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AOGD BULLETIN



**Critical Obstetric Care
and Benign Gynaecology**

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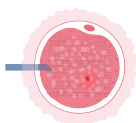
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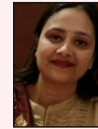
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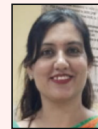
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From the AOGD Office



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Dear Friends

Cheers to a prosperous, peaceful, and healthy 2024!

The AOGD has had quite an eventful year in 2023 and hopes that the new year will usher in full spirits in preparation for the forthcoming AICOG in 2026. To make this a memorable event, each member must participate and put up a good show.

Some aspects of medical practice are straightforward and sufficient evidence exists to support optimal management, others are controversial and elicit debates. Through academic updates, discussion and dialogue, the intellectual mind finds a middle best path. In this issue of the bulletin, we explore various clinical situations and updated management protocols in critically ill obstetric patients. A presentation on various aspects of benign gynecology, including medico-legal issues, surgical options, and treatment options for adenomyosis, should prove to be an interesting read.

We encourage you to keep up with AOGD office announcements and updates through whats app, e-mail and telephonic messages. With the increasing number of opportunities and events, it is crucial to remain vigilant. Since FOGSI membership subscription is due in January 2024, we request the members to inform the office regarding any change in address or contact details at the earliest possible. The annual members may renew the subscription on time to ensure timely receipt of FOGSI membership number.

We all deeply mourn the loss of Dr Monika Suri, who left for heavenly abode on 30th December 2023. Our sincere condolences are extended to her family and friends on her untimely passing.

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From the Editor's Desk



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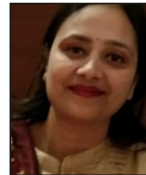
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Respected Seniors and dear friends

Warm greetings to all!

We gladly bring you first bulletin of the year 2024. The current issue delves upon 'Critical Care Obstetrics and benign Gynecology'. It includes topics like clinical assessment scores in critically ill obstetric patients, oxygen therapy in obstetrics, ancillary role in ICU & maternal collapse, which is a nightmare to the obstetricians.

In benign gynecology, we present to you an update on adenomyosis, algorithm on endometrial hyperplasia, role of minimally invasive surgery in pelvic floor reconstruction. In medicolegal section the hysterectomy audit throws light on the medicolegal issues and need of optimizing healthcare delivery. In research hub section, there is an interesting review on unmasking the predatory nature of publishing practices in Medicine. Last but not the least, do watch a video on tips and tricks to make total laparoscopic hysterectomy easy.

Wish you a happy new year!

"Embrace the light of new beginning,

It's the only way to discover what lies beyond horizon".

Warm regards

AOGD Editorial team (2023 – 2024)

Role of Assessment Scores in Critical Obstetrics Patients

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Introduction

Critical assessment scores are measures of disease severity that are used to predict outcomes in critical care patients and is useful for standardizing research and comparing quality of patient care across ICUs. Scoring systems quantify the severity of patient's illness severity and prognosticate the outcomes of the group of patients as per the probability model.¹ In clinical practice, the role of scoring systems has been demonstrated in objective quantification of disease severity, risk stratification of patients as per prognosis, and assessment of quality improvement of ICU services as per patient outcomes.² (Fig 1) A ideal critical assessment score should be predictive (of outcome, functional status, mortality), applicable to broad patient populations, calibrated, easily performed, discriminatory and has the capacity to anticipate standard of life and functionality of patients after getting discharged from ICU. The critical assessment scores enables us to prognosticate, helps in cost-benefit analysis, enables us to make decisions on withdrawal of treatment, and helps compare performance between centers.¹

However, critical assessment scores must be used by clinicians, nurses, and policy-makers judiciously as inaccurate usage could lead to error production, wastage of resources, and may lead to misdiagnosis and substandard treatment of patient.³

Types of Critical Assessment Scores

Critical assessment scores could be categorised into critical assessment scores assessing severity (APACHE, SAPS, MPM, MODS, LODS, SOFA etc), critical assessment scores assessing specified disease conditions like MELD score for liver diseases, and critical assessment scores assessing injury to specific organ systems like GCS score for neurological injuries. (Table 1). The severity critical assessment scoring system can

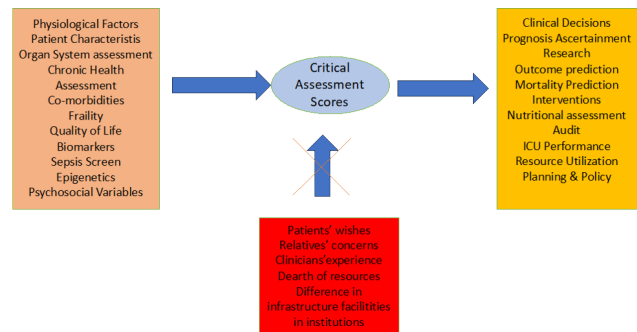


Figure 1: Factors to be considered while developing critical assessment scores (scoring system) and its utility

be divided into a) Outcome prediction based critical assessment scores like APACHE (Acute Physiology and Chronic Health Evaluation), SAPS (Simplified Acute Physiology Score), and MPM (Mortality Probability Models), and b) Organ system dysfunction prediction based critical assessment scores like MODS (Multiple Organ Dysfunction Score), SOFA (Sequential Organ Failure Assessment), and LODS (Logistic Organ Dysfunction Score).

Since we are specifically discussing critical assessment scores in critically ill patients in this article, early warning scores like National Early Warning Scores (NEWS), Modified Early Warning Scores Risk Triage etc. will not be discussed here as they have been used primarily for early identification of deterioration in a patient's status. The early warning scores help in rapid mobilisation of critical care services to ward patients and guide nurses/paramedical staff to guide regarding further course of action.⁴

Discussion

Critical assessment scores can be broadly classified as:

First day scoring systems/Scoring Systems Predicting in-patient mortality

- APACHE scoring systems.
- SAPS (Simplified acute physiology score)

Category	Intent		Examples	Outcome Measure
Disease specified assessment scores	Decide risk of a single specific disease		CHADS ₂ ≥ VASc	Risk and/or fatality of a single disease
Injury specified Assessment Scores	Classifies extent of injury severity		(Glasgow Coma scale)	Quantify extent of acute neurological injury
Illness severity specified assessment Scores	Probability of Mortality Risk Prediction	Estimates risk of in-hospital mortality of ICU patients as per derangement of physiologic variables on admission to ICU	Acute Physiology and Chronic Health Evaluation (APACHE)	Probability of in Hospital mortality
			Simplified Acute Physiology Score (SAPS)	
			Mortality Probability Model (MPM)	
	Probability of Organ System Derangement Prediction	Explore extent of organ system derangement. Could be used as serially to assess response/ failure of treatment initiated	Sequential organ failure assessment (SOFA)	Extent of organ dysfunction
			Multiple organ dysfunction score (MODS)	
			Logistic organ dysfunction score (LODS)	

- MPM (Mortality prediction model)
- Repetitive scoring systems/Scoring systems predicting organ dysfunction
- MODS(Multiple Organ Dysfunction Score)
 - SOFA (Sequential Organ Failure Assessment)
 - LODS (Logistic Organ Dysfunction Score)
- Other critical assessment scores
- Glasgow Coma Scale (GCS)
 - Nutrition risk in critically ill (NUTRIC)

First day scoring systems/Scoring Systems Predicting in-patient mortality

APACHE - Acute physiology and Chronic Health Evaluation

APACHE is one of the most frequently used critical assessment score worldwide. APACHE I (1981) comprises of amalgamation of health indicators before admission and 34 weighted physiologic variables, measured within the first 24 hours of admission to ICU. The score obtained correlates with mortality.⁴

APACHE II came into being after 4 years and the number of variables was reduced to 12 from 34 with inclusion of primary ICU admission diagnosis. The algorithms used in APACHE II

estimates probability of mortality in hospital taking into account total points (0-71) and diagnosis at time of admission to ICU. The APACHE II score of 25 confers about 50 % probability of death while score > 35 characterizes high probability of death, i.e.,80%. Even though newer APACHE models are available to use, APACHE II remains most used critical assessment score in US and UK.¹

The major leap obtained in APACHE III (1991) was addition of treatment initiation and location immediately before ICU admission, and major disease categories, thus giving it the ability to calculate mortality risk pertaining to specific group of diseases. However, requirement of manually extracting complex patient data, longer time requirements, and the proprietary over the use of equations included in APACHE III, have led to its restricted usage.

