HealthNews DIGEST

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Aster HOSPITALS & CLINICS

We'll Treat You Well

Dr. Sherbaz Bichu

CEO & Specialist Anaesthetist
Aster Hospitals & Clinics, UAE

On behalf of Aster's leadership, I welcome you to the 19th edition of the HealthNews Digest. I am particularly enthused about the approaching March celebrations.

On March 8th, we celebrate International Women's Day, which recognizes women's contributions to society and emphasizes the importance of gender equality. As a healthcare organization, we are fortunate to have many talented and dedicated women on our team, and I would like to convey my appreciation for their efforts and dedication.

Furthermore, March 11th is World Kidney Day, a crucial reminder of the significance of kidney health and the need to raise awareness about the risks of renal illness.

Finally, March 30th is National Doctors Day, a day that recognizes the contributions of physicians to our communities and society as a whole. I want to express my sincere appreciation for all that you do as a Doctor. Your commitment to your profession and patients is truly inspirational.

Thank you for your persistent devotion to our healthcare organization and dedication to our patients' well-being.

Dr. Ramanathan V

Medical Director
Aster Hospitals & Clinics, UAE

As the Medical Director for Aster Hospitals and Clinics, I want to recognize and applaud the exceptional work that our medical professionals have been doing in handling critical cases.

Over the years, we have seen a surge in cases, and our team has risen to the challenge with compassion and expertise. I have always been pleased with our doctors, nurses, and support staff's tenacity and drive to provide the finest treatment to our patients.

I have received numerous reports of successful cases where our medical team has gone above and beyond to save lives and improve the quality of life of our patients. Your hard work and commitment to your profession have not gone unnoticed, and I am proud to have you as part of our team.

As we continue to face the challenges of the current healthcare landscape, I urge you to continue to prioritize the health and safety of our patients and our medical staff. Let us continue to work together to deliver the best possible care to those in need.

Thank you for your hard work and dedication to our healthcare organization.

Bilateral Temporomandibular Joint (Condylar Process) Fractures treated successfully with Open Reduction and Internal Fixation (ORIF) and Nerve Sparing Approach at Aster Hospital, Mankhool

Dr. Renju Prem
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(Specialist)

PRESENTATION

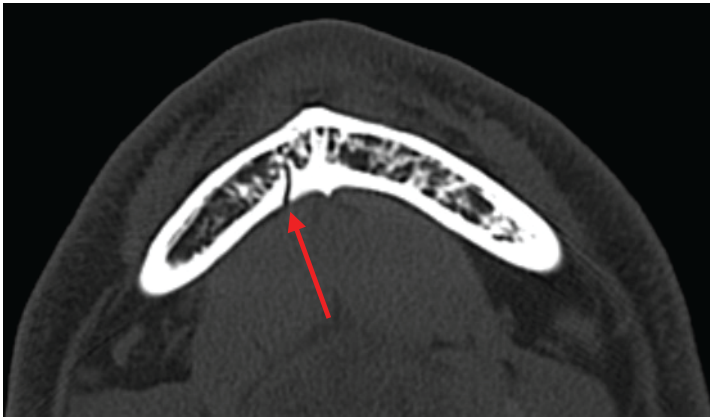
- 44 year old male
- History of accidental slip and fall at home due to loss of consciousness and sustained injury to the lower jaw and left side of the face
- No other history of medical illness
- Initially evaluated elsewhere and then referred to Aster for further management
- Complaints of:
  - Swelling associated with bleeding in the lower front region of the jaw
  - Acute pain due to trauma in both the sides of temporomandibular joints
  - Difficulty in mouth opening

FINDINGS

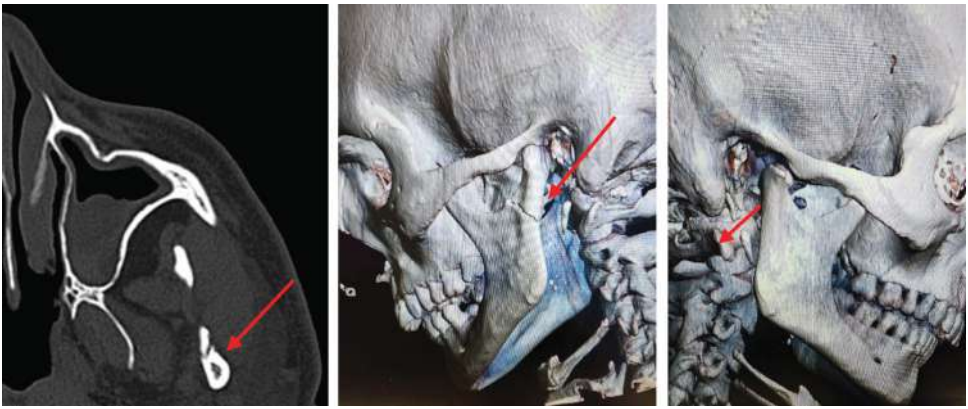
- Diffuse swelling in the left preauricular region - bilateral
- Restricted mouth opening with severe pain
- Step deformity in the lower parasymphysis region
- Deranged occlusion

RADIOLOGICAL EXAMINATION FINDINGS

CT Face:



Fracture Mandibular Symphysis



Bilateral Condylar Process Fractures

OPG x-ray showed:

- Fracture in the midline symphysis/parasymphysis region
- Displaced Condylar Process Fracture - Left Temporomandibular Joint (TMJ)
- Undisplaced Fracture Condyle - Right Temporomandibular Joint (TMJ)

DIAGNOSIS

- Fracture of condylar process of right mandible
- Fracture of symphysis of mandible
- Fracture of condylar process of left mandible

Pre-operative images showing restricted mouth opening and deranged occlusion

PROCEDURE

The patient underwent Open Reduction and Internal Fixation (ORIF) under general anaesthesia:

- Under GA, pre-anesthetic evaluation and orotracheal intubation was done.
- In view of the complex airway and the need for intraoperative intermaxillary fixation (IMF), as nasal intubation was not possible, the decision was made for **Submental Intubation.**
- Extra oral skin incision was made in the neck crease below the symphysis region of the mandible.
- Sub-platysmal dissection was done.
- Endotracheal tube was re-inserted, and the airway was secured in position.
- Intraoral occlusion was achieved bilaterally with the aid of wiring.

Intraoral Approach:

- Circumvestibular incision was made to the lower labial vestibule.
- Periosteum reflected. A fracture was seen extending between the mandibular incisor teeth.
- Fracture was reduced, and fixation was done with titanium plates and screws along the symphysis region of the mandible.
- Intubation changed to orotracheal, and the airway was maintained well.

Extraoral - Retromandibular Approach:

- Skin incision was made 0.5 cm below the lobule of the left ear, and subplatysmal dissection was done. Blunt dissection continued to reach the pterygomasseteric sling.
- Incision was given along the pterygomasseteric sling, and transparotid dissection was done to reach the masseteric muscle/ramus of the mandible.
- Fracture was seen extending to the neck of the condyle; fracture was reduced and stabilized, and fixation was done with titanium plates and screws.
- The same process was continued on the contralateral side, and the fractured neck of the condyle segment was seen medially displaced with fractured segments of bone along the neck of the condyle.
- Fracture segments devoid of periosteal attachment were removed.
- Intraoperative occlusion restored bilaterally.
- The wound cavity was debrided thoroughly, and the hemostasis was secured.
- Corrugated drain placement was done in the bilateral retromandibular regions.
- Wound closure was done in multiple layers and skin closure was done cosmetically.
- Compression dressing was given.

Intra-operative Images

ORIF – Parasymphysis Fracture

Right Condyle Fracture

ORIF – Left Mandibular Condyle Fracture

POST PROCEDURE

The patient withstood the procedure well; post-anesthesia recovery was uneventful. Post-operatively, the patient was monitored in the recovery, stabilized in the HDU overnight, and shifted to the ward thereafter.

