacuating Haemorrhagic Collection



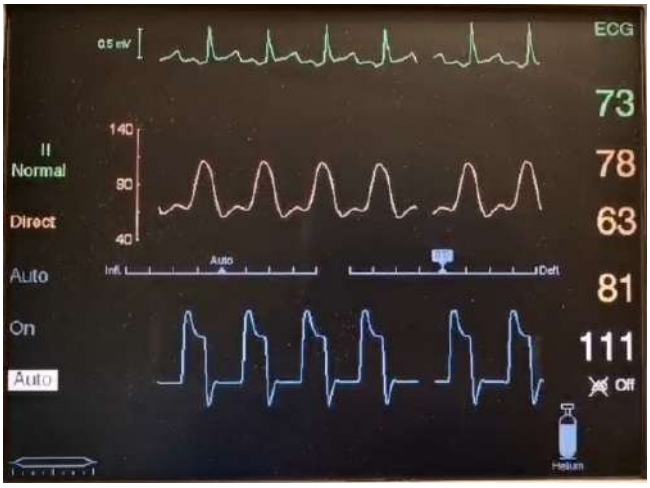
Pressure applied after Repair of Cardiac Rupture on Beating Heart

Case 2: Differentiating factors from Case 1:

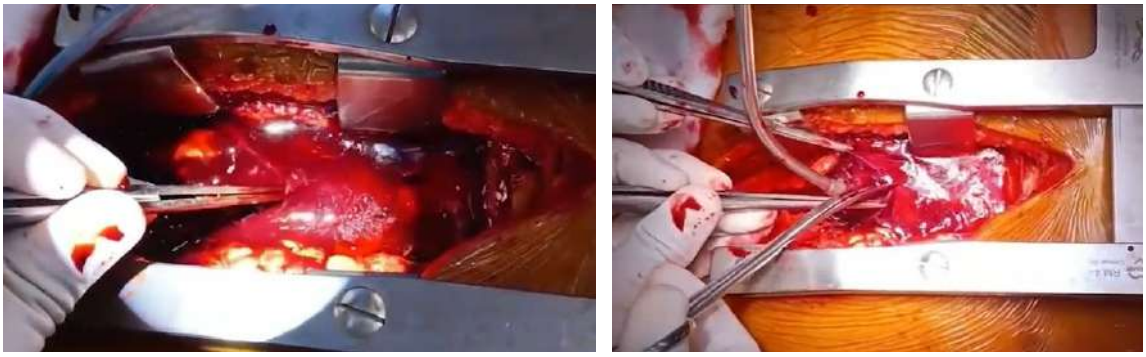
1. Primary PTCA to LAD
2. Intra-Aortic Balloon Pump (IABP) was inserted hurriedly before giving anaesthesia
3. Patient had Bradycardia, Hypotension and near Cardiac Arrest, as soon as the patient was anaesthetised

In addition to the relief of Cardiac Tamponade as in Case 1, this patient also underwent:

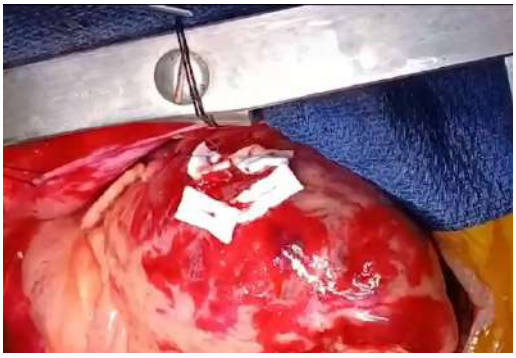
- Repair of anterior wall cardiac rupture on beating heart with pledgeted 4-0 Prolene sutures.
- CABG with RSVG grafts to OM1 and PDA on beating heart.



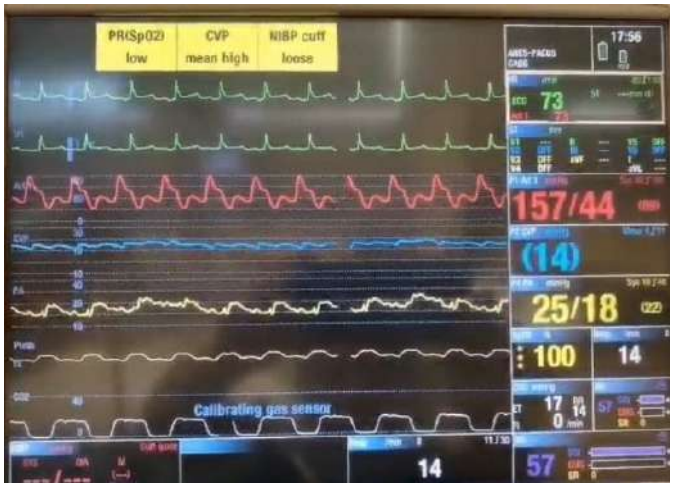
IABP showing borderline haemodynamics



Intra-op image showing gush of blood



Repair of Anterior Wall Rupture with Pledgeted Sutures

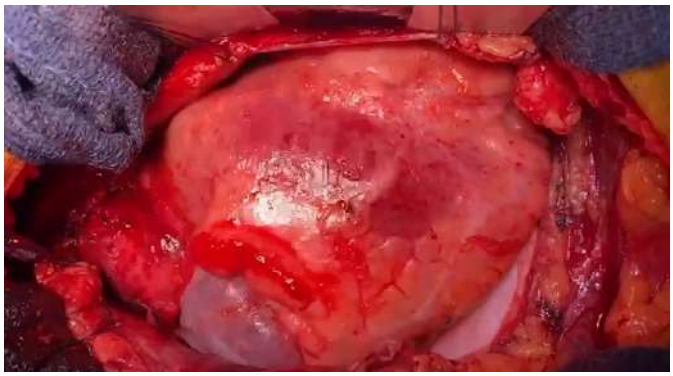


Improved Haemodynamics after evacuating Haemorrhagic Collection

POST PROCEDURE

Both the patients tolerated the procedure well and were in stable condition. They were extubated the next day. The post-operative period was smooth and uneventful.

Case 1: Discharged on post-op day 4 with normal haemodynamics



Post-operative image showing comfortable heart

Post Surgery Monitor showing normal haemodynamics (BP: 125 mmHg systolic; CVP: 2 mmHg; PASP: 17 mmHg)

Case 2: Discharged on post-op day 4 with normal haemodynamics

Post Surgery Monitor showing normal haemodynamics (BP: 140 mmHg systolic; CVP: 3 mmHg)

DISCUSSION

Cardiac Rupture is one of the rare complications of Acute Myocardial Infarction (AMI). The complications of massive AMIs can be a free wall rupture, ventricular septal rupture, papillary muscle rupture leading to acute mitral regurgitation, and sudden death. After sustaining AMI, the high-risk substrate for Cardiac Rupture include: old age, female gender, lower BMI, and longer reperfusion time.