APACHE IV came into public domain in 2006 and is constructed from variety of patients as compared to previous version. It includes mechanical ventilation, GCS score, thrombolysis, PaO₂ and PaFiO₂ as well. APACHE IV also helps in predicting total number of days of ICU admission which can indirectly denote resources utilized in

critical care services. Its algorithm does not bear proprietary ownership and can be used freely. However, inclusion of 142 variables makes it difficult to use and led to its restricted usage.²

Simplified Acute Physiology Score

The SAPS (1984) unlike APACHE III, excludes diagnostic categories and chronic health status as a part of severity of illness estimate and thus is considered as quicker and less expensive to calculate. The ability to predict in-patient mortality is similar in both APACHE and SAPS.³

9 years later, SAPS II was introduced and the contrasting point between SAPS I and SAPS II was that SAPS comprised of twelve measurable values like age(years), reason of admission, and 3 underlying disease conditions (Acquired Immunodeficiency Syndromes, hematological carcinomas, and advanced cancer). Logistic regression analyses convert score into probability model to predict mortality risk of critically ill patients. SAPS II is easy to use, freely available and has predictive ability like APACHE.

SAPS III is the newest and most advanced member of SAPS system and was developed in 2005 and score data is acquired during the first 60 minutes of ICU admission, using 20 variables (developed and weighted after multiple logistic regression analyses) from three different categories

- i. Patient characteristics before ICU admission (age, comorbidity)
- ii. Conditions pertaining to the ICU admission (readmission)
- iii. Extent of derangement of physiological variables (vital signs, GCS)

The favorable aspects of SAPS III are that it is freely available for use, especially made prediction algorithms suited to 7 international zones of America, Europe, Australia, and Asia making it relevant globally.⁵

Mortality Probability Model (MPM)

The first MPM included seven variables for admission and seven variables for the 24-hour admission period. MPM II critical assessment score has two components: MPM0, the

admission template containing 15 variables, and MPM24, the 24-hour template, which is applicable on ICU patients admitted for more than 24 hours containing 5 admission variables along with 8 extra values.

With the exception for age, all values in MPM II are denoted as present or absent and assigned a score of 1 or 0 correspondingly, whereas in other scoring systems, variables are weighted. Modeling points are added to MPM-II at 48- and 72-hours following ICU admission to account for continuous assessment. Clinicians' scoring method is made simpler by the assumption that variables that are not retrieved are normal rather than missing. MPM-II has been improvised by adding weighted hospital-days scale (WHD-94) to assess resources utilised in ICU.⁶

The updated MPM0-III estimates the risk of death upon hospital discharge using 16 variables, including 3 physiological markers, collected within 1 hour of ICU admission. The final MPM0-III model incorporates two new variables; Zero variable (only age is risk factor) and full code variables (operated patient after risk of extended anaesthesia) upon ICU admission.¹

Roles, limitations, and implications of mortality predicting severity scoring systems

The most widely used outcome risk prediction scoring systems, which were created, tested, and validated, are APACHE II, APACHE IV, SAPS 3, and MPM0-III. Though all the critical assessment scores use the common outcome, i.e., mortality, however there is notable difference in timing of calculation of scores. For example: the first hour of ICU admission (SAPS 3), 24 hours after ICU admission (APACHE II and IV), ICU admission but prior to intervention (MPM0-III), and 24 hours after ICU admission (MPM24-II). Dependability of critical assessment scores can only be ensured when they are applied on critical care patients with a stipulated time period.

The most updated version of critical assessment scores should be used as they are modified and developed after considering recent changes in population characteristics and geographical considerations. It is imperative that effectiveness

of prediction of a particular critical assessment will decrease progressively with the time passing by. So, there is continuous need of regular updates and recalibrations as per new developments.¹

Some limitations of critical assessment scores:

1. These critical assessment scores systems don't take standard of life and functionality of patients' after ICU admission as outcomes.
2. These critical assessment scores estimate probability of death within a similar cohort having comparable baseline characteristics and hence, should be used in similar group of populations for whom these scores were originally developed. Since, characteristics of patient population changes over a period due to changes in pathogens, advance in treatments etc., so their cautious usage is warranted.

3. These systems do not follow a linearity, e.g., a score of 70 does not confer twice the chances of dying as compared to a score of 35. Further, the data cannot be compared in between the various scoring systems as different scales and variables have been used in their development. Hence, the need to develop one internationally applicable scale has been felt from time to time. Currently, Global Open-Source Severity of Illness Score (GOSSIS-1) and Linking of global intensive care (LOGIC) projects are working in this direction.
4. Lead time bias- Difference in initiation of treatment before ICU admission, or lead-time bias, may confound severity scores. The common physiological variables include blood glucose, serum pH, oxygenation, heart rate (HR), blood pressure (BP), respiratory rate (RR), and blood pressure could show marked changes as per treatment is initiated/not

Comparison of Organ Dysfunction Critical Assessment Scores		
Critical Assessment Score	Parameters	Description
MULTIPLE ORGAN DYSFUNCTION SCORE (MODS)	-GCS -Pressure adjusted heart rate# -Serum Creatinine levels -PaO ₂ mmHg /FiO ₂ -Platelet count -Serum Bilirubin levels	First daily value utilized Each value is given score 0-4 Range of score: 0-24 Could be used everyday
SEQUENTIAL ORGAN FAILURE ASSESSMENT (SOFA)	-GCS -Hypotension - Serum Creatinine levels -Urine output/24 HOURD -PaO ₂ mmHg /FiO ₂ - Platelet count -Serum Bilirubin levels	Worst daily value used Each value is given score 0-4 Range of score: 0-24 Could be used everyday
LOGISTIC ORGAN DYSFUNCTION SCALE (LODS)	-Glasgow Coma Score -Heart rate -Systolic Blood Pressure -Blood urea nitrogen -Creatinine -Urine output/24 hours -FaO ₂ mmHg /FiO ₂ -White blood cell count -Platelets -Bilirubin -Prothrombin time	Worst daily value used Values quantified on 0,1,3 5 scale Range of Score: 0-22 Valid for first 24 hours initially, now daily usage is also permitted
#PAR: Pressure adjusted heart rate is computed by multiplying heart rate with right arterial pressure, and then whole value is divided by mean arterial pressure		

initiated prior to critical care unit admission. A patient referred from a primary/comprehensive health centre admitted to ICU without stabilization and another patient shifted to ICU after primary treatment in emergency department might show striking difference in the severity score which may not be correct clinically and could lead to biases in patient care. Some conditions, though produce insanely high severity scores, don't carry that much actual risk of mortality. They are quickly reversible with correct management. For example, diabetic ketoacidosis, postoperative patients admitted to the ICU prior to full anesthesia reversal, hemorrhage etc.