Post-operative images showing intact facial nerve functions

Post-op view on 2 weeks follow-up with low-to-minimal scars

DISCUSSION

Bilateral Condylar Fractures are common but are frequently under-treated. In most of the cases, only one side is addressed surgically, and the other side is managed conservatively.

These fractures lead to loss of normal height bilaterally, accentuated anterior open bite, disruption of articular surfaces, and disc/muscle attachments.

Although ORIF is done on one side in a mandibular bilateral condylar fracture, a patient still needs inter-maxillary fixation (IMF) for 2-4 weeks post-op to correct occlusion and deviation.

These fractures account for 40-50% of the total condylar fractures, with an occurrence rate of 25-35%.

The closed method of treatment was favoured for a long time due to fear of complications such as facial nerve injury, external scar, and sialocele.

The complications associated with closed reduction include pain, arthritis, deviation of the mouth, and inadequate restoration of normal height.

The open method is always the preferred choice for condylar fractures. Even though the fracture is bilateral, it is possible to achieve good functional results by Open Reduction and Bone Plate Fixation of the unilateral condyle.

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Comprehensive Insights into Diagnosis and Management of Endometriosis

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INTRODUCTION

Endometriosis is an inflammatory, estrogen-dependent chronic disease identified by the presence of endometrium-like lesions outside the uterus (1,2). While the ovaries and pelvic peritoneum are frequent sites, endometriosis can also be found in the fallopian tube, abdominal wall, bowels, cervix, bladder, and vagina (3). Symptoms of endometriosis include chronic pelvic pain, dysmenorrhea deep dyspareunia, and bowel and bladder symptoms accompanied by fatigue (4). Although its precise pathophysiology remains unknown, the implantation of endometrial tissue within the peritoneal cavity through retrograde menstruation is believed to play a role in lesion formation (4). Diagnosing endometriosis involves a comprehensive approach that includes patient interviews, clinical examination, and imaging techniques (1). The current treatment approach includes hormone therapy analgesics, and surgery particularly in cases where initial treatments prove ineffective (4).

This article discusses the different diagnostic approaches and management strategies for endometriosis.

ENDOMETRIOSIS-ASSOCIATED SYMPTOMS

Endometriosis presents a range of symptoms, including chronic pelvic pain (cyclical and non-cyclical), dysmenorrhea, dyspareunia, and dyschezia (pain on defecation) (5). The severity varies from mild to severe (5). Some women may be

asymptomatic or experience episodic pelvic pain, while others have constant pain in multiple body regions (5). It is observed that some women may transition between these categories - progressing from episodic and localized pain to chronic, complex, and more challenging to treat (5).

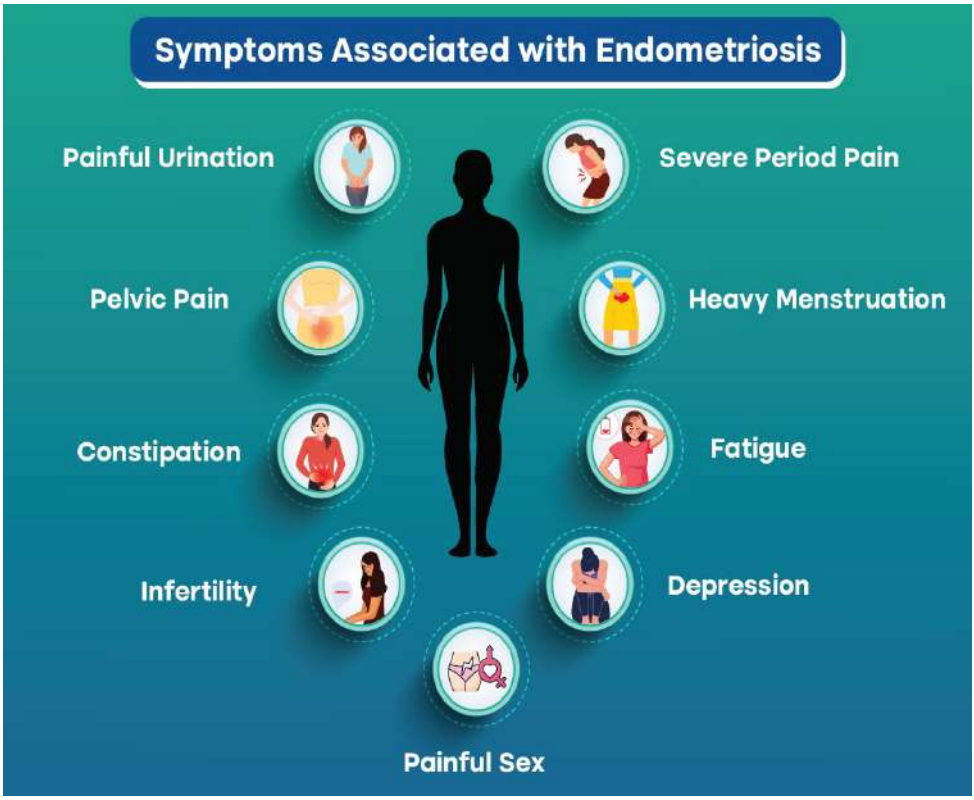


Figure 1: Symptoms Associated with Endometriosis (5)

Furthermore, women with severe anatomical disease can exhibit few symptoms; on the other hand, individuals showing minimal signs of endometriosis may experience significant and life-altering symptoms (2). Fatigue and depression are frequently cited by patients with endometriosis, similar to what is observed in other chronic pain conditions (5). Those affected by endometriosis also encounter twice the likelihood of infertility compared to those without this condition (6). Around 30-50% of women seeking assisted reproductive treatment are diagnosed with endometriosis (6).

CLASSIFICATION OF ENDOMETRIOSIS

Endometriosis commonly occurs in the abdominal cavity and can be classified into three subtypes that may coexist in patients (7). Extrapelvic endometriosis, though less common, can occur in areas such as the diaphragm, thoracic cavity, and surgical scars (7).

1. Superficial Peritoneal Endometriosis

This is the most prevalent form of endometriosis (accounting for 80% of cases) and appears on the peritoneal surface with varied appearances (7).

2. Ovarian Endometrioma

These are ovarian cysts known as endometriomas that contain dark blood-stained fluid often referred to as "chocolate cysts" (5).

3. Deep Endometriosis (DE)

Previously called 'deep infiltrating endometriosis," this type involves lesions that extend beyond the peritoneum (7). These nodular and fibrotic lesions have the potential to invade nearby pelvic organs, including the rectosigmoid, ureter, or bladder; they can also lead to significant damage to vital organs such as kidney failure resulting from ureteric obstruction or bowel obstruction (7).

DIAGNOSIS OF ENDOMETRIOSIS

Diagnosis of endometriosis has a highly variable presentation and the gold standard for diagnosis is laparoscopic visualization of endometriosis lesions with histopathological confirmation (7). However, recent guidelines such as European Society of Human Reproduction and Embryology (ESHRE) and National Institute for Health and Care Excellence (NICE) recommend diagnosis based on symptoms and findings on physical and imaging, as surgery is not regarded as curative and can result in lengthy wait times for treatment initiation (up to 11 years) (7).