Myocardial Rupture is a serious complication of myocardial infarction where the heart wall or muscle ruptures. Free wall rupture is a rapidly fatal type leading to cardiac tamponade and cardiogenic shock. Moreover, in post-PTCA patients, there is an additional surgical challenge because the patient is fully loaded with dual antiplatelets. Additionally, fully reversing the dual antiplatelet effect risks the newly deployed stent.

We present two exceptional cases of successful surgical repair of Cardiac Rupture, managed by evacuating tense hemopericardium and repairing the free wall rupture on a beating heart. Our patients were at high risk for surgery. Case 1 was a young male with a lateral free wall rupture, severe hypotension, very high Central Venous Pressure (CVP) and raised Pulmonary Artery Systolic Pressure (PASP), suggesting Cardiac Tamponade.

Case 2 was an elderly female with anterior free wall rupture, severe hypotension, profound bradycardia, and near cardiac arrest.

Even a little delay in relieving Cardiac Tamponade would have resulted in loss of lives. However, mortality remains considerably high despite the best efforts in such cases.

Prompt intervention, meticulous surgery and experienced surgical expertise are crucial for a positive outcome, as every second is potentially fatal for such critical patients. If not intervened timely, the prognosis for myocardial free wall rupture remains poor. The only salvage choice is immediate surgery for relief of tamponade and repair of the leaking myocardium.

CONCLUSION

Cardiac Rupture is one of the rare but fatal complications of myocardial infarction. This cardiac emergency should be treated expeditiously. Surgical management is a high-risk option, but it is the only viable alternative. Cardiac Rupture can be repaired in an arrested heart using a heart-lung machine. It is also possible, in some cases, with experienced hands to perform the repair of cardiac rupture on a beating heart.

These cases emphasize the need for prompt diagnosis and immediate intervention to save a life in such catastrophic emergencies. These patients carry extremely high mortality even in good centers. However, our patients survived and resumed normal activities as early as post-op day 4.

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An Overview of Left Hemicolectomy for Colonic Diverticulosis

Dr. Sandeep Patil
General Surgery (Specialist)
Aster Cedars Hospital & Clinic, Jebel Ali

INTRODUCTION

Diverticula are sac-like protruding pouches that develop on the wall of the colon, a condition known as colonic diverticulosis (1). These are mucosal herniations that develop in the weaker part of the colonic wall (2). It is generally observed that diverticula appear more frequently in the left colon of Western populations and the right colon of Eastern populations, primarily affecting individuals over the age of 70 and occurring more often in males (1).

The pathogenesis of colonic diverticulosis is not fully understood, but several factors such as low dietary fibre, low levels of vitamin D, regular use of aspirin and nonsteroidal anti-inflammatory drugs, BMI over 22.5-25 kg/m^2 and lack of physical activity are some of the risk factors responsible for diverticula formation (3).

Treatment for colonic diverticulosis varies based on whether it is complicated or uncomplicated (2). For symptomatic uncomplicated diverticular disease, antibiotics, rifaximin, mesalazine, and balsalazide are indicated (1). However, left colonic diverticulosis complicated by abscess and more perforation may require surgical resection of the colon (1,2). Left hemicolectomy is one such procedure that can be employed for treating the diverticula localized in the descending colon (4).

This article elaborates on the use of left hemicolectomy in colonic diverticulosis.

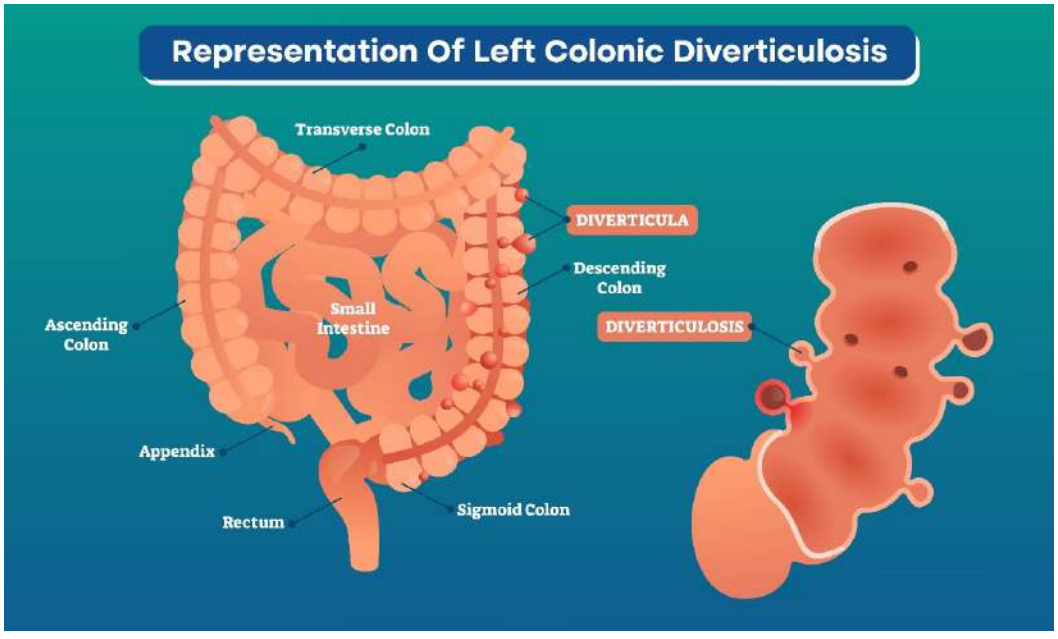


Figure 1: Representation of Diverticula and Diverticulosis

LEFT HEMICOLECTOMY

Left hemicolectomy is the surgical removal of the left side of the descending colon affected by colonic diverticulosis (5). It is a common procedure performed for colon cancers, and several other conditions such as colonic polyps, inflammatory bowel diseases, complicated appendicitis, perforation and diverticular disease (4).

Surgical management may be indicated for patients who do not respond to antibiotic therapy, or when percutaneous drainage proves unsuccessful (6). Surgery may also be warranted if the abscess is large and cannot be effectively drained, or if patients develop fecal or purulent peritonitis (6). The decision to perform a left hemicolectomy is based on the individual patient's condition and presentation (6).