Repetitive scoring systems/Scoring systems predicting organ dysfunction

MODS (multiple organ dysfunction score)

MODS critical assessment score pertains to dysfunction in six organ systems and uses their failure as the outcome, rather than death. MODS included five fundamental physiological variables as well as a composite variable for the cardiovascular system known as "pressure-adjusted heart rate" (PAR), which is assumed to be normal in patients who do not have a central line. Each variable's initial measurement of the day is scored on a five-point scale, resulting in a total score that ranges from zero (normal) to 24 (highest dysfunction). However, MODS does not predict death directly, but, gives indirect assessment of probability of mortality by serially assessing organ system derangement and has shown strong correlation too in research studies.⁸ (Table 2)

SOFA (Sequential Organ Failure Assessment)

Initially named as Sepsis Related Organ Failure Assessment, the name of this critical assessment score was modified to Sequential Organ Failure Assessment owing to its capacity to measure organ system dysfunction sequentially and its ability to predict death. The SOFA was structured by European Society of Intensive Care Medicine to cater organ dysfunctions secondary to sepsis.⁸ Calculation of SOFA is done 24 hours after admission to the ICU and measure every 48

hours serially. The highest values along with and average scores correlate most with probability of death. An increase in SOFA score more than or equal to 2 is associated with more than 10% mortality, scores when increases by about 30% increases risk of mortality by 50%. So, serial values of SOFA correlates with mortality. Unlike MODS, SOFA does not require any calculation and easy to measure (Table 2). There are some variations to SOFA score. Delta SOFA is described as change in total SOFA score between a designated time and a baseline value. The baseline value could be admission SOFA/SOFA value of any other defined day. For example, respective changes in SOFA scores can be computed as: $\Delta\text{-SOFA} = \text{ICU SOFA} - \text{AD(admission day)-SOFA}$. Delta SOFA >2 predicted of 51% probability of being alive at the time of hospital discharge as compared to 86.5% probability of being alive by Delta SOFA score of 0-1 as per recent study. Thus, the increase in SOFA scores by 2 or more points worsens the prognosis of patients.⁹

Identification of at-risk patients outside ICU is done with quick Sequential Organ Failure Assessment (q-SOFA) score. The q-SOFA score is a relatively easy and simple score comprising of three variables: respiratory rate (RR) ≥ 22 breaths per minute, altered mentation (GCS < 15), and systolic blood pressure (SBP) < 100 mm Hg. One point is allocated to each variable. A q-SOFA score ≥ 2 is correlated with significant predictability of increased mortality in patients outside of the ICU.¹⁰

LODS (Logistic Organ Dysfunction Score)

LODS comprises of twelve separately weighted variables that represent the organ system dysfunctions and the relative severity across organ systems objectively derived using regression analyses. The most deranged values are selected to calculate the score after 24 hours of ICU admission. LODS is a composite critical assessment score which measures both dysfunction of organ system and probability of mortality. It ranges from 0 to 22 and uses an equation to translate the scores to calculate probability of death.^{1,3} (Table 2)

Roles, limitations, and implications of organ dysfunction predicting severity scoring systems

MODS, SOFA, and LODS can be calculated easily from commonly measured parameters in routine practice and provide vital inputs to caregivers pertaining to patients' status, course of disease, and treatment results. They provide doctors with a quick overview of important organ systems' functional status. Though they have variable time frame of collecting clinical values, all can be used daily to assess functionality of vital organs.

Numerous studies have shown that there is no discernible difference between these three scoring systems as per their performance status. Because of its ease of use, SOFA is still the most widely utilized score as any organ system predicting critical assessment score has not shown any superiority.

Other Clinical assessment scores

NUTRIC- NUTRIC critical assessment score is a novel score that identifies critical care patients at high risk of malnutrition and those who will be benefitted most by aggressive nutrition therapy. Each variable is given score ranging from 0-2 and total score varies from 1 to 10.^{11,12} (Table 3-5)

GCS (Glasgow Coma Score)

The GCS is a widely used scale to quantify degree of neurological injury rapidly. It is most frequently used tool in emergency services. It correlated very strongly to acute brain injury and

Table 3: NUTRIC critical assessment score

Values	Range	Points
Age	<50	0
	50 - <75	1
	≥75	2
APACHE II	<15	0
	15 - <20	1
	20-28	2
	≥28	3
SOFA	<6	0
	6 - <10	1
	≥10	2
Co-morbidities	0-1	0
	≥2	1
Days from hospital to ICU admission	0 - <1	0
	≥1	1
IL-6	0 - <400	0
	≥ 400	1

Table 4: NUTRIC critical assessment score scoring system: IL-6 availability

Summated Points	Classification	Description
6-10	High Score	Denotes worse patient outcomes Robust nutrition, if initiated, has shown clear cut benefit.
0-5	Low Score	Low risk of malnutrition

Table 5: NUTRIC critical assessment score: IL-6 non-availability*

Summated Points	Classification	Description
5-9	High Score	Denotes worse patient outcomes Robust nutrition, if initiated, has shown clear cut benefit.
0-4	Low Score	Low risk of malnutrition

* IL-6 is not imperative in for score calculation due to it's low predictability

patients 'outcome. Some modifications have been done in GCS values to assess alertness in infants and children.¹³

Conclusions

Critical assessment scores are being used in clinical practice for over 40 years now. Their function has now been shifted from individual patient care to now effectively organizing critical care services and enabling international comparisons. With the advent of artificial intelligence in medicine, scoring systems should also undergo major refinement for widespread application and cross-border comparisons across ICUs. New critical assessment scores taking quality of life post ICU admission, length of stay, functional status etc as the outcome measures should be developed. The new scoring systems must have elements including biological processes, genomics, biomarkers, and health care infrastructure.

References

- Desai N, Gross J. Scoring systems in the critically ill: uses, cautions, and future directions. *BJA Educ.* 2019;19(7):212-8.
- Pellathy TP, Pinsky MR, Hravnak M. Intensive Care Unit Scoring Systems. *Crit Care Nurse.* 2021;41(4):54-64.
- Vincent J-L, Moreno R: Scoring systems in the critically ill. *Critical Care* 2010, 14:207
- Rapsang AG, Shyam DC. Scoring systems in the intensive care unit: A compendium. *Indian J Crit Care Med* 2014;18:220-8.
- Quintairos A, Pilcher D, Salluh JIF. ICU scoring systems. *Intensive Care Med.* 2023 Feb;49(2):223-225. doi:
- Nathanson BH, Higgins TL, Teres D, et al. A revised method to assess intensive care unit clinical performance and resource utilization. *Crit Care Med*

- 2007;35:1853-1862.
7. ArtsDG, deKeizerNF, VroomMB, deJongeE. Reliability and accuracy of Sequential Organ Failure Assessment (SOFA) scoring. Crit Care Med 2005;33:1988-93.
 8. Vincent JL, Moreno R, Takala J, et al. The SOFA (Sepsis-related organ failure assessment) score to describe organ dysfunction/failure. On behalf of the Working Group on Sepsis-Related Problems of the European Society of Intensive Care Medicine. Intens Care Med 1996;22:707-10
 9. García-Gigorro R, Sáez-de la Fuente I, Marín Mateos H, et al. Utility of SOFA and Δ -SOFA scores for predicting outcome in critically ill patients from the emergency department. Eur J Emerg Med. 2018;25(6):387-393.
 10. Koch C, Edinger F, Fischer Tet al. Comparison of qSOFA score, SOFA score, and SIRS criteria for the prediction of infection and mortality among surgical intermediate and intensive care patients. World J Emerg Surg 15, 63 (2020).
 11. Heyland DK, Dhaliwal R, Jiang X, Day AG. Identifying critically ill patients who benefit the most from nutrition therapy: the development and initial validation of a novel risk assessment tool. Critical Care. 2011;15(6):R268.
 12. Rahman A, Hasan RM, Agarwala R, et al. Identifying critically-ill patients who will benefit most from nutritional therapy: Further validation of the "modified NUTRIC" nutritional risk assessment tool. Clin Nutr. 2015.
 13. Raffa JD, Johnson AEW, O'Brien Z, et al. The Global Open Source Severity of Illness Score (GOSSIS). Crit Care Med. 2022 Jul 1;50(7):1040-1050.

CONGRATULATIONS ON YOUR ACHIEVEMENT



Dr Neerja Bhatla

VICE PRESIDENT FOGSI, NORTH ZONE AT AICOG 24

Oxygen Therapy in Obstetrics

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Introduction

Oxygen is a pharmacological agent which is more or less used in every critical care set up. Like any other drug it has definite indication, dose, side effects and it should not be prescribed or used casually. Proper and safe administration of oxygen should be there to achieve the target goal.