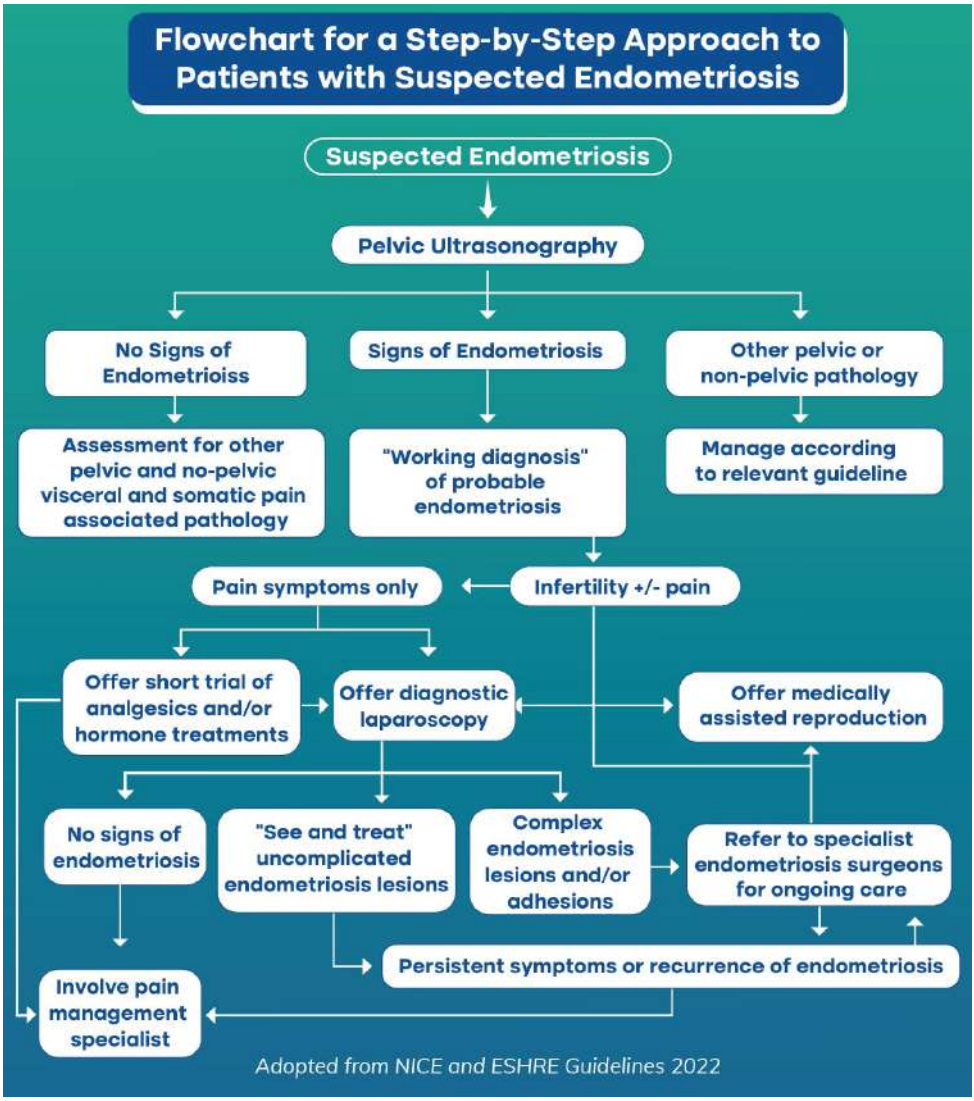


Figure 2: Flow chart for the Diagnosis and Management of Endometriosis (7)

Clinical Examination

The diagnosis of endometriosis involves a comprehensive examination of the patient's medical history, symptoms, and physical condition (7). Due to the diverse range of symptoms associated with endometriosis, the diagnostic process can be

complex (7). These symptoms include chronic pelvic pain (either cyclic or non-cyclic), dysmenorrhea affecting daily activities, deep dyspareunia, cyclical gastrointestinal and urinary symptoms, as well as infertility (7). In some cases, extra-abdominal manifestations such as shoulder tip pain and catamenial pneumothorax may also signal the presence of endometriosis (7).

The pelvic exam serves as a crucial tool for assessing sensitivity and detecting abnormalities in the pelvic region (7). It aids in identifying masses near the ovaries in patients with endometrioma or a fixed retroverted uterus, as well as firm nodules at the back of the vaginal fornix (related to the cul-de-sac) in patients with deep endometriosis (7). At times, bluish-tinged nodules may be visible during speculum examination within the posterior vaginal fornix (7). Sensitivity around these areas can indicate endometriosis in affected patients (7).

Imaging

The use of imaging is essential for the non-surgical detection of endometriomas and deep endometriosis (7). Transvaginal ultrasonography is recommended as an initial diagnostic tool for patients suspected of having endometriosis due to its accessibility and cost-effectiveness (7). Basic transvaginal ultrasonography accurately identifies endometriomas and excludes other pelvic pathologies (7). Advanced transvaginal ultrasonography has also demonstrated reliable detection of deep endometriosis by incorporating specific examination techniques such as the sliding sign between the uterus and sigmoid colon, along with examining nodules in anterior and posterior compartments for potential signs of endometrial tissue deposits (7). In situations where pelvic examination or transvaginal ultrasonography are not feasible or acceptable to the patient, alternative options such as transabdominal or transrectal ultrasonography can be considered instead (7).

A biopsy is only required for differential diagnosis when other diseases are suspected, such as urothelial carcinoma and/or interstitial cystitis (7).

MANAGEMENT OF ENDOMETRIOSIS

The medical management of endometriosis aims to control pain and inhibit the hormonally active tissue linked with endometriosis (4). Numerous treatment options have been developed over time to achieve these goals, with new approaches continually emerging (4). The treatment choices for symptomatic endometriosis include hormonal therapies that suppress ovulation and menstruation, non-hormonal treatments like neuromodulators and analgesics,

surgical techniques such as ablation/excision of lesions, and non-pharmacological interventions (4).

PHARMACOLOGICAL MANAGEMENT OF ENDOMETRIOSIS

Non-Steroidal Anti-Inflammatory Drugs (NSAIDS)

Non-Steroidal- Anti-Inflammatory Drugs are frequently used as the initial treatment for managing pain and dysmenorrhea associated with endometriosis (4). The pain in endometriosis is mainly due to increased levels of PGs, interleukins, and cytokines (4). These medications work by inhibiting the COX enzyme responsible for producing inflammatory substances (4). Studies have indicated that ectopic endometrial tissues have a higher concentration of COX 2 receptors (8). Both selective and non-selective COX inhibitors are commonly used for relief from symptoms, and research suggests that selective COX 2 inhibitors may also impede the growth of endometrial tissue (8).

Combined Hormonal Contraceptives

Estrogen and progesterone combinations or progesterone alone initiate decidualization of the endometriotic tissue, which is proposed to slow down the advancement of the disease (4). They have been employed with varying degrees of effectiveness in women with endometriosis (4). The European Society of Human Reproduction and Embryology's recommendations highlight the limited evidence regarding the use of estrogen-progestins for endometriosis (1). Nevertheless, combined hormonal contraception is commonly employed to alleviate pain associated with endometriosis (1). This may be due to the practical advantages provided by estrogen-progestins therapy in women with endometriosis, including contraceptive effects, minimal side effects, long-term safety, and effective management of uterine bleeding (1). These favorable attributes of estrogen-progestins contribute positively to the overall tolerability of medical treatment and generally enhance patients' quality of life (1).

Dienogest

According to the 2022 guidelines from the ESHRE, the most commonly prescribed treatments for endometriosis include drugs that alter hormonal levels, either by suppressing ovarian activity or by acting directly on steroid receptors and enzymes present in lesions (1). One such commonly prescribed drug is dienogest (DNG), which is a type of progestin that selectively attaches to progesterone receptors (9). It is classified as a distinct fourth-generation synthetic progestogen (9). Multinational guidelines recommend it as the primary medication for the

long-term management of endometriosis due to its positive attributes, including good tolerability, anti-androgenic properties, moderate impact on estrogen levels and the hypothalamic-pituitary-ovarian axis, as well as minimal influence on metabolism (9). In comparison to treatment with gonadotropin-releasing hormone analogs, DNG helps maintain estradiol levels within the appropriate range for managing endometriosis (9).