TECHNIQUE AND PROCEDURE OF LEFT HEMICOLECTOMY

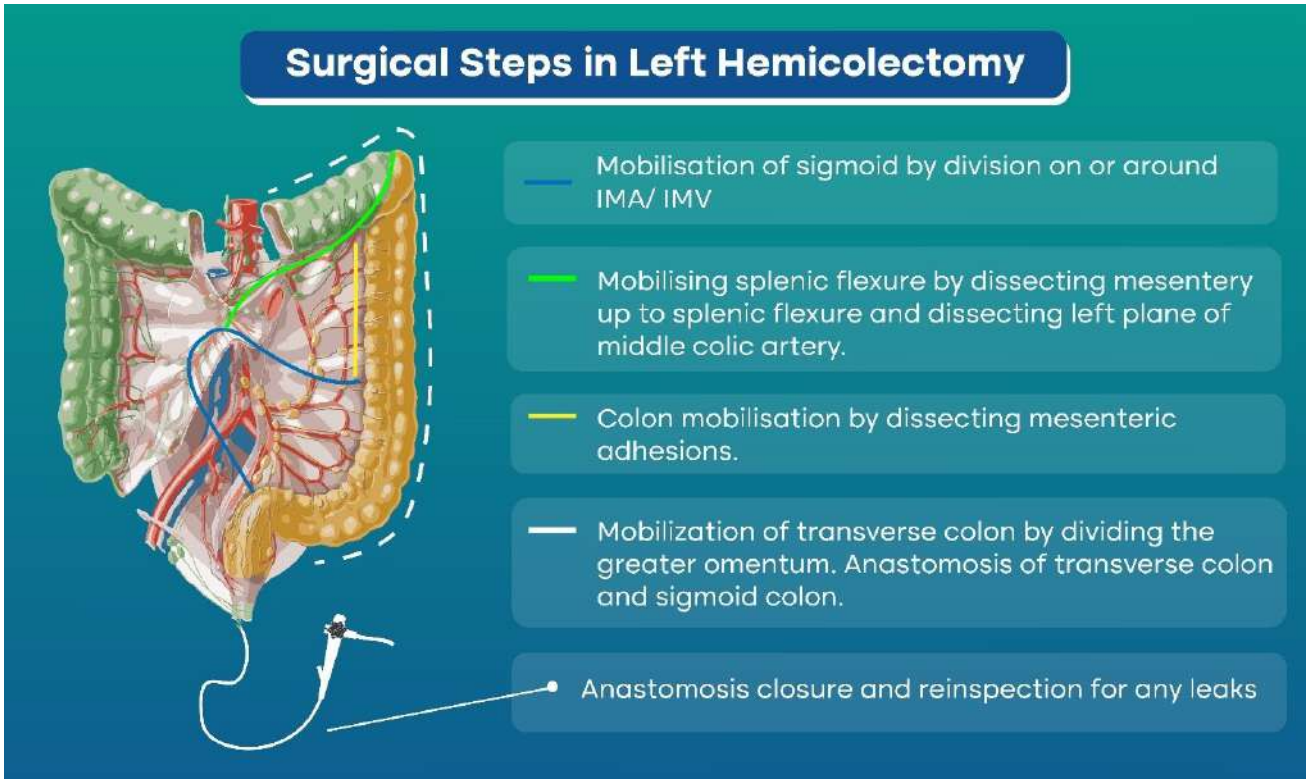


Figure 2: Steps in Left Hemicolectomy (4,7)

Step 1: Mobilisation of the Sigmoid Colon

A medial-to-lateral technique may be employed, where the sigmoid mesentery is incised along the white line of Toldt (4). The inferior mesenteric artery (IMA) and the inferior mesenteric vein (IMV) become identified, ligated, and transected (4,7). Caution should be taken to avoid damaging the ureter adjacent to the IMA (4).

Step 2: Mobilisation of the Descending Colon

The descending colon is mobilised from the mesenteric adhesions up to the splenic flexure, by using electrocautery or ultrasonic techniques (4). The extent of mesenteric dissection is determined by the length of the colonic segment to be excised (4). The left branch middle colic artery is divided if the lesions are close to the splenic flexure (4,7).

Step 3: Mobilisation of the Splenic Flexure

The splenic flexure is mobilised by dissecting the mesentery, gaining access to the omental bursa (4).

This dissection is extended superiorly up to the splenic flexure and inferiorly to the pelvic brim avoiding dissecting close to the splenic hilum (4).

The planes of the left branch of the middle colic artery are dissected allowing the division of the arteries (4,7). The marginal artery of Drummond and the remaining branches of the middle colic artery are preserved for subsequent anastomosis of the transverse colon and the pelvic region (4,7).

Step 4: Extracorporeal Anastomosis

The transverse colon is mobilised by dissecting the greater omentum and accessing the lesser sac (4). After the colon is mobilised, the ends are anastomosed by a transanal circular stapler (4,7). The colon anastomosis can be done either by end-to-end, end-to-side, or side-to-side manner (4).

Step 5: Closure and Re-inspection

The colon is secured proximally to the anastomosis and inspected for potential leaks (4). To test for leaks, the patient is positioned in reverse Trendelenburg, and the pelvis is filled with warm saline (5). The surgeon then inserts a rigid sigmoidoscope through the anal canal to examine the anastomosis (4). The colon is checked for adequate distension and the presence of leaks denoted by air bubbles (7). Any leaks can be fixed by suturing the gaps or completely revising the anastomosis (4).

RADIOGRAPHIC FEATURES OF A SUCCESSFUL LEFT HEMICOLECTOMY:

Plain Radiograph

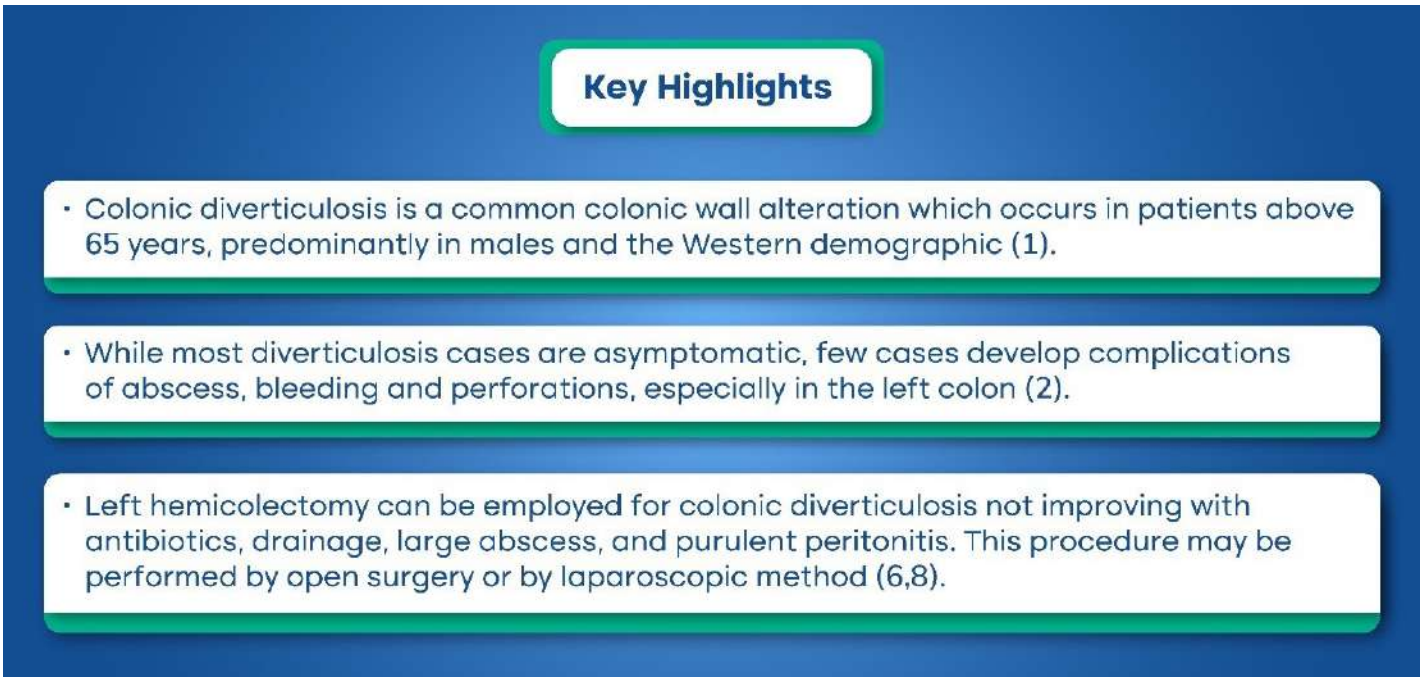
A left hemicolectomy without complication shows an absent normal gas pattern in the left colon and surgical clips may be visualised at the anastomosis site (8).