Important indications of oxygen therapy

1. Respiratory failure in pregnancy/postpartum

- Pulmonary edema- non cardiogenic
- Pulmonary edema- cardiogenic
- ARDS
- Pneumonia

2. Circulatory failure

- PPH
- APH

Some of the indicators of tissue hypoxia warranting oxygen therapy are altered mentation, tachycardia, tachypnea, hypertension followed by hypotension, decreased urine output and blood acidosis increased lactate level in arterial blood gas analysis (ABG).

Important terminologies:

PaO₂= Alveolar O₂ tension

FiO₂= Fraction of inspired oxygen

PaCO₂= Arterial CO₂ tension

SpO₂= Oxygen saturation

Fraction of inspired oxygen (FiO₂) is the measurable or calculable concentration of oxygen delivered to the patient, that is, if a tidal volume of 500 mL is composed of 250 mL oxygen, the FiO₂ will be considered 0.5 (50%). In the air we breathe, the FiO₂ is 0.21 (21%). It is expressed as a fraction or as percentage.

Goals of oxygen therapy:

1. To increase alveolar oxygen tension
2. To decrease the work of breathing required to maintain a given alveolar oxygen tension
3. To decrease myocardial work necessary to maintain arterial oxygen tension
4. To correct hypoxemia by achieving a PaO₂ 60 mmHg or an arterial oxygen saturation 90%, in pregnancy PaO₂ 70mmHg and SpO₂ 95%

Principles of oxygen therapy:

1. Administer minimum therapeutic dose needed to achieve the target
2. Prescribe the dose as percentage or a fractional concentration (FiO₂)
3. Assess clinical parameters to modify the dose

Administration of oxygen:

The equipment which are used for oxygen administration are two types. The choice of equipment depends upon the degree of hypoxemia, patient comfort, requirement for precision of delivery and cost. These are as follows

1. Variable performance low flow system. It is commonly used. The low flow system is used if
 - Tidal volume is between 300-700 ml
 - Respiratory rate is <25 per minute
 - Breathing pattern is regular and consistent
2. Fixed performance high flow system. It is used when a constant FiO₂ is required. Mostly used in chronic disease like COPD.

Variable performance low flow system:

The devices that are used as low flow oxygen delivery system are discussed below and the flow rate and FiO₂ that can be achieved by these are summarized in Table 1.

1. Nasal Cannula (Fig 1)



Figure 1: Nasal Prong

It is the most commonly used device. The nasopharynx act as the reservoir (50ml). It is easy to administer. It can be used at a flow rate as low as 0.5 L/min and can be used up to 6 L/min. Humidifier is used when the flow rate is more than 4 L/min else crusting of nasal mucosa and bleeding can occur.

The advantage is patient can talk, drink and eat while using this device so it is comfortable and convenient to use.

The disadvantages are irritation of the nose at high flow rate, varying FiO₂ with patient's breathing pattern and rarely allergic reaction to the tube.

2. Face Mask (Figure 2)

It is also commonly used in clinical practice. The mask acts as a larger reservoir (100ml) so a higher FiO₂ can be delivered to the patient. It can deliver 35% to 50% oxygen. It is to be started when the required flow rate is at least 5 L/min and can be used up to 8 liters/min. It should be snugly fitted. The disadvantage is it has to be removed while drinking or eating. Patient can speak with the mask on.

3.Face Mask with Reservoir (Figure 3)

A reservoir with the capacity of 600-1000 ml is attached with the simple face mask to increase the FiO₂ further. It can deliver FiO₂ of more than



Figure 2: Face mask



Figure 3: Mask with Reservoir Bag

50%. The flow rate should be more than 10 L/min and the reservoir should be full all the time. It can be of two types

- Partial rebreather mask: Patient inhales from the reservoir and from the environment and exhales into the reservoir. So, the reservoir does not have 100% oxygen and patient inhales mixed air.
- Non-rebreather mask: It has a one-way valve on the mask and reservoir. Room air does not enter the mask and exhaled air does not enter the reservoir because of the valves. It can deliver up to 90% FiO₂.

Fixed performance low flow system:

It provides consistent FiO₂. The oxygen flow

Table 1: Variable performance low flow oxygen delivery systems

Low flow system		
Low – flow system	Oxygen flow rate (L)	FiO ₂
Nasal cannula	1	0.24
	2	0.28
	3	0.32
	4	0.36
	5	0.40
	6	0.44
Simple face mask	5-6	0.40
	6-7	0.50
	7-8	0.60
Partial rebreathing mask	8	0.80
	9	0.80+
	10	0.80+
Nonrebreathing mask	10	0.80+
	15	0.90+

meets all inspiratory demands. The patient's respiratory rate or breathing pattern does not affect the FiO₂. They are used when very precise delivery of FiO₂ is required as in cases of chronic pulmonary airway diseases. These systems use a method of gas-entrainment to provide a specific FiO₂ and adequate flows. These were referred to as "venturi" devices because they were believed to be governed by the Bernoulli principle of gas flow, which states that a rapid velocity of gas exiting from a restricted orifice will create subatmospheric lateral pressures, resulting in atmospheric air being entrained by the "constant pressure jet mixing" principle which states that a rapid velocity of gas through a restricted orifice creates "viscous shearing forces" that entrain air into the mainstream (Fig 4).

Evaluation of oxygen therapy:

1. Physical examination must be performed and monitored:
 - Pulse rate and rhythm
 - Blood pressure—systolic and diastolic
 - Perfusion state-skin color, texture and capillary refill urine output
 - Level of consciousness
 - Pulse oximetry- may not accurately work in patient with hypotension or hypothermia
 - Ventilator pattern including respiratory rate,

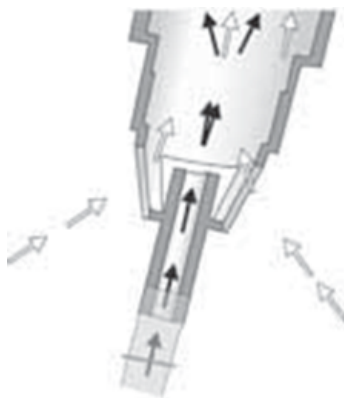


Figure 4: Principle of Air Entrainment Device; 100% oxygen (black arrows) and entrained room air (white arrows) in a fixed ratio depending on oxygen flow rate and entrainment port size. The larger the ports the lower is the FiO₂ delivered

tidal volume and work of breathing

2. Arterial blood gas measurements- It is more sensitive test
 - PaO₂, PaCO₂ and acid-base status must be evaluated

Refractory hypoxemia is said to be present when: PaO₂ is less than 55 mmHg at FiO₂ more than 0.35

PaO₂ is less than 55 mmHg at FiO₂ less than 0.35 and the response to oxygen challenge of 0.2 is less than 10 mmHg.

Oxygen toxicity

Oxygen toxicity can occur if high FiO₂ (> 60%) is delivered over many days. The side effects are:

Pulmonary

- Hypoventilation
- Absorption atelectasis
- Pulmonary vasodilatation
- Decreased mucociliary clearance
- Decreased macrophage function
- Tracheobronchitis
- ARDS
- Bronchopulmonary dysplasia

Extrapulmonary

- Suppressed erythropoiesis
- Decreased cardiac output
- Systemic vasoconstriction.

To conclude, oxygen is a life saving drug which must be used promptly after identifying hypoxia. The use of appropriate device, dose and monitoring is of utmost importance. Obstetricians should be well versed about its proper and safe use before prescribing oxygen.

Suggested Reading

1. Kapadia V, Wyckoff MH. Oxygen Therapy in the Delivery Room: What Is the Right Dose? Clin Perinatol. 2018 Jun;45(2):293-306.
2. Overview of oxygen delivery devices. Michael Lipnick, Cornelius Sendagire, Rich Kallet, Rich Branson, Rebecca Silvers. <https://opencriticalcare.org/encyclopedia/overview-of-oxygen-delivery-devices>. Last accessed on 13 jan 2024.
3. Suran M. Preparing Hospitals' Medical Oxygen Delivery Systems for a Respiratory "Twindemic". JAMA. 2022;327(5):411–413.