Non-Hormonal Treatment

Several medications like tricyclic antidepressants (e.g., amitriptyline, nortriptyline), selective serotonin reuptake inhibitors (e.g., duloxetine), and anticonvulsants (e.g., gabapentin and pregabalin) are occasionally utilized in treating endometriosis related pain despite limited empirical support (4). These "neuromodulatory drugs" differ from traditional analgesics such as NSAIDs as they primarily impact the central nervous system's regulation of pain instead of peripheral inflammation mediators (4).

Gonadotropin Releasing Hormone Agonists (GnRH Agonists)

The effective use of GnRH agonists is based on inducing significant hypoestrogenism by inhibiting ovarian estrogen production, leading to the regression of endometriotic implants (4). Initially, GnRH agonists stimulate the pituitary to release FSH and LH, but prolonged administration results in downregulation of pituitary GnRH receptors, thereby suppressing the hypothalamic-pituitary-ovarian axis and causing anovulation (4). This ultimately leads to hypoestrogenism, amenorrhea, and regression of endometriotic implants by depriving them of essential estrogen for their survival (4). They are a suitable option for women who have not responded to initial therapy with OCPs or cannot use OCPs due to their medical history (4).

SURGICAL TREATMENT OF ENDOMETRIOSIS

Surgical treatments for endometriosis are broadly categorized as conservative or definitive (10). Conservative therapy, with the primary aim of preserving fertility, involves procedures such as the removal or destruction of peritoneal implants, excision of deep infiltrating implants, and extraction of endometriomas (10).

In contrast, definitive surgical intervention, which may impact future fertility, includes options such as hysterectomy with or without oophorectomy (10). The choice between conservative and definitive approaches is guided by the specific type and severity of endometriosis (10).

SUPERFICIAL ENDOMETRIOSIS

Treatment options for superficial endometriosis may involve their elimination through techniques such as electrosurgery or laser, removal by excising the isolated lesion along with surrounding fibrosis, or thorough excision which involves removing extensive affected areas (11).

Laparoscopic Resection

Laparoscopic resection, performed by making small incisions in the abdomen, is used to remove visible areas of endometriosis (12). This procedure has been linked to a decrease in postoperative pain, shorter hospital stays, and quicker recovery times (12). Additionally, it reduces the risk of infectious complications (12). According to ESHRE, The Society of Obstetricians and Gynaecologists of Canada (SOGC), American College of Obstetricians and Gynaecologists (ACOG), American Society for Reproductive Medicines (ASRM), and Brazilian Federation of Gynaecology and Obstetrics Associations (FEBRASGO) recommendations laparoscopy should be considered for patients with suspected superficial endometriosis and persistent pain symptoms who do not respond to or cannot tolerate medical therapy (11).

Ablation with Electrosurgery

'Ablation' refers to the physical removal of diseased tissue through coagulation or vaporization (13). There are various methods for ablation, such as carbon dioxide laser ablation, bipolar diathermy, and monopolar electrosurgery (13). Various randomized controlled trials have demonstrated the effectiveness of ablative surgery in treating peritoneal endometriosis, leading to improvements in dysmenorrhea and dyspareunia (14).

Both excision and ablation have shown similar effectiveness in treating pain associated with superficial endometriosis; however, individual changes were more significant with ablation (15).

OVARIAN ENDOMETRIOMA

Surgical options for Ovarian Endometrioma (OMA) vary from simple drainage and coagulation to ovarian cystectomy or oophorectomy (11). Several critical factors are considered when determining the type of surgery for OMA, including symptoms such as pain, the patient's age and ovarian function, desire for fertility preservation, treatment history, size of the endometrioma(s), bilateral occurrence, prior ovarian surgeries affecting ovarian reserve decline, and suspicion of malignancy (11).

Drainage

Cyst drainage, performed laparoscopically or through ultrasound, involves introducing a needle into the cyst to drain its contents (11). Ultrasound guided

drainage of endometriomas has been shown to be a feasible treatment (11). This method is believed to have the advantage of draining the fluid while reducing the potential harm to healthy ovarian tissue (11).

CO2 Laser Vaporization

In this surgical approach, the 'pseudo-capsule" is not removed but it is ablated with energies with little thermal spread (17). Among the various energy sources studied, CO2 fiber laser has demonstrated promising results in treating endometrioma-associated infertility (17). It is linked to improved fertility prognosis for infertile women and preservation of ovarian function (17).

Oophorectomy

An oophorectomy involves the surgical removal of one or both ovaries (18). This procedure may be performed using a laparoscopic, vaginal, or laparotomy approach (18). In cases where the ovarian cyst is sizable, multiloculated, or potentially cancerous, oophorectomy may be performed as a semi-radical surgery (19).

Ovarian cystectomy

Ovarian cystectomy is the surgical removal of ovarian cysts and can be performed laparoscopically through small incisions (16). This approach is associated with improved pregnancy rates and pain relief (16). Laparoscopic cystectomy is typically the preferred conservative treatment for endometriotic cysts (16).

DEEP ENDOMETRIOSIS

Deep infiltrating endometriosis can impact various pelvic organs, including the uterosacral ligaments, vagina, rectovaginal septum, pelvic side walls, ureter, bladder, or bowel (11) . Surgical removal of these lesions poses a challenge due to the varying locations of the lesions and the complexity in applying consistent surgical techniques (11). There are no specific guidelines from any society regarding the indication and surgical approach for bladder and bowel DE(11). Currently, the general recommendation by ACOG, ESHRE, and SOGC for the definitive treatment of pain associated with DE is still hysterectomy with or without bilateral salpingo-oophorectomy in women with no desire for future fertility (11).

Shaving and Discoid Resection

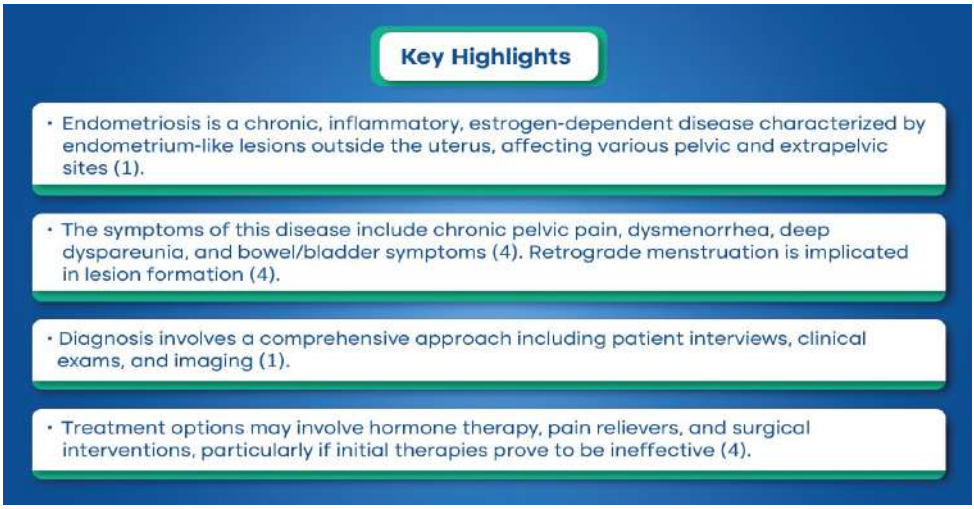
Intestinal lesions of the rectosigmoid measuring up to 3 cm can be treated with conservative techniques such as shaving and discoid resection (11). This involves removing endometriosis nodules from the rectal wall without affecting the lumen (20). For larger lesions or multiple lesions, or in cases where there is more than 40% circumferential involvement, depth beyond the submucosal layer, or when bowel obstructive symptoms are present, intestinal segmental resection should be considered (11).

Laparoscopic Hysterectomy

Laparoscopic hysterectomy, with or without removal of one or both ovaries, might be considered for certain patients (7). This includes those experiencing persistent dysmenorrhea or heavy menstrual bleeding and adenomyosis, as well as those facing disease recurrence who do not wish to conceive in the future (7). Patients should receive comprehensive counseling about the advantages and disadvantages of this option (7). While undergoing hysterectomy alongside endometriosis treatment yields better pain outcomes compared to conservative surgery alone, it is not a definitive cure (7).