Computed Tomography and Magnetic Resonance Imaging

The splenic flexure, descending colon and a portion of the sigmoid colon would not be visualised given their surgical resection (8). The other abdominal structure may be seen occupying the subsequent abdominal space (8).

CONTRAINDICATIONS TO LEFT HEMICOLECTOMY:

Patients with cardiovascular or renal disease with a high risk of mortality, pre-morbid state and intolerance to anaesthesia are contraindicated to left hemicolectomy (4). Severe adhesions from previous surgeries, phlegmonous tissue due to Crohn's disease, and significant large bowel obstruction are not suitable for laparoscopic hemicolectomy but may be managed by open surgery (5). The POSSUM score can be utilised to assess the mortality and morbidity of the patient and whether to proceed with the surgery or not (4).



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Successful Diagnosis of a Rare Case of Person-in-the-barrel Syndrome (PIBS) at Aster Clinic, Al Qusais, Dubai

Dr. Akta Trivedi
Neurology (Specialist)

PRESENTATION

- 39-year-old male, born to a non-consanguineous marriage, driver, left-handed
- Presented with insidious onset of asymmetrical proximal upper limb weakness from 5-6 months involving right upper limb followed by left upper limb.
- The patient first consulted an Orthopaedic surgeon for his issues involving the right upper limb and was advised for a MRI cervical spine that showed mild disc desiccation changes involving C4-5-6.

He was advised conservative medical management considering the possibility of cervical spondylosis. However, given the increment in his symptoms during his follow-up visit within a month, he was referred to Neurologist for further management. Upon eliciting history, left upper limb involvement was noted over the last 1-2 months while performing activities of daily living. There was also hand-grip weakness in both hands noted while carrying out routine tasks over the past month. There was no history of sensory symptoms, bladder or bowel involvement, cognitive or behavioural issues, bulbar involvement, or lower limb involvement.

- No history of weight loss, trauma/injury, febrile illness, joint pains, rash or any skin discolouration.
- No family history of similar medical issues

FINDINGS

On examination:

- Haemodynamically stable

Central Nervous System Examination:

- E4V5M6
- Motor : Bilateral Atrophy of Arms, Forearms, Wrist

Power	Right Hand	Left Hand
Shoulder Abductor	2/5	3/5
Elbow Flexor	2/5	3/5
Elbow Extensors	3/5	4/5
Bilateral hand grip weakness		

- Sensory System: Intact
- Deep Tendon Reflex: Reduced in bilateral upper limb
- Plantar Reflex: Bilateral equivocal
- Gait: Normal
- No pallor, cyanosis, clubbing, oedema and lymphadenopathy.
- No neurocutaneous markers

Bilateral Brachial Diplegia

WORKUP

Laboratory Investigations:

- CBC: Normal
- ESR: 06 mm/hr
- Serum Electrolytes: Normal
- Serum Glucose: 100.1 mg/dl (<200 mg/dl)
- Thyroid Secreting Hormone: 0.80 uIU/L (0.27 – 4.2 uIU/L)
- Serum Creatinine: 1.02 mg/dL (0.67 – 1.17 mg/dL)
- Serum Uric acid: 4.16 mg/dL (2.6 – 6 mg/dL)
- Serum Lipid Profile: Normal
- Serum ANA Profile: Negative
- CPK Total: Normal

Other Investigations:

MRI Cervical Spine:

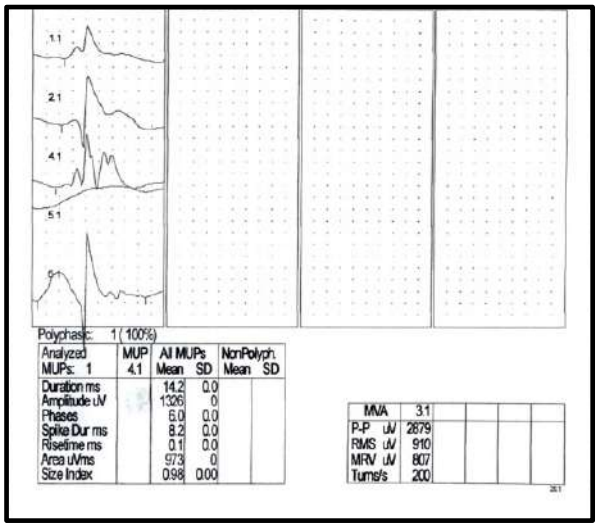
- Straightening of cervical spine was noted likely due to paraspinal spasm.
- Disc osteophyte complex was noted at C5-C6 level ventrally indenting the thecal sac with mild left sided neural foraminal narrowing abutting the exiting nerve roots. Disc desiccation in the form of loss of water content and T2 hypointensity was noted.

Nerve Conduction Study (all four limbs):

- Axonal motor polyneuropathy with no conduction blocks in both upper limbs.