Resuscitation in Maternal Collapse

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Maternal collapse is defined as an acute event involving the cardio-respiratory systems and/or brain, resulting in a reduced or absent conscious level (and potentially death), at any stage in pregnancy and up to six weeks after delivery. It may be due to haemorrhagic or non-haemorrhagic conditions. The incidence is 0.14-6/1000 births. Active surveillance in the labor and delivery suite along with early identification and management of the pre-arrest conditions can prevent mishaps and improve the outcome of the mother and fetus/neonate. Once the collapse has occurred, early diagnosis of the underlying cause and specific management will aid in the early reversal of cardiopulmonary arrest for improving the outcome of resuscitation. The focus of resuscitation is the mother. Fetal outcome is dependent upon effective maternal resuscitation. Since maternal collapse is often sudden in nature, all areas of the hospital catering to pregnant patients (antenatal clinics, ante-natal and post-natal wards, labor and delivery areas) must have a crash cart with all the supplies required for maternal resuscitation.

Surveillance

Periodic charting of vital signs (pulse, systolic and diastolic blood pressure, temperature, respiratory rate, alertness, and urine output) known as the Modified Early Obstetric Warning Score (MEOWS) should be done for all admitted obstetric patients especially those at high risk of collapse. A score of >2 should alarm the physician for a possibility of maternal deterioration and development of cardiac arrest. Multidisciplinary teams should be activated in case the score increases and resuscitation team, anesthesiologists, obstetricians, and pediatricians should be involved in the management of such emergencies.

Immediate actions:

Patient should be put into a left lateral decubitus

position to relieve aortocaval compression and oxygen should be given by face mask to treat or prevent hypoxemia. A large-bore intravenous (IV) access should be established above the diaphragm. An active search for the preventable causes of cardiac arrest (ABCDEFGH: A: Anesthetic complications; B: Bleeding; C: Cardiovascular; D: Drugs; E: Embolic; F: Fever; G: General non-obstetric reversible causes; H: Hypertension) should be undertaken and appropriate treatment should be instituted.

Basic Life Support

Basic life support (BLS) measures (Flowchart 1) should be initiated immediately by the bystander after the recognition of cardiac arrest and should be continued until expert help arrives or the victim starts responding. A minimum of four BLS responders should be present to accomplish all these tasks effectively. Documentation of the time of arrest should be done to help the team decide regarding perimortem cesarean delivery (PMCD).

Steps of Basic Life Support

Scene Safety: Ensuring scene safety for the rescuer and the victim is the first step. Universal precautions including the use of personnel protective equipment (PPE) should be taken.

Check Responsiveness: Auditory and tactile stimulus should be given to ascertain that the patient is unresponsive.

Check Breathing and Pulse: The chest should be scanned to look for the breathing. Simultaneously, the ipsilateral carotid pulse should also be palpated. All these actions should be performed simultaneously within 5-10 seconds.

Activation of Emergency Medical Services: The emergency medical service (EMS) teams should be activated immediately with a request to bring an automated external defibrillator

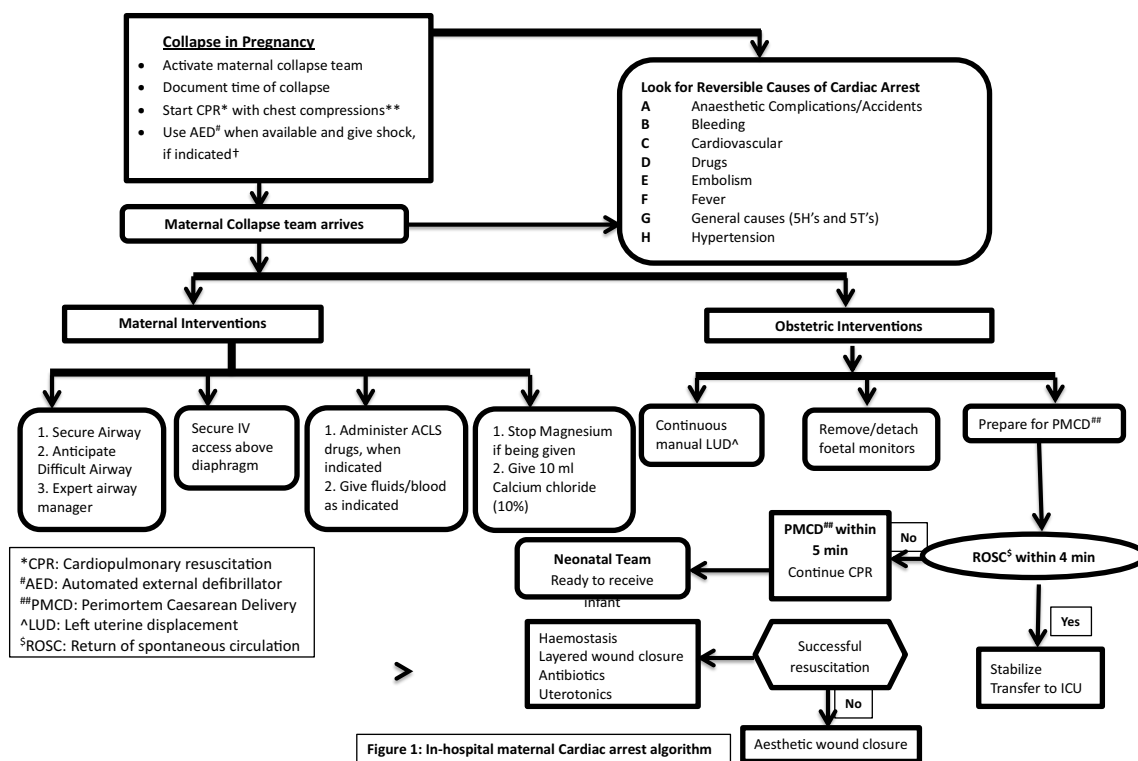


Figure 1: In-hospital maternal Cardiac arrest algorithm

Basic life support (BLS) measures

(AED) or a manual defibrillator.

Chest Compressions: High-quality chest compressions should be initiated immediately. The patient should be lying on a hard surface to deliver effective chest compressions. A resuscitation board can be used to improve the efficacy. Manual LUD with one handed technique or two-handed technique (preferred) should be done and must be maintained throughout the resuscitative and the post-resuscitative phase to relieve aortocaval compression. Rate of chest compressions should be 100–120/min and depth of 5–6 cm at the lower half of the sternum. The elbows should be locked. Interruptions should be minimized to <10 seconds and full chest recoil should be allowed in between compressions. Pressure over the xiphoid process and the ribs must be avoided.

Airway and Breathing: Establishment of airway control by insertion of a definitive airway device and provision of breaths are essential at an early stage as hypoxemia develops more rapidly in the

pregnant patient due to increase in maternal metabolism, reduced functional residual capacity and risk of fetal brain injury. Supplemental oxygen must be provided as soon as it is available. Early institution of bag-mask ventilation with 100% oxygen at the rate of 10-15 L/min should be initiated. Airway should be secured early during resuscitation because as mentioned earlier, these patients are at an increased risk of aspiration of gastric contents. But intubation should be attempted by an expert only as these patients have an anticipated difficult airway. The standard compression-ventilation ratio of 30:2 should be continued. Hyperventilation should be avoided at all costs. Five cycles of 30 compressions and two breaths should be continued over a period of two min until multidisciplinary cardiac arrest team takes over or patient is revived or a defibrillator is available.

Defibrillation: Prompt defibrillation with an AED when the rhythm is shockable (i.e. ventricular fibrillation (VF) or pulseless

ventricular tachycardia (pVT)) maximizes the likelihood of survival. Defibrillator pads should be placed in the anterolateral position. The lateral pad/paddle should be placed under the left breast and the other pad should be placed under the right clavicle. Fetal monitors should be removed, if not done earlier. Chest compressions should be resumed immediately after shock. Rhythm should be analyzed only after 2 min of shock delivery or if the patient begins to respond.