OTHER MANAGEMENT APPROACHES

Some patients may not benefit from medical or surgical treatment and may experience enduring pelvic pain, which could indicate central sensitization or nociplastic pain, along with chronic overlapping pain conditions (7). For individuals with complex pain, a comprehensive care strategy following chronic pelvic pain guidelines is likely to enhance their quality of life (7). This strategy could involve providing education on pain management, pelvic physiotherapy, psychological treatments (such as cognitive behavioral therapy, acceptance and commitment therapy, or mindfulness-based therapy), and targeted interventions addressing other sources of pain (7).



DISCUSSION

What factors should be prioritized to enhance both short-term symptom relief and long-term quality of life for patients with endometriosis?

A. Personalized Therapies: Prioritizing tailored treatment plans based on individual symptoms and patient preferences.

B. Minimizing Side Effects: Emphasizing therapies with minimal side effects to improve overall well-being during and after treatment.

C. Multidisciplinary Care: Advocating for comprehensive care approaches, integrating medical, psychological, and lifestyle interventions.

D. Fertility Considerations: Weighing the impact of treatments on fertility and exploring options that address both symptom relief and reproductive goals.

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Successful Repair of a Massive Retracted Shoulder Rotator Cuff Tear causing Pseudopalsy (Loss of Shoulder over Head Movements) resulting in Restoration of Full Shoulder Function and Muscle Power at Aster Hospital, Al Qusais

PRESENTATION

- 57 year old female
- Right shoulder pain and severe limitation of shoulder movements for 7 months
- Started after the patient lifted a heavy weight - causing acute pain and loss of movement
- Patient visited multiple centres and Orthopaedic surgeons - treated with all forms of conservative management, including long physiotherapy sessions, with no improvements in the symptoms.
- She was having sleepless nights due to night shoulder pain and inability to turn to the affected side.
- Activities of Daily Living (ADLs) were severely affected:
  - VAS: 7/10
  - Constant Shoulder Score: 46 (affected side) / 92 (unaffected side)
- The patient came to Aster for expert management. She was clinically evaluated in detail.

FINDINGS

During clinical examination:

- Anterior and bicipital groove tenderness
- Neer's / H.K tests +
- Jobe's Empty Can & Full Can ++
- Gerber Test - NAD
- Lift-off Test - NAD
- Upper Cut Test - NAD
- Horn Blower's - not elicitable
- External rotation Lag +
- ROM
  - 0-60°
  - >60° - painful and tilting scapula (active)
  - Passive - full ranger possible with terminal stiffness
- No neurological deficits / Regiment Badge sign - NAD
- Elbow / Wrist / Hand power - 5/5

Radiological Findings:

MRI scan was performed with detailed sequencing for Shoulder / C-spine / Brachial Plexus:

- MRI Shoulder -
  - Massive Supraspinatus and Infraspinatus Tear with Patte's Grade 2 + Retraction
  - Fatty Infiltration - Goutallier - stage 1/2
  - Grade 1 proximal migration of humeral head
- MRI C-Spine and Brachial Plexus - Nil Significant

Pre-operative examination showing Pseudoparalytic Shoulder

MRI of Right Shoulder showing Massive Cuff Tear (Grade 2 Retraction)

DIAGNOSIS

Massive Retracted Cuff Tear of Right Shoulder causing Pseudopalsy - No neurological involvement

DURING PROCEDURE

The patient underwent **Right Shoulder Diagnostic Arthroscopy, Arthroscopic Subacromial Decompression, Acromioplasty, Rotator Cuff Anatomic Double Row Knotless Repair - Speed Bridge Configuration with Regeneten Patch Augmentation:**

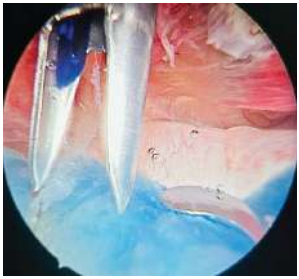
- Parts painted and draped in the semi-beach (lazy) chair position under general anaesthesia / regional block. Arm positioned in Spider 2 support system.
- Right shoulder diagnostic Arthroscopy showed supraspinatus and infraspinatus full-thickness tear with grade 2 retraction, sub-acromion bursal, and inflamed tissue.
- Subacromial decompression and acromioplasty were performed to aid in creating more room for visualization and repair.
- Supraspinatus and infraspinatus full-thickness tears were visualized, and tear personality was studied.
- Footprint - bone bed prepared with Crimson duvet.
- Two medial row open architecture Regen 5.5 mm anchors were deployed (double loaded - 1 tape and 1 fibre wire).
- Horizontal mattress bites were taken through good cuff tissue.
- Lateral knotless speed bridge fixation was performed with 2 * Knotless Regene Healicoil Anchors.
- After adequate cuff tensioning and good and strong cuff footprint knotless repair - **"Speed Bridge Configuration"** was achieved.
- Free strands were cut flush to the lateral anchor.
- The double-row knotless cuff repair was augmented with medium size Regeneten patch.
- The patch position was fixed with 8 tendon anchors over the musculotendinous junction.
- Good cuff repair and tension checked in the shoulder (intra-articular region).
- Fixed and wash was given.
- Portal wounds were closed in layers.
- Compression dressing was done.

This complex arthroscopic shoulder procedure would not be possible without the excellent **"Hypotensive Anaesthesia"** given and monitored by **Dr. Manish and his team.**

Intra-op-positioning with Spider 2 System

Massive Cuff Tear – Poor Quality Cuff Tissue

Speed Bridge Footprint Anatomic Knotless Cuff Repair



Regeneten Patch Augmentation

POST PROCEDURE

- The patient was discharged as Day Care.
- Cuff Repair Phase-1 Rehabilitation Physiotherapy started from POD 5.
- Rehab protocol continued for 3 months post-op. Followed by protocol-based Strengthening exercises.
- Patient had regained full shoulder range of movements with good cuff muscle power at 5 months post-op. However, the strengthening exercises rehab protocol will be continued for 8 months post-op for maximum functional benefit.
- Constant Shoulder Score at 5 months post-op: Improved from **46 to 84.**

Patient at 5 months post-op with full shoulder ROM and good power restoration

DISCUSSION

60-70% of the population over 50 years have Degenerative Cuff Tears. Around 50% of them are symptomatic. The incidence of massive cuff tears ranges from 5-40% over a spectrum of variables. An important subset is the patients with Chronic Massive Cuff Tears (symptomatic) made symptomatic by Acute Traumatic Exacerbation.

They tend to present with severe shoulder pain and pseudo-paralytic shoulder. Care should always be taken to rule out neurological involvement - as they might co-exist with a cuff pathology.

The first line of approach in Acute Trauma Pseudo-paralytic Shoulders is a suitable Protocol-based physiotherapy rehab for at least 6 weeks. Those who don't regain shoulder function and power - warrant surgical intervention - since they fall into "Unbalanced Shoulder".

Global debate continues on the correct procedure (cuff repair /SCR/muscle transfer/RSA) for Pseudo-paralytic Massive cuff tears. However, literature has made it clear - that most of the massive cuff tears can be repaired arthroscopically with good arthroscopic releases - provided the fatty infiltration is not >grade 2.

In this case as well, we proceeded with an **"All Arthroscopic Anatomic Foot Print Cuff Repair"**.

Another concern of all the Global Shoulder surgeons is the high rate of cuff re-tears despite good repair (incidence 15-35%). Here is the situation wherein Biologics will occupy a significant role in the present and future, enabling us to achieve better tendon-bone healing, reducing cuff re-tears with a sustainable increase in good cuff healing post repair.