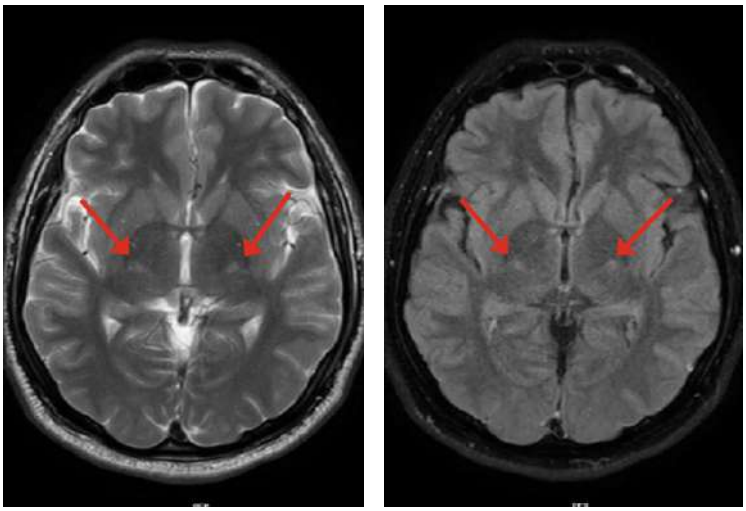
Electromyography Test (right biceps brachii, right deltoid, left 1st FDI, left tibialis anterior, right paraspinal muscle):

- A denervating process in the cervical region (including fibrillation potentials, positive sharp waves, fasciculations and large polyphasic motor units without involvement of other spinal cord regions).



MRI Brain Plain:

- Bilateral mild symmetrical T2 and FLAIR hyperintensity in the posterior limb of internal capsule extending into bilateral centrum semiovale and corona radiata. Possibility of motor neuron disease was ruled out.



MRI Brain T2 MRI Brain FLAIR

CONCLUSION

Given insidious onset asymmetrical proximal upper limb weakness involving the right upper limb followed by left upper limb and relatively involving bilateral distal upper limb extremities with SPARING of cognition, bulbar, truncal, lower limb involvement in a chronic smoker with no associated systemic comorbidities and no similar or significant family history; the possibility of Bilateral Brachial Paresis was considered. After ruling out other etiologies for bilateral brachial paresis, along with clinical examination and additional input from electrodiagnostic findings and radiological features, it was in favour of the motor neuron disease ALS regional variant.

He was managed for the same symptomatically by tablet Riluzole every 12th hourly, along with lifestyle changes and physiotherapy.

DISCUSSION

Motor Neuron Disease (MND) encompasses a group of rapidly progressive and universally fatal neurodegenerative disorders of the human motor system, first described in the mid-19th century by the French

Neurologist Jean-Martin Charcot [1]. Amyotrophic lateral sclerosis (ALS) is the most typical MND phenotype, clinically characterized by progressive neurological deterioration and co-existence of upper and lower motor neuron signs [2].

Flail arm syndrome (FAS) has a similar clinical course and pathological findings as amyotrophic lateral sclerosis (ALS) [3,4]. It is essential to distinguish the two diseases because FAS patients have significantly better survival rates compared with other typical ALS variants [5,6]. MND has been reported to have multiple variants; one of those atypical variants of MND is the so-called flail arm syndrome (FAS), sometimes also referred to as Vulpian-Bernhardt syndrome, man-in-the-barrel syndrome, or brachial amyotrophic diplegia [6-8].

Patients with Brachial Amyotrophic Diplegia (BAD) have motor neuron disease confined to the cervical spinal cord region. The differential diagnosis for BAD includes bilateral cortical watershed infarcts, spinal cord infarction, and infectious aetiologies. The majority can be distinguished based on clinical history and basic diagnostic testing. The main differential for BAD in the absence of other clinical or diagnostic abnormalities is the regional presentation of classic ALS. BAD accounts for between 2–11.4% of patients presenting with motor neuron disease, and the mean age of onset is similar to ALS at 53.3–57.3 years [9-12].

Patients are more likely to be male than the general ALS population, with a male-to-female ratio ranging from 1.5–5 to 1. Symptoms can begin asymmetrically but usually progress to include both arms (70%). Unlike arm onset ALS, which usually presents with distal weakness, the majority of BAD patients have proximal weakness at presentation (70%) [9,11,12].

Diagnosis:

The definitions for BAD differ by case series, but common features include:

- Insidious onset of weakness in the proximal arm muscles
- Decreased or absent reflexes
- Symptoms confined to one spinal region for 12–18 months

In the absence of Sensory symptoms or signs, diagnostic testing should include:

- Normal MRI of the cervical spinal cord
- Negative GM1 antibody testing
- Consideration for genetic testing for spinal muscular atrophy and/or spinobulbar muscular atrophy

Electrodiagnostic testing reveals normal sensory studies. Motor conduction studies may show axonal changes but should have normal conduction velocities and no conduction block. Multifocal motor neuropathy, which needs to be ruled out with serologic testing, is more commonly asymmetric and distal than BAD. Electromyography should support a denervating process in the cervical region (including fibrillation potentials, positive sharp waves, fasciculations and large polyphasic motor units) without the involvement of other spinal cord regions. Patients most frequently do not meet El Escorial criteria for ALS at presentation.

Genetic testing is not required. That said, one must consider a brachial amyotrophic presentation of spinal muscular atrophy or spinobulbar muscular atrophy. These disorders can sometimes be delineated by electrodiagnostic testing (sensory changes in SBMA) or family history.

Prognosis:

Overall, the prognosis for BAD is better than classic ALS. The atypical presentation here was the patient's age, which was 39 years, and the mean age of onset was 53.3–57.3 years.

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Understanding Hip Avascular Necrosis: A Clinical Overview

Dr. Anil Kumar Chintada
Orthopaedics (Specialist)
Aster Hospital, Al Qusais

INTRODUCTION

Avascular necrosis (AVN) is a prevalent degenerative condition marked by the death of bone cells resulting from an interrupted blood supply to the bone's surface (1,2). Often referred to as osteonecrosis, this condition commonly affects individuals between the ages of 40 and 65, with a higher incidence in men (3). Each year, more than 20,000 cases of bilateral hip involvement are diagnosed (3). AVN may result from a variety of causes, including traumatic injuries such as fractures and dislocations, as well as non-traumatic factors like prolonged steroid use, chronic alcohol consumption, coagulopathy, and certain congenital conditions (1).

Patients with AVN typically present with joint pain, stiffness, reduced range of motion, muscle atrophy, and joint instability (3,4). Initial symptoms of dull or throbbing pain in the buttocks or groin are most commonly reported (3,4). Diagnosis is primarily based on the clinical evaluation and radiographic findings, such as X-rays, radionuclide bone scans, and magnetic resonance imaging (MRI) (2). Management of AVN, particularly of the femoral head, ranges from conservative to invasive approaches (2). Treatment decisions are guided by the severity of the disease and tailored to the specific needs of the patient, underscoring the importance of individualized care to achieve optimal outcomes (2).

This article provides an overview of the diagnosis and management of hip AVN.

DIAGNOSIS

Patients presenting with typical symptoms such as a history of escalating pain, stiffness, and joint crepitus, often following an asymptomatic period, are primarily diagnosed with AVN based on clinical presentation and radiographic findings (5). On physical examination, individuals report a restricted range of motion in the hip joint along with discomfort, particularly with forced internal rotation (5).