Advanced Cardiac Life Support

Maternal cardiac arrest should be treated as a dire emergency and the response should be fast and well-co-ordinated. Cardiac arrest advanced cardiac life support (ACLS) algorithm as recommended by the AHA 2015 guidelines should be followed. The maternal resuscitation team should comprise of an adult resuscitation team including critical care physicians and nurses, obstetrician and obstetric nurse, obstetric anesthesiologist, anesthesia assistant, neonatology team comprising of a nurse, a physician, and a neonatal respiratory therapist. Equipment for management of airway, PMCD (at least a scalpel and clamps) and neonatal resuscitation must be available in all areas where peripartum patients are taken care of. The ACLS team should continue BLS tasks. If available, continuous capnography monitoring should be used to confirm the ETT placement, assess the quality of chest compressions, and confirm return of spontaneous circulation (ROSC). Epinephrine 1 mg IV/IO should be administered every 3–5 minutes. The use of atropine is recommended only for treatment of bradycardia. If the cause of cardiac arrest is refractory (shock-resistant) VF and VT, amiodarone 300 mg infusion should be administered and 150-mg repeat dose may be administered as needed.

Fetal Assessment during Cardiac Arrest

Maternal resuscitation is a priority. As per the AHA 2020 guidelines, evaluation of the fetal heart is not helpful during maternal cardiac arrest and it may distract the team from necessary resuscitation elements. Also, it is

advisable to remove all fetal monitoring before defibrillation.

Delivery

Perimortem cesarean delivery should be planned once the obstetric and neonatal teams arrive and ROSC has not been achieved within 4 min of cardiac arrest and in whom the uterus extends to or above the umbilicus. PMCD provides a two-fold benefit. Firstly, it relieves the aortocaval compression. Secondly, early delivery of fetus may result in a decreased risk of permanent neurological damage from anoxia. In situations where the mother cannot be resuscitated, timely delivery of the fetus becomes all the more essential. The risks of neurological damage to the fetus begin to develop after 4–6 min of anoxic cardiac arrest, if there is no ROSC. Therefore, it is recommended that PMCD should begin at 4 min, so as to deliver the baby at 5 min after failed resuscitative efforts. The procedure for PMCD should be performed at the site of the maternal resuscitation. No time should be wasted waiting for surgical equipment or abdominal preparation. As soon as the scalpel is available, the procedure should begin. All the resuscitative efforts should be continued, including manual left uterine displacement. The use of oxytocin after delivery may precipitate re-arrest. Therefore, it should be used with caution.

Vaginal Delivery during Maternal Collapse

Assisted vaginal delivery during a cardiac arrest situation may be tried, if the cervix is fully dilated and the fetal head is at a low station.

Neonatal Resuscitation

In maternal cardiac arrest situations, the neonatologists should be prepared for advanced resuscitation. Neonatal endotracheal intubation may be urgently required. In cases of multiple gestation, each newborn should be resuscitated by a separate resuscitation team.

Immediate Post-arrest Care

Immediately after ROSC, an integrated postarrest care is a must. A thorough assessment, monitoring, and treatment of complications need to be done. As per the 2020 guidelines, pregnant women who survive

cardiac arrest should receive targeted temperature management, with consideration for the status of fetus that may remain in utero. Anti-arrhythmic therapy, or implantable-cardioverter-defibrillator may be used as required.

Bibliography

1. Jeejeebhoy FM, Zelop CM, Lipman S, et al. Cardiac arrest in pregnancy: a scientific statement from the American Heart Association. *Circulation*. 2015;132:1747-73.
2. Link MS, Atkins DL, Passman RS, et al. Part 6: electrical therapies: automated external defibrillators, defibrillation, cardioversion, and pacing: 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2010;122:S706-19.
3. Madden AM, Meng ML. Cardiopulmonary resuscitation in the pregnant patient. *BJA Education*, 2020;20(8):252-8.
4. Merchant RM, Topjian AA, Panchal AR, et al. Part 1: executive summary: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2020;142(suppl 2):S337-57.
5. Nirmal D, Goodsell R. Clinical Guidelines for: The use of the Modified Early Obstetric Warning Score (MEOWS) Approved by: Maternity Guidelines Committee 2016 Trust Docs ID: MID33/AO13-817.



In loving memory of



Dr Monika Suri

With profound grief and sorrow we would like to inform the untimely demise of our beloved Dr Monika Suri .

She was an excellent human being with a large heart who was loved and respected by all , Seniors and Juniors. A thorough professional, soft spoken, loving and caring doctor. There was no problem for which she had no solutions. Her ever smiling face, her courage, her compassion for all will be missed by us. She has left a void which no one can fill. May her soul rest in peace.

Algorithm

Endometrial Hyperplasia

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DEFINITION

Endometrial hyperplasia is defined as irregular proliferation of the endometrial glands and it is associated with an increase in gland/stroma ratio when compared with proliferative endometrium.¹

INTRODUCTION

Endometrial hyperplasia was classified as simple and complex hyperplasia with or without atypia. However as per the recent guidelines it is classified as hyperplasia without atypia or with atypical hyperplasia.² The risk of endometrial hyperplasia without atypia progressing to endometrial cancer over 20 years is less than 5%.² It is found to regress spontaneously during follow up in a majority of cases. Future risk of endometrial cancer in women with atypical endometrial hyperplasia is 8%.³

CLINICAL PRESENTATION

Woman may present with abnormal uterine bleeding which may include post menopausal bleeding, intermenstrual bleeding, heavy menstrual bleeding, irregular bleeding on hormone replacement therapy (HRT).

DIAGNOSTIC EVALUATION

Endometrial Hyperplasia is a histopathological diagnosis. Outpatient endometrial biopsy using an endosampler/pipelle/karman cannula gives a good yield of endometrial tissue for histopathology.⁴

Diagnostic hysteroscopy which is considered a gold standard should be considered especially when outpatient sampling fails or sample is inadequate. Hysteroscopy and guided biopsy should be done if abnormal bleeding persists or if polyps or focal lesions are suspected on TVS.²

Endometrial Hyperplasia in Special Population:

1. In breast cancer survivors on oral

Tamoxifen: Tamoxifen has a partial agonist effect in the genital tract and its use is associated with an increased risk of endometrial cancer.^{5,6} Unlike in the past, not all women on tamoxifen should be screened for endometrial hyperplasia but those who present with any abnormal vaginal bleeding or discharge should be promptly evaluated. Aromatase inhibitors (such as anastrozole, exemestane and letrozole) are not known to increase the risk of endometrial hyperplasia and cancer. Women who are on tamoxifen should be seen in by a multidisciplinary team involving an oncologist and an alternative treatment should be considered if women is symptomatic.