Henceforth, in this case, we have used a Regeneten Patch (New Bio-inductive Implant) over the musculotendinous junction of the repaired cuff to help us achieve better-enhanced cuff tissue histologic healing. This will improve the biomechanical strength of the healed cuff footprint - preventing type 2 cuff failures and improving shoulder function and power restoration - to her pre-injury level.

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Understanding Respiratory and Cardiovascular Dysfunction in Post-COVID-19 Condition

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INTRODUCTION

The Severe Acute Respiratory Syndrome Coronavirus-2 responsible for the COVID-19 disease has caused over 9.5 million infections and 4,80,000 deaths reported globally (1). The spectrum of COVID-19 symptoms and outcomes vary widely, ranging from mild upper respiratory tract symptoms to severe illness (2). Patients with obesity, diabetes, cardiopulmonary diseases, asthma, viral pneumonia, and older age face an increased risk of severe illness and mortality (2,3).

Prolonged presentation of symptoms such as fatigue, breathlessness, and neurological impairments, lasting for months to years contributes to the development of Post-Acute Sequelae of SARS-CoV-2 infection (PACS), commonly referred to as 'long-COVID' (3). Post-COVID-19 condition occurs in individuals with prior confirmed or probable COVID-19 (3). An estimated 10% of non-hospitalized individuals experience persistent symptoms and may develop PACS (4). These persistent symptoms eventually lead to cardiorespiratory dysfunction in PACS and significantly impact cardiorespiratory fitness, with individuals showing a significant 63% reduction in peripheral oxygen transport capacity (DO2) (4,5). This decline persists even after months post-illness, indicating a persistent reduction in cardiorespiratory fitness leading to its dysfunction (5).

This article focuses on the clinical manifestations, mechanisms, and management of cardiorespiratory dysfunction in post-COVID-19 conditions.

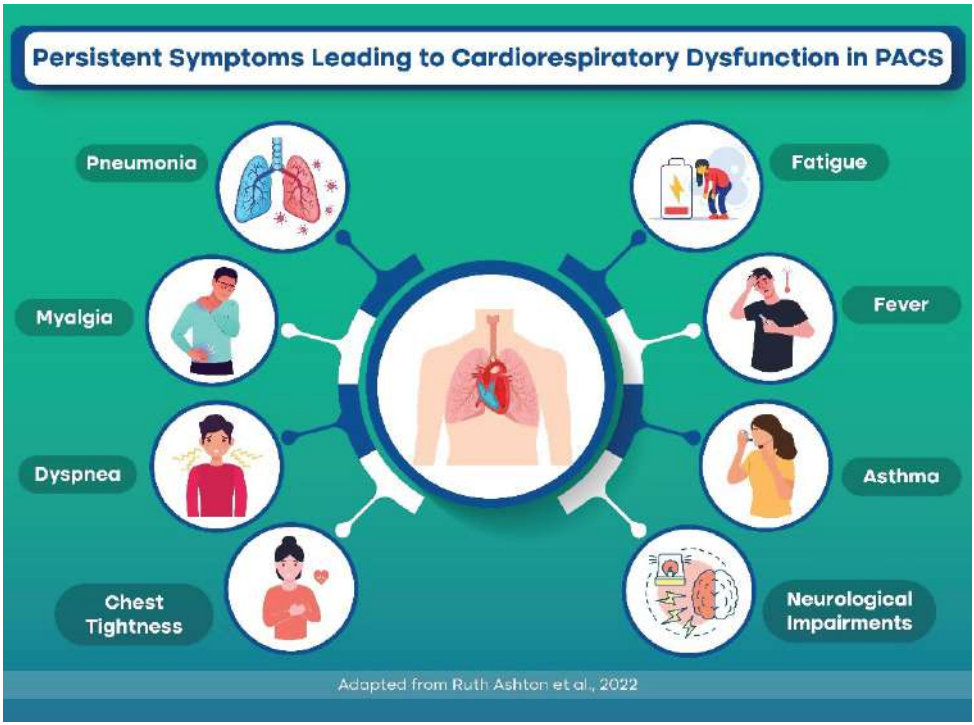


Figure 1: Persistent Symptoms Leading to Cardiorespiratory Dysfunction in PACS

MECHANISMS OF CARDIORESPIRATORY DYSFUNCTION IN LONG COVID

The connection between COVID-19 and the development of cardiac issues in the post-acute phase is not entirely clear (6). There are several mechanisms responsible for the development of cardiorespiratory dysfunction in long COVID, some of which are explained below:

- Direct Viral Toxicity

SARS-CoV-2 spreads mainly by targeting ACE2-rich airway epithelial cells (1). Reverse transcriptase polymerase chain reaction (RT-PCR's) ability to detect live virus and viral mRNA in the upper airway indicates that the viral replication commonly takes place in the lower respiratory tract, frequently resulting in severe pneumonia and ARDS (1). Studies have isolated viral RNA from feces at high

levels, from urine and blood, demonstrating viral replication (1). The histopathological investigations further revealed SARS-CoV-2's organotropism, affecting renal, myocardial, neurological, pharyngeal, and gastrointestinal tissues (1). Single-cell RNA-sequencing also confirmed ACE2 and TMPRSS2 expression in various cells across organs, hinting at multi-organ injury due to direct viral damage (1).

- **Endothelial Cell Damage and Thromboinflammation**

SARS-CoV-2 enters endothelial cells via ACE-2, causing inflammation and promoting a prothrombotic environment (6). The infection-related damage triggers excessive thrombin, suppressing fibrinolysis, and activating the complement system, fostering microthrombi formation and microvascular dysfunction (1). Platelet-neutrophil interactions and macrophage activation further escalates inflammation, inducing cytokine release, microthrombus formation and the formation of neutrophil extracellular traps (1). The elevated neutrophil extracellular traps (NETs) contributes to endothelial damage and coagulation pathway activation, correlating with severe illness (1). Hypoxia-related HIF-1 signalling pathway upregulation and coronavirus-mediated effects further contribute to the prothrombotic state (1). The presence of fibrinous exudates and microthrombi was observed in patients with COVID-19 (1).

- **Dysregulation of Immune Response**

Severe COVID-19 presentations show dysregulated immune responses and cytokine-release syndrome, which is driven by overactive innate immunity and T-cell depletion (1). This syndrome involves increased inflammation due to factors like rapid virus reproduction, interference with interferon signalling, and heightened activity of certain white blood cells (1). Patients with severe illness often show elevated levels of specific blood markers like C-reactive protein, ferritin, D-dimer, and others, are more prone to critical illness and mortality (1). These markers resemble patterns seen in a condition called hemophagocytic lymphohistiocytosis, also observed in SARS-CoV-2 infections (1). Elevated IL-6 levels in the blood are linked to worse prognosis and correlate with fibrinogen levels in patients with COVID-19 (1). To counter these effects, studies targeting the IL-6 signalling pathway are being conducted to inhibit the harmful impact of this immune pathway activation in COVID-19 (1).

- **Dysregulation of the RAAS**

Renin-Angiotensin-Aldosterone System (RAAS) dysfunction could serve as a pathophysiological mechanism in SARS-CoV-2 infection-related tissue damage (1). It regulates crucial body functions like fluid balance, blood pressure, and vascular

permeability (1). ACE2 is a key component of RAAS which promotes the conversion of angiotensin I to beneficial forms (angiotensin 1-9 and 1-7), facilitating vasodilation and countering proliferation and fibrosis (1). The entry of SARS-COV-2 downregulated ACE2 and Mas receptor which leads to lung injury and vasoconstriction (1). While SARS-CoV-2's impact might extend beyond ACE2-related pathways, understanding these connections can elucidate COVID-19's specific organ-related clinical effects (1).