STAGING

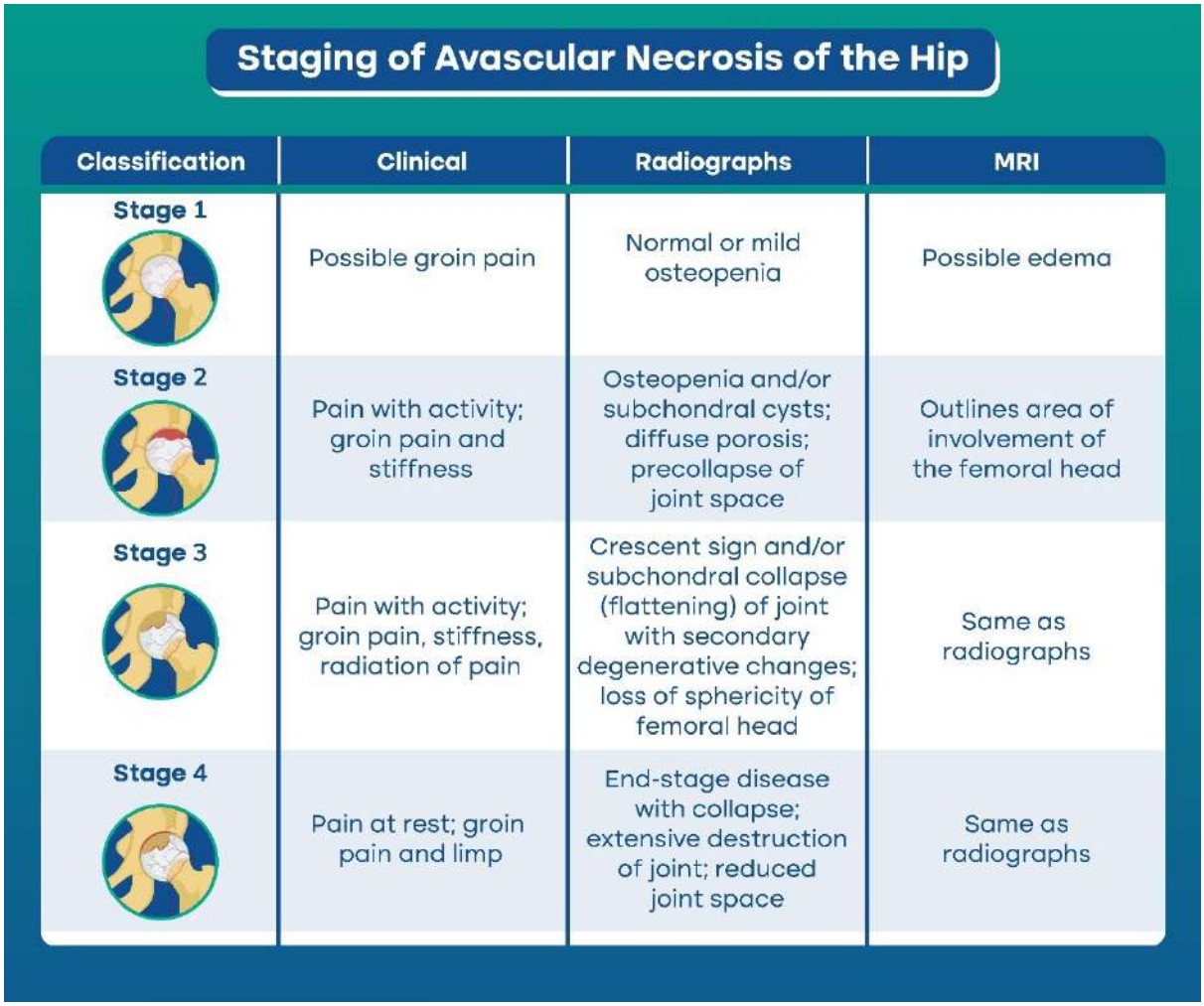

Figure 1: Staging of AVN of the Hip (5)

DIAGNOSTIC IMAGING TECHNIQUES FOR AVN

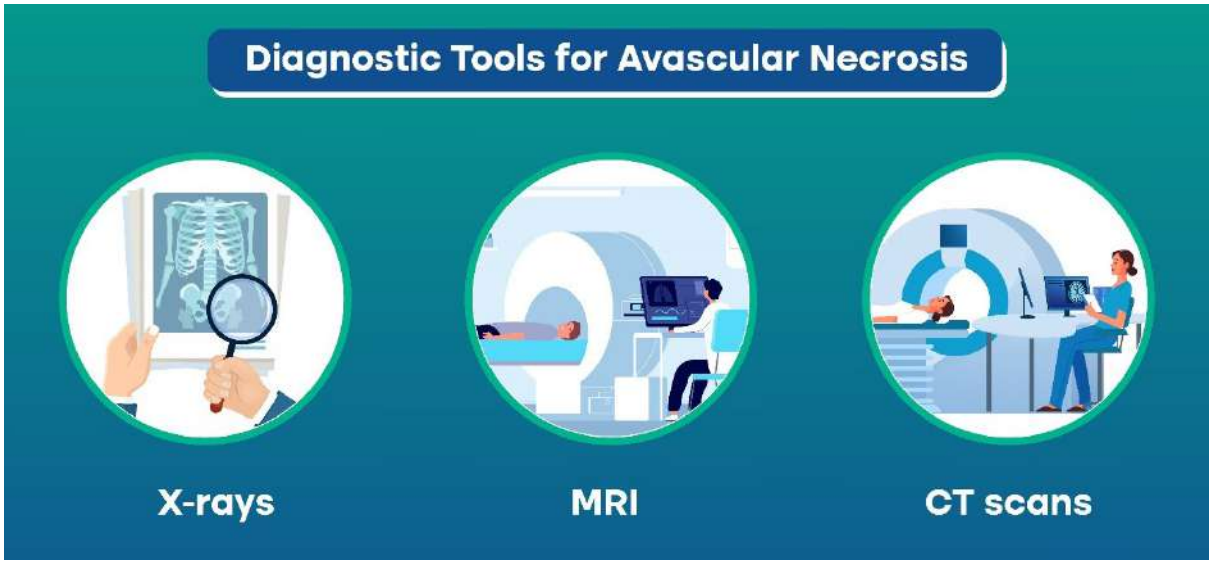

Figure 2: Imaging Tools for AVN of the Hip (4)

1. X-rays

X-rays are used as the initial diagnostic tool for diagnosing AVN in the hip (4). Characteristic findings on X-ray include subchondral radiolucency, known as the 'crescent sign," which indicates subchondral collapse (4). Additionally, a wedge-shaped sclerotic area may appear in the superolateral portion of the femoral head (4). However, X-rays may not help diagnose early-stage changes, which may prompt the use of more sensitive and accurate imaging modalities like MRI for early diagnosis (4).