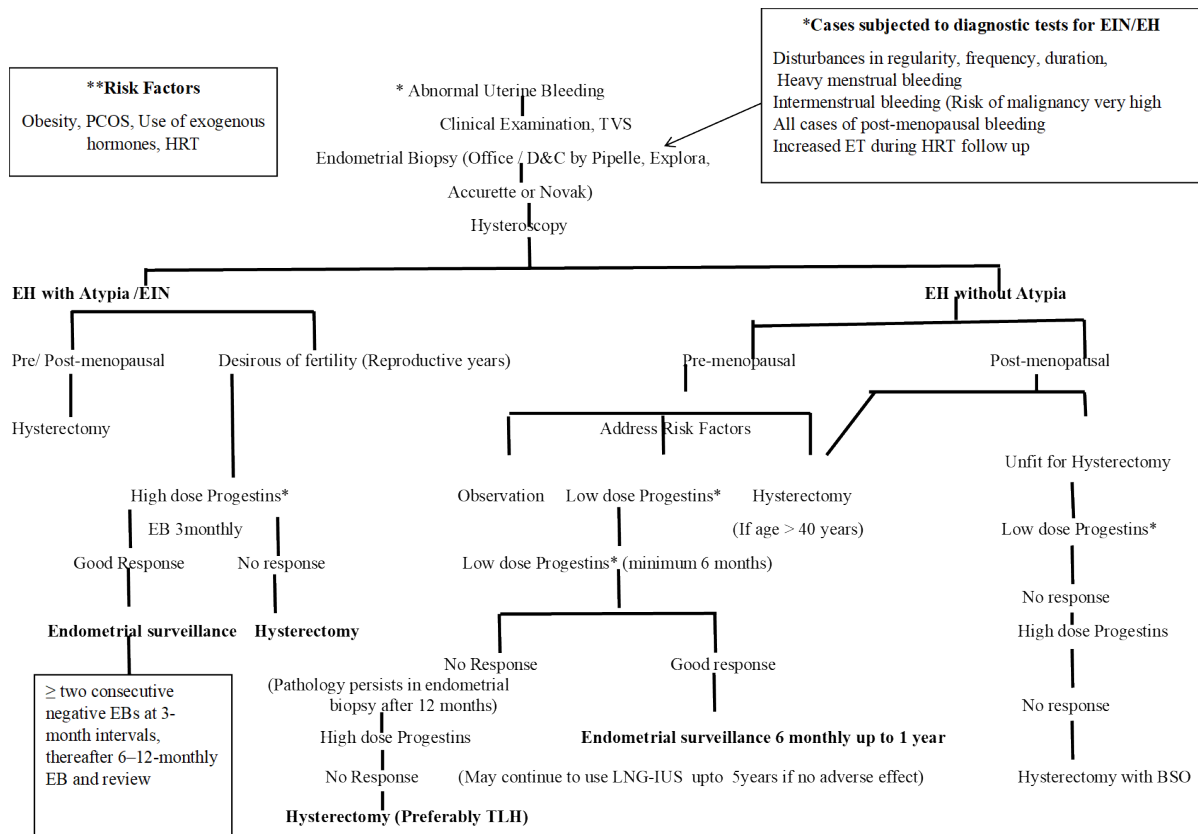
2. **In Women desiring Fertility:** The treatment should be in conjunction with a fertility specialist. Before attempting pregnancy, disease regression should be achieved on at least one endometrial sample. Women can be advised to attempt natural conception. However, as a hyperplastic endometrium may predispose women to infertility, an early referral for fertility specialist can be sought.

RECENT ADVANCES: Several biomarkers are being evaluated including phosphatase and tensin homolog (PTEN), B-cell lymphoma 2 (BCL-2) and BCL-2-like protein 4 (BAX) which have been thought to be potentially useful, but more research is needed.^{2,7}

REFERENCES:

1. Kurman RJ, Carcangiu ML, Herrington CS et al WHO Classification of Tumours of Female Reproductive Organs. 4th ed. [Lyon]:IARC; 2014.
2. Management of endometrial hyperplasia RCOG/BSGE Green-top Guideline No. 67 © Royal College of Obstetricians and Gynaecologists; February 2016: 2-24

- Doherty MT, Sanni OB, Coleman HG et al. Concurrent and future risk of endometrial cancer in women with endometrial hyperplasia: A systematic review and meta-analysis. PLoS ONE 15(4): 2020
- Zutshi V, Gupta M, Kaur P et al. Office endometrial sampling: a comparison between Endosampler and Karman cannula number 4. Int J Reprod Contracept Obstet Gynecol 2018;7:3965-8
- Van Leeuwen FE, Benraadt J, Coebergh JW et al. Risk of endometrial cancer after tamoxifen treatment of breast cancer. Lancet 1994;343:448-52.
- Fisher B, Costantino JP, Wickerham DL et al. Tamoxifen for the prevention of breast cancer: current status of the National Surgical Adjuvant Breast and Bowel Project P-1 study. J Natl Cancer Inst 2005;97: 1652-62.
- Allison KH, Tenpenny E, Reed SD et al. Immunohistochemical markers in endometrial hyperplasia: is there a panel with promise? A review. Appl Immunohistochem Mol Morphol 2008;16: 329-43.



*Progestins in the management of Endometrial Hyperplasia			
Progestin		Trade name	Usual dose
MPA oral continuous	High dose	Provera	100 - 200 mg / day
	Low dose		2.5 - 20 mg / day
Oral cyclic			10 - 20 mg / day x 10 - 12 day / cycle
Injectable		Depo-Provera	150 mg. every 90 days
MA	High dose	Megace	80 - 320 mg / day
	Low dose		40 mg / day
NETA oral continuous		Norulate	5 - 15 mg / day
Oral cyclic			15 mg / day x 10 - 12 days /cycle
Progesterone		Prometrium	100 = 300 mg / day
LNG - IUS		Mirena	20 µg / day

MPA : Medroxo-progesterone acetate ; MA : Megestrol acetate ; NETA : Norethindrone acetate ; LNG_IUS : Levonorgestrel intrauterine system

Research Hub

Unmasking the Predatory Nature of Publishing Practices in Medicine

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Introduction

In recent years, the field of medicine has witnessed a surge in the number of scientific journals and publishers. While this growth is generally considered a positive development, it has also given rise to a darker phenomenon – predatory publishing. Predatory journals exploit the open-access model, preying on researchers eager to publish their work. This article explores the various facets of predatory publishing in medicine, shedding light on the detrimental impact it has on the scientific community.

Predatory publishing refers to the unethical and exploitative practices adopted by certain journals and publishers. These entities prioritize profit over academic rigor, often failing to uphold standards of peer review, editorial quality, and ethical publishing. The victims of predatory publishing are typically researchers, who unknowingly submit their work to these journals in pursuit of publication.

Red Flags of Predatory Journals

Identifying predatory journals is crucial to safeguard the integrity of scientific research. Several red flags can serve as indicators of predatory publishing practices. These include:

- 1. Lack of Rigorous Peer Review:** Predatory journals often claim to conduct peer review, but in reality, the process is either superficial or non-existent. Legitimate journals have a thorough and transparent peer-review process, ensuring the quality of published articles.
- 2. Aggressive Solicitation:** Predatory journals are notorious for bombarding researchers with unsolicited emails, enticing them to submit their manuscripts. Authentic journals typically do not engage in aggressive solicitation and rely on a more professional approach to attract submissions.

- 3. Questionable Editorial Practices:** Many predatory journals list fictitious editorial boards, claiming renowned researchers as members without their consent. Legitimate journals maintain transparency about their editorial boards, providing clear information about the affiliations and expertise of the members.
- 4. High Publication Fees:** Predatory journals often charge exorbitant publication fees without providing the necessary services such as proper peer review, editing, and indexing. Genuine open-access journals have reasonable fees that are justified by the services they offer.
- 5. Dubious Indexing and Impact Factor:** Predatory journals frequently boast false claims about being indexed in reputable databases or having a high impact factor. Researchers should verify such claims through reliable sources like PubMed, Scopus, or the Journal Citation Reports.

Impact on the Scientific Community-

The rise of predatory publishing poses significant threats to the scientific community:

- 1. Erosion of Trust:** The proliferation of predatory journals erodes the trust that researchers and the public place in scientific literature. This can lead to skepticism regarding the credibility of research findings and hinder the progress of evidence-based medicine.
- 2. Waste of Resources:** Researchers who fall victim to predatory journals waste valuable time and resources preparing and submitting manuscripts. The funds spent on publication fees for subpar journals could be better utilized for legitimate research activities.
- 3. Compromised Academic Careers:** Publishing in predatory journals can tarnish the reputation of researchers, affecting their

academic careers. Employers, grant agencies, and peers may question the quality of work published in such journals, potentially hindering career advancement.

4. Propagation of Misinformation: Predatory journals contribute to the dissemination of poor-quality or even false information. This misinformation can have serious consequences in clinical practice, as medical professionals may unknowingly rely on flawed research.

Combating Predatory Publishing-

Several measures can be taken to combat the menace of predatory publishing:

1. Awareness and Education: Researchers must be educated about the characteristics of predatory journals and be vigilant in evaluating the legitimacy of potential publishing venues. Institutions and academic organizations should provide training on responsible publishing practices.
2. Strengthening Peer Review: Supporting and strengthening the traditional peer-review process is essential. Researchers should opt for journals with a robust peer-review system, ensuring the credibility and quality of published work.
3. Transparency in Publishing: Journals should prioritize transparency in their editorial processes, clearly stating their peer-review policies, editorial boards, and publication fees. Open-access journals should be committed to ethical publishing practices.
4. Promotion of Trusted Indexing Services: Researchers and institutions should rely on well-established indexing services such as PubMed, Scopus, and Web of Science to verify the legitimacy and impact of journals.