MANIFESTATIONS OF CARDIORESPIRATORY DYSFUNCTION IN LONG COVID

- Respiratory Manifestations

Following COVID-19 infection, dyspnea and chronic cough commonly persist in the patients (3). There are 40%–48% of individuals experiencing ongoing symptoms, particularly those with a more severe initial illness (3). Long-term observations of discharged ICU patients indicated that the proportion experiencing dyspnea decreased from 26% at 6 months to 14% after 2 years and chronic cough prevalence after 1 year was as low as 2.5% (3). In some cases, if the chronic cough persists then new adult-onset asthma can be considered as one of the etiologies (7). Asthma needs to be considered among the alternate diagnoses for ongoing subacute or chronic respiratory symptoms post-COVID-19 infection (7). Severe COVID-19 cases often result in lung function impairment, including reduced total lung capacity, forced vital capacity, lung diffusion, and in some cases asthma (3). Radiological assessments revealed post-COVID-19 pneumonia, 75% showed ground glass opacities, 30% exhibited reticulations, and 13% had residual subpleural infiltration (3). Even after 12 months, about 25% of hospitalized patients displayed CT chest abnormalities, predominantly residual linear opacities, and multifocal reticular or cystic lesions (3).

- Cardiovascular Manifestations

The cardiovascular system maintains homeostasis by regulating cardiac output and blood flow to transport essential substances like nutrients, oxygen, and hormones (3). Post-COVID-19, patients may exhibit cardiovascular symptoms like palpitations, tachycardia, chest pain, dyspnea, and reduced exercise tolerance (8). Approximately 20% to 30% of severely symptomatic post-COVID-19 patients, may meet the criteria for POTS (Postural Orthostatic Tachycardia Syndrome) (3). POTS involves issues with the autonomic nervous system, causing heart rate spikes upon standing while maintaining blood pressure (3). About 5% reported chest pain, and 9% experienced palpitations six months after hospitalization due to COVID-19

(3). For a comprehensive diagnostic assessment, evaluations include autonomic function tests, Holter ECG monitoring for inappropriate sinus tachycardia, 24-hour blood pressure monitoring for hypotensive tendencies, and cardiac imaging (3).

Some cardiovascular manifestations include (3):

- Myocardial Ischemia and Myocardial Infarction (type 1 and 2)
- Myocarditis
- Arrhythmia
- Cardiomyopathy
- Cardiogenic shock

- **Interaction between Respiratory and Cardiovascular Systems**

Early in the pandemic, patients exhibited reduced respiratory muscle strength, impacting both inspiratory and expiratory muscles (3). Post-COVID-19, individuals showed abnormal breathing patterns at rest and during exercise, relying on upper chest muscles and displaying ineffective breathing despite normal lung function (3). Symptoms like breathlessness, shallow breathing, and chest tightness were associated with decreased inspiratory muscle function (3). These issues were observed regardless of the severity of COVID-19, with some possibly linked to autonomic dysfunction, emphasizing varied respiratory and cardiovascular manifestations beyond lung damage (3).

MANAGEMENT OF CARDIORESPIRATORY DYSFUNCTION IN LONG COVID

Current treatments for post-COVID-19 conditions largely rely on repurposed methods from pre-COVID times (3). Immunomodulatory therapies, though promising, lack substantial evidence and remain under investigation through ongoing trials (3). Several preventive measures, including vaccination, are crucial in reducing the risk of post-COVID-19 conditions after initial infection and reinfection (3). Though management of cardiovascular and respiratory symptoms is necessary to effectively treat cardiorespiratory dysfunction in post-COVID-19 conditions (3).

- **Management of Cardiovascular Symptoms**

Various cardiovascular symptoms observed in individuals with post-COVID-19 conditions demand tailored treatment (3). Management of symptoms related to cardiorespiratory dysfunction involves personalized approaches, encompassing both pharmacological and non-pharmacological treatments (3).

- The non-pharmacological treatment approach includes increased water and

oral NaCl intake, exercise, and lower body compression garments (3).

- The pharmacological treatments include blood volume expanders, heart rate inhibitors, vasoconstrictors, sympatholytic drugs, etc (3).

- **Management of Respiratory Symptoms**

The treatments for respiratory symptoms in post-COVID-19 conditions are not specific, but evidence supports different rehabilitation strategies such as pharmacological and non-pharmacological treatments (3).

- Non-pharmacological interventions such as physical therapy involving mobilization, deep breathing exercises, retraining normal breathing patterns, inspiratory/expiratory muscle training, stretching, and exercises to enhance movement and circulation, along with manual treatments are recommended (3).
- Pharmacological treatment strategies include inhaled corticosteroids, long-acting beta-2-agonists, long-acting muscarinic antagonists, short-acting bronchodilators, and oral corticosteroids (3).

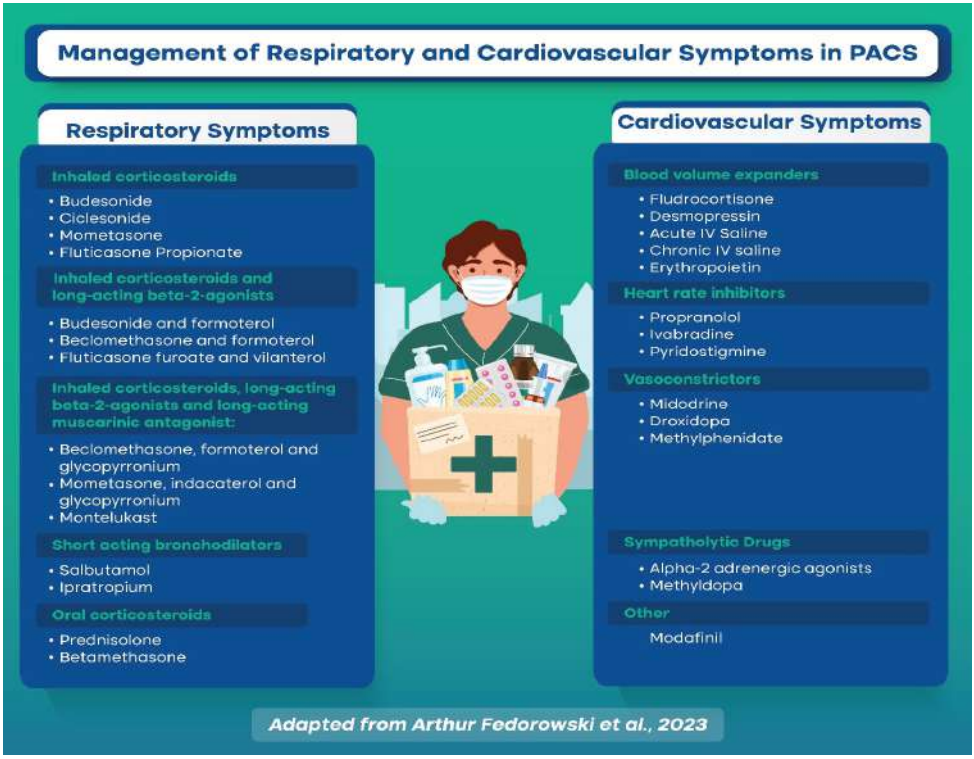
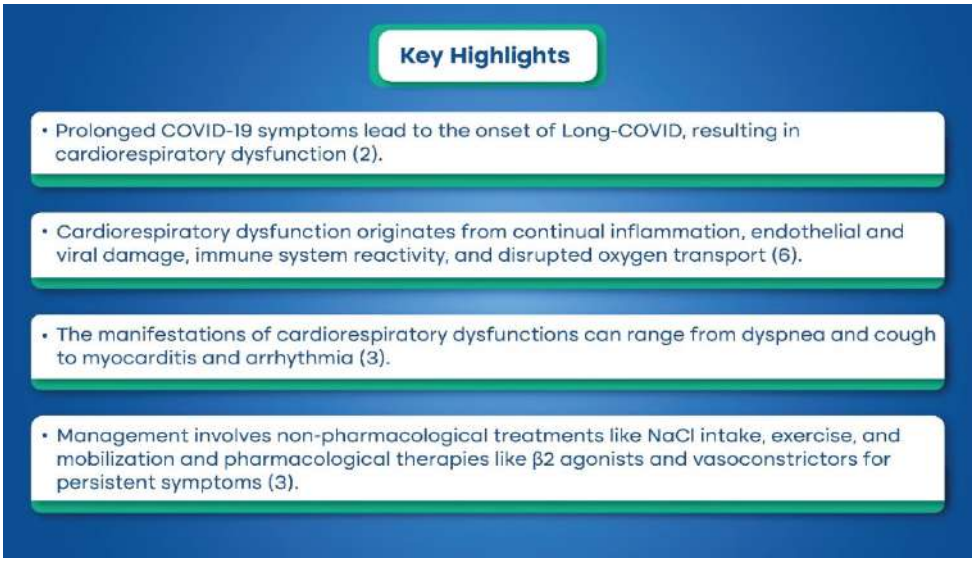