2. MRI

MRI is widely regarded as the most reliable diagnostic tool, offering approximately 99% sensitivity and specificity (6). It allows for quantitative assessment of the lesion size and extent by delineating abnormal areas in the femoral head (6). T1-weighted images typically show well-defined focal lesions with a single-density line distinguishing normal from ischemic bone (6). T2-weighted images often reveal a characteristic "double-line sign," indicating the presence of hypervascular granulation tissue (6). This detailed imaging capability is important, as understanding the size and extent of the lesion in the affected bone is significant for guiding treatment strategies (6). However, in cases of advanced disease, the applicability of MRI in individuals with AVN may be limited, as therapeutic options at this juncture are often constrained (6).

3. CT scans

CT scans are useful for surgical planning, as they provide a connection between the hip bone and specific treatment (4). CT scans, which are an important alternative to MRI and X-rays due to their ability to detect small anatomical details, provide thorough diagnosis and staging of AVN in the hip (4). However, they are less sensitive in detecting stages 0 and 1 of AVN (7).

TREATMENTS FOR AVN

1. Core Decompression

Core decompression is a minimally invasive surgical intervention used to manage symptoms in the early stages of AVN (6). Perforations are drilled into the femolar head during this procedure to reduce intraosseous pressure and allow new blood vessels to supply the necrotic bone tissue (6). A small cut is made close to the injured joint during treatment, and a core of necrotic bone is removed (4). This elimination improves vascular infiltration and decreases bone marrow pressure, which is essential for healthy bone tissue (4). The success rates of core decompression can range significantly, from 40% to 100%, based on the specific characteristics of the patient population (6).

2. Hyperbaric Oxygen Therapy

Hyperbaric oxygen therapy (HBOT) has been shown to promote bone healing and regeneration in AVN (8,9). HBOT works by causing vasoconstriction, reducing cellular edema, decreasing cell adhesion, and restoring microcirculation through lower intercellular pressure (8,9). This therapy helps to improve the body's natural repairing processes and also enhances bone health and function (8).

HBOT increases and improves blood oxygen levels, which can raise the body's natural repair processes and support tissue repair (8). HBOT sessions generally last from 30 minutes to 2 hours, and several sessions may be required for positive results (8). The number and length of treatment sessions will vary depending on the severity of AVN and the patient's overall health (8).

In a study of 16 hips with stage 1 AVN, N. Reis et al. reported that 81% of patients who received 90 minutes of daily oxygen therapy for 100 days had normal MRI results (9). In a double-blind trial with 20 femoral heads affected by stage 2 AVN, E. Camporesi et al. found that HBOT decreased pain, and none of the patients required hip replacement surgery within 2 years (9).

3. Vascularized Bone Grafting

Vascularized bone grafting is a surgical option for AVN in cases with substantial bone loss (4). The primary advantage of this procedure is its ability to regulate the blood flow to the transplanted bone, ensuring an immediate supply of nutrients (4). This approach enhances healing and increases the probability of successful bone integration due to the direct vascular connection (4). Given the complexity of this procedure, it is typically reserved for more advanced cases of AVN (4).

4. Hemiarthroplasty and Total Hip Arthroplasty

In late-stage AVN, palliative measures are often insufficient, and surgical joint replacement becomes necessary (10). THA is recommended for patients with advanced femoral head collapse, substantial loss of hip function, and severe pain (5). The procedure entails the replacement of both the acetabular and femoral components of the hip with prosthetic implants (11). The increasing prevalence of THA can be attributed to improvements in long-term efficacy (4). THA can effectively reduce pain and enhance function by addressing the specific joint injury while preserving any unaffected joint structures (4). In cases where the disease affects the joints unevenly and retaining the native joint anatomy is advantageous, hemiarthroplasty may be the preferred surgical intervention (4).

EMERGING THERAPIES FOR AVN

1. Regenerative Medicine

▪ Platelet-Rich Plasma (PRP)

When considering PRP for AVN treatment, the effect of comparable blood supply problems on other bones, such as the astragalus and the carpal scaphoid, must be taken into consideration (12). Because of their distinctive characteristics and small blood supply, these bones become more vulnerable to the healing process of bone fractures or necrosis (12). PRP injections can help alleviate resting pain and lead to significant improvements in functional limitations, enhancing performance in both specific tasks and everyday activities (12). PRP plays an important role in the regeneration and repair of bones which have been damaged by low blood flow (12).

▪ Bone Marrow Aspirate Concentrate (BMAC)

BMAC is a regenerative treatment that involves removing the bone marrow from the patient and then concentrating the growth factors and mesenchymal stem cells within it (4). The concentrated growth factors and mesenchymal stem cells are then injected into the affected joint (4). This procedure can help support bone growth and tissue repair, particularly in diseases like AVN (4). Early intervention, therefore, becomes crucial to prevent significant bone fractures in such patients (4).

2. Core Decompression and Stem Cell Therapy

▪ Mesenchymal Stem Cells (MSCs)

Since mesenchymal stem cells are often obtained from bone marrow or adipose tissue, they serve as an effective therapy option for AVN in regenerative medicine (4). These cells offer a promising treatment in cases where the bone tissue dies due to less blood flow by increasing bone regeneration and repairing damaged tissue in the affected joint (4). MSCs can also support the body's natural healing processes, resulting in the development of new and healthy bone tissue, as observed in some preclinical and early clinical studies (4).

▪ Embryonic Stem Cells (ESCs)

Another option for the effective management of AVN can be a combination of stem cell therapy and core decompression (4). ESCs can be used for the reconstruction of the necrotic bone tissue due to their capability to differentiate into various cell lineages, including osteoblasts involved in bone formation (4). While AVN treatment research is still in its early phase, this method involves pluripotent cells developing into bone cells, suggesting a potential remedy for tissue regeneration (4).

Key Highlights

- An irregularity in the blood flow to the femoral head leads to AVN which affects the joint and damages the bone cells (1). It might be caused by traumatic or non-traumatic factors, such as radiation exposure, alcohol consumption, steroid usage, or stress (1).
- CT, MRI and X-rays are essential for AVN staging and diagnosis (4). While MRI operates for early detection, X-rays help to identify the severity, and CT scans help with surgical and imaging (4).
- Early-stage therapies include vascularized bone grafting, HBO therapy, and core decompression (4). Hip replacement may be crucial in more serious situations (4).
- Emerging therapies include bone marrow aspirate concentrate (BMAC), platelet-rich plasma (PRP), and stem cell therapies (including MSCs and ESCs)(4).