Figure 2: Management of Respiratory and Cardiovascular Symptoms in PACS



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Exemplification of Medical Pandora's Box at Aster Hospital, Sharjah

Dr. Abhilash Jayachandran
General And Laparoscopic Surgery (Specialist)

PRESENTATION

- 67 year old male
- Medical history of uncontrolled Diabetes and Benign Prostatic Hyperplasia (BPH)
- No family history of medical illness
- Seen by multiple specialists with no improvement, came to Aster for further management and evaluation
- Admitted with:
  - Severe abdominal pain and vomiting for 3 days

ON EVALUATION

- Tenderness over the right iliac fossa extending to the midline
- Presence of McBurney's tenderness, rebound tenderness and guarding
- Pain score - 8/10
- Increased WBC ~ 22000
- CRP - 169
- Ultrasound from outside showed **Acute Appendicitis with Fat Strands and Omental Adhesion**

DURING PROCEDURE

The patient underwent Laparoscopic Assisted Ileal Resection and Anastomosis with Appendicectomy:

- The pneumoperitoneum was created using the open method at the supraumbilical area.
- One 10 mm and two 5 mm ports at the right and left midclavicular region and one 5 mm epigastric port were placed.

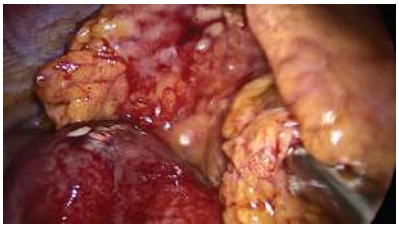
Intra-operative findings:

- Mass formation with dense omental adhesion over the terminal ileum with features of Ileitis noted.
- Thickened omentum with flakes.
- Dense adhesion at the right iliac fossa. Terminal ileum defined after meticulous dissection of the adhesion.
- Unhealthy segment in ileum with purple discolouration and sloughed out areas approximately 15 cm proximal to the Ileocecal Junction noted.
- Whole bowel walk was done from the Ileocecal junction to the duodeno-jejunal junction.
- A segment of the ileum (approximately 10 cm) was resected, leaving the healthy margins, and anastomosis of distal and proximal ends with 2-0 Vicryl double layer was done.
- Inflamed and elongated appendix was seen - appendicectomy was performed and sent for biopsy.
- The peritoneal cavity was filled with straw-coloured fluid and taken for cytology and culture analysis.

Procedure:

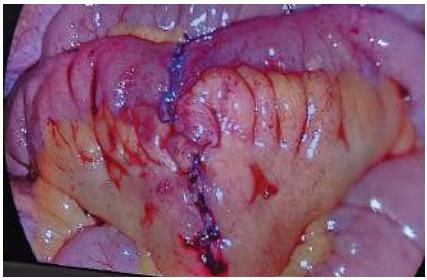
- A suprapubic incision of approximately 5 cm was created, and the affected segment was externalized.
- Leaving an adequate margin of healthy tissue, the affected ileal segment was resected, and anastomosis was carried out after confirming good vascularity.
- Double-layered anastomosis was performed using 2-0 Vicryl.
- After anastomosis, the area was observed for any colour change.
- Anastomosis area appeared to be normal in vascularity.
- After anastomosis, the bowel was placed into the peritoneal cavity.
- The appendix was identified. The mesoappendix was cauterized using mono and bipolar scalpel.
- Base was doubly ligated using an Endoloop. The appendix was removed via 10 mm port.
- Thorough wash was given with saline.
- Hemostasis was secured.
- Port sites and Suprapubic incision site were closed.


Mass formation



Area of Perforation


Affected Segment of Bowel



Post-anastomosis

Resected Bowel

POST PROCEDURE

The patient tolerated the procedure well; he was shifted to the ICU and later to the ward. He was discharged in a stable condition on day 9.

DISCUSSION

Intestinal Perforation is a major life-threatening condition with high morbidity and mortality that requires emergency surgery. Despite improvements in surgical and medical treatments, the overall mortality rate is 30% and the mortality rate of cases that also have diffuse peritonitis is up to 70%. Morbidity and mortality following an intestinal perforation were greater in patients with unstable initial vital signs, poor nutritional status, and feculent ascites (1,2).

The common pathology of Ileal perforation is **Typhoid or Enteric fever, Non-specific ulcers, Tuberculosis, and others.** Intestinal complications of typhoid fever are quite common in developing countries. Whereas gastroduodenal perforation usually results in massive pneumoperitoneum, small bowel perforation accounts for the majority of the cases in which the amount of extraluminal air is too small to be detected by conventional radiography or even CT (3).

Non-traumatic ileal perforation is a common cause of obscure peritonitis. Small bowel perforation is a potentially fatal complication if the treatment is delayed (4).

Mortality Risks Associated with Surgery:

A retrospective analysis of patients with intestinal perforations undergoing emergent surgery found that feculent ascites and an SBP <100 mmHg were independent risk factors for postoperative mortality. In other cohorts, the presence of sepsis was a negative prognostic factor for both small bowel and colonic perforations. Other identified risk factors include older age, presence of comorbidities, acute kidney injury, leukopenia, acidemia, hypothermia, decreased hematocrit level, and low P/F (Pa02/Fi02) ratio for mechanically ventilated patients. Taking these factors into account, the patient in this case had a very high risk of postoperative mortality (5,6).

Take Home Points:

Emphasis on bedside examination and deliberate feedback loops to physicians may be the most effective way to improve diagnostic accuracy and timeliness. Biomarkers and risk scores should be used in conjunction with bedside assessments in patients with suspected sepsis, not in lieu of those assessments. When an unanticipated change in clinical exam or status occurs, one should broaden the differential to consider other diagnoses.

An "acute abdomen", with findings such as guarding and a rigid abdomen, is a surgical emergency and warrants immediate consultation from a surgical team. Adequate resuscitation and initiation of a protocolized sepsis bundle may potentially improve the prognosis of patients in shock who undergo "damage control laparotomy" due to severe abdominal sepsis (7).

Any patient presenting with fever and right sided lower abdominal pain, especially at extremes of age, should be examined thoroughly and supplemented with proper investigations to come to a correct diagnosis for better outcome.

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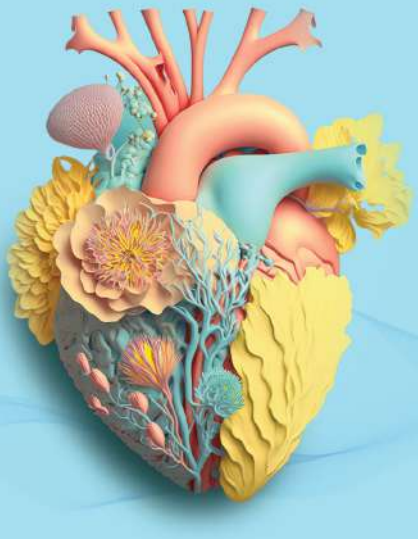

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