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Dr. Fathima Safa
Obstetrics and Gynaecology (Specialist)
Aster Hospital, Al Qusais

Dr. Aysha Salam
Obstetrics and Gynaecology (Specialist)
Aster Hospital, Mankhool

vNOTES: Revolutionising Gynaecologic Surgery with a Scarless Transvaginal Laparoscopic Technique at Aster Hospital, Al Qusais

PRESENTATION

- 62 year old female, P2L2A1
- Menopausal for the last 10 years
- Medical history of Hypertension and Diabetes Mellitus, on medications
- Surgical history of LSCS and Dilatation and Curettage (D&C) for post-menopausal bleeding 3 years back
- Family history of Hypertension and Diabetes Mellitus
- Admitted with complaints of:
  - Post menopausal bleeding
  - Heaviness in the vagina

FINDINGS

During Examination:

- Afebrile, Pulse rate - 98/min, BP - 130/80
- Pap smear - Negative

MRI Pelvis showed:

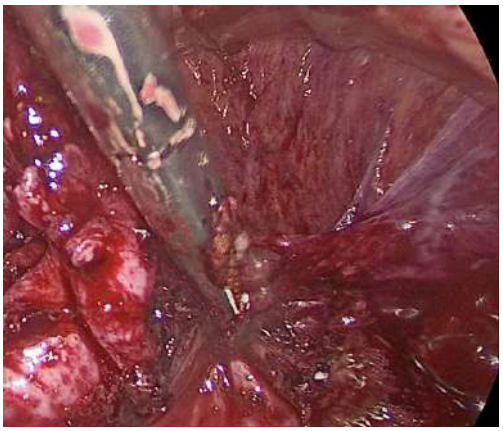
- Bulky uterus with multiple uterine fibroids
- Thickened endometrium with cystic changes

DURING PROCEDURE

After careful consultation and evaluation of the patient's preference for a minimally invasive approach, a decision was made to proceed with Hysterectomy and considering the advantages of vNOTES (Vaginal Natural Orifice Transluminal Endoscopic Surgery), this surgical method was chosen.

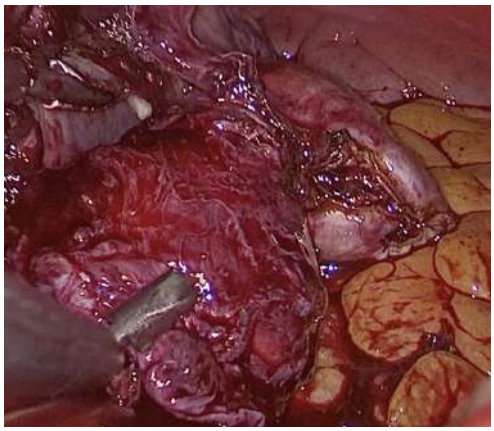
- The vNOTES procedure began similarly to a transvaginal hysterectomy.
- A circumferential incision was made in the cervix down to the pubo-cervical fascia.
- The anterior and posterior vaginal mucosa were dissected to access the cul-de-sacs.
- The uterosacral ligaments were clamped, cut, and ligated, with the pedicles preserved for later cuff closure.
- A Gelpoint V path device by Applied Medical was placed in the anterior and posterior spaces.
- A silicone cap was attached to the outer ring of the Gelpoint device, and the ports were introduced into this silicone cap.
- The patient was placed in a 20-degree Trendelenburg position.
- Insufflation of the abdomen was performed with lower pressure and flow rates, compared to abdominal laparoscopy.
- A 10mm laparoscope, vessel sealing device, and grasping instrument were introduced through the ports.
- The cervix was pushed medially and cephalad to visualise the uterine vessels, which were then cauterised and cut.
- The broad ligament was resected up to the fundus.
- The round ligament was transected, and adnexal attachments remained until the right side dissection was complete.
- This process was repeated on the right side, and then the left adnexa were managed similarly, freeing the uterus, which was then removed through the vagina.

The surgery was performed with excellent visualisation, and minimal blood loss, as is typical with vNOTES. The uterus was removed without any complications, the tubes and ovaries were also removed. The abdomen was explored, ureteric peristalsis visualised, and haemostasis was confirmed.



Ligation of uterine with advanced bipolar energy

Removal of Adnexa



Visualisation of Uterus and adjacent Pelvis

POST-OPERATIVE PERIOD

- The patient experienced minimal post-operative pain and required limited pain medication.
- Discharged within a day and recovering well.
- There were no complications, and the patient reported high satisfaction with the procedure.
- Absence of any visible abdominal scarring

The benefits of the vNOTES procedure over traditional laparoscopy were evident in the rapid recovery time and reduced pain.

DISCUSSION

The roots of vNOTES trace back to culdoscopy in the 1940s. Modern vNOTES emerged in the 2010s, with key developments in Asia and Europe. Dr. Jan Baekelandt adapted the GelPoint device for transvaginal use in 2013, becoming a significant promoter of vNOTES in the West. The FDA approved a specialised vNOTES port (VPath) in 2019.

This case highlights the successful application of vNOTES for a hysterectomy in a 64-year-old female with post-menopausal bleeding. The procedure offered significant advantages such as reduced post-operative pain, quicker recovery, and no visible scarring. The ergonomic benefits for the surgeon and the reduced blood loss are also notable. This case demonstrates the potential of vNOTES as a safe and effective alternative to traditional laparoscopic or abdominal approaches for hysterectomies. vNOTES provides a minimally invasive option that combines the best of vaginal and laparoscopic techniques. Advantage over vaginal approach is the easy access to adnexa and a panoramic view of pelvis.

Advantages of vNOTES:

- **Patient Benefits:** Shorter recovery, less pain, no visible scars
- **Surgical Advantages:** Better visualisation, early blood supply control, improved ergonomics
- **Versatility:** Suitable for various procedures, including in obese patients

A randomised trial showed vNOTES hysterectomy had shorter operative time, less pain, and fewer complications than laparoscopic hysterectomy.

Applications in Gynaecology:

- Hysterectomy
- Suitable for various uterine pathologies, including large uteri and post-cesarean patients
- Adnexal Surgery
- Includes salpingectomy, oophorectomy, cystectomy, and ectopic pregnancy treatment
- Pelvic Support
- Uterosacral ligament plication and sacrocolpopexy possible via vNOTES.
- vNOTES shows promise in gynaecologic oncology, particularly for endometrial cancer staging. It allows for hysterectomy, adnexectomy, pelvic washing, and lymph node sampling or removal.
- Early-stage ovarian cancer may also be managed via vNOTES. While not yet reported, cervical cancer treatment may be possible with further skill development.

CONCLUSION AND FUTURE OUTLOOK

vNOTES is a safe, feasible alternative for many gynaecologic procedures, offering advantages in pain reduction, recovery time, and cosmetic outcomes. As the technique evolves and specialized instrumentation becomes available, vNOTES will likely gain wider adoption. Patient satisfaction and the combination of laparoscopic benefits with vaginal access will drive further development and acceptance of this innovative approach.

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