Conclusion

Predatory publishing practices in medicine pose a significant threat to the integrity of scientific research. Researchers, institutions, and publishers must collaborate to raise awareness, strengthen ethical standards, and promote responsible publishing practices. By doing so, the scientific community can protect its reputation and ensure that valuable research contributes to advancements in medicine rather than being buried in the depths of predatory journals.

References

1. Beall, J. (2016). Predatory journals and the breakdown of research cultures. *Information Development*, 32(5), 473-476.
2. Moher, D., Srivastava, A., & Stroup, D. F. (2016). Predatory journals: no definition, no defence. *Nature*, 534(7607), 326-327.
3. Shamseer, L., Moher, D., Maduekwe, O., Turner, L., Barbour, V., Burch, R., ... & Shea, B. J. (2017). Potential predatory and legitimate biomedical journals: can you tell the difference? A cross-sectional comparison. *BMC medicine*, 15(1), 28.
4. Dadkhah, M., & Bianciardi, G. (2019). Ranking predatory journals: Solve the problem instead of removing it! *Advanced Pharmaceutical Bulletin*, 9(2), 167-170.
5. Cress, P. E., & Bibby, M. (2020). Predatory publishing and public health research: A call to action. *Public Health Nursing*, 37(3), 422-427.

Medico Legal Section

Hysterectomy Audits – Do we need them?

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Hysterectomy is the most common gynaecological surgery performed worldwide. More than 90% of the hysterectomies are performed for a benign cause. Interestingly for most of these conditions, there are effective alternative medical or surgical treatments available. Apart from the immediate complications of surgery in general, the aftermath includes increased risk of cardiovascular diseases, early deaths, dementia, osteoporosis, vault prolapse, incontinence, sexual dysfunction, and the much less talked about the impact on psychological and emotional health. More recently hysterectomy with or without oophorectomy is also being reported to be associated with an increased risk of diabetes mellitus and hypertension.

It is incumbent on us to review the evidence for the effectiveness and safety of hysterectomy, which is the most frequently performed major gynaecologic surgical procedure, to examine the therapeutic alternatives and their effect on the incidence of the operation in various countries and to assess the data on complications of one approach compared with another. In recent years, there has been a considerable and rapidly increasing literature base of randomized trials and large prospective national studies on which to base an opinion. Still on a ground level, the appropriateness of recommendations for hysterectomy has gained an interest in scrutiny and debate by media and activist. In such a scenario, regular audits by researchers and clinician are imperative for insight, as well as to formulate recommendations and guidelines for the fellow practitioner specific to the loco-regional practices, available resources and patient preferences.

Clinical audit is a quality improvement process that seeks to improve patient care and outcomes

through systematic review of care against explicit criteria. Where indicated, changes are implemented and further monitoring is used to confirm improvement in healthcare delivery. It must be understood that a clinical audit is not just a data collection exercise, it involves measuring current patient care and outcomes against explicit audit criteria (also termed standards). There is an expectation from the outset that practice will be improved.

Hysterectomy audit helps analyse all the hysterectomies along with the indications for which it was conducted. This gives an overview of the unintended hysterectomies done specially for the younger women in whom a less invasive or medical management could have been the treatment of choice. As newer and less invasive treatment option are becoming more and more available for benign pathologies which are effective and have the potential to reduce the incidence of a major surgery, financial burden related to it and short / long term complications, it is imperative for us to offer all the options to the patient. Regularly we must reflect on to our surgical practice whether availability of these options is reducing the rate of hysterectomy or not, have these methods decreased the number of hysterectomy for a particular indication, in a particular age-group or are we now operating more of those women who have history of failed or non-adherence to treatment, as compared to a primary cases. This aspect is also important to audit as successive medical, conservative management if leads to failure and ultimately surgery for a certain kind of indication, to know in reality we are wasting more resources and adding on to substandard quality of life when ultimately one has to resort to hysterectomy.

Data on the frequency of hysterectomy for

benign conditions is available in selected countries such as North America, Australia, and Europe. Conversely, data from Asian countries, especially from the Indian subcontinent that differs in reproductive and sociocultural patterns, are scanty.

In India, the prevalence of hysterectomy is 3.2%, the highest in Andhra Pradesh (8.9%) and the lowest in Assam (0.9%). Rural India has a higher prevalence than urban India. In the year 2022 Ministry of Health and Family Welfare (MoHFW), Govt. of India issued guidelines titled – “Guidelines to Prevent Unnecessary Hysterectomies”, which have been forwarded to all states and Union Territories. These guidelines were formulated after a series of consultations with various stake holders. In India community based studies have consistently found rising hysterectomy rates among young women. In May 2023, Union health secretary advised the states to share the hysterectomy data as there were instances of unnecessary hysterectomies in government medical insurance scheme.

A single centre audit of hysterectomies done over past 10 years in India, reported around half of the women who underwent hysterectomy belonged to the age group of 41 to 50 years. This was followed by the 51 to 60 years age bracket. The trend has been similar over the years. Hysterectomies (0.2%–1.9%) under the age of 30 years were all postpartum hysterectomies, (postpartum haemorrhage, morbidly adherent placenta, or uterine rupture). The indications for undergoing hysterectomy include abnormal uterine bleeding, fibroids, adenomyosis, uterovaginal prolapse, endometrial hyperplasia and cancer, postpartum haemorrhage. The types of hysterectomy are abdominal, vaginal and laparoscopic hysterectomy.

The mean age of women undergoing hysterectomy is not uniform across the globe. In Taiwan, the peak age for women who underwent hysterectomies was 40 to 44 years. In Finland the median age at hysterectomy has shifted from 51 years in 1998–2001 to 55 years in 2014–2017. China reported more than 75% of hysterectomies in the age group of 50 to 59 years. In Tanzania mean age for hysterectomy

was 48.8 ± 8.6 years. This difference may be related to the availability and acceptability of nonsurgical treatments for benign gynaecological pathologies among different nations and geographical locations.

Hysterectomy rates for benign gynaecological conditions exhibit a decline over the past two decades in Australia, US, Sweden, and Taiwan. Similar declining trends have been observed in Europe too. A 15-year study (1996–2010), from Italy, observed a marked decrease in the frequency of hysterectomy in their setup. Austria reported a 27% decline in the rate of hysterectomy for benign conditions from 2002 to 2014. In a trend analysis from Portugal, the rate of hysterectomies decreased in a span of 15 years (2000–2014) with an increase in age at the time of the procedure and a change towards less invasive routes. The possible reason for the decreasing trend of hysterectomy could be the introduction of nonsurgical treatment options, for benign diseases of uterus. To opt for conservative options requires the need for long-term follow-up, the introduction of screening programs in the health care delivery chain, easy access to conservative modalities such as uterine artery embolization, endometrial ablation procedures, high-intensity focused ultrasound therapy and related cost factors. Owing to the sparsity of these in a developing country setup, the trends of hysterectomy may seem to remain unchanged. Patient’s perception of hysterectomy as a one-time treatment choice in our setup might also have contributed to the static rate of hysterectomies over the years.

The data from the developing world, on this subject matter, is limited. A study from Gujrat, India reported an estimated prevalence of hysterectomy to be 20.7 per 1000 woman-years, which is four times higher than the highest global rates. The National Family Health Survey-4 in India provided the first nationally representative estimates of hysterectomy. It revealed the highest prevalence in the states of Andhra Pradesh, Bihar, Gujarat, and Telangana. The lowest rate of hysterectomy was reported in Punjab, Chhattisgarh, West Bengal, and Kerala, as well as all eight north-eastern states.

India is a diverse nation in terms of its socio-economics, education level, beliefs, and attitude. It is neither possible nor rational to extract and exploit mean data for the entire population. To formulate workable guidelines, we must collect the data from diverse platforms, from urban and rural settings, from private and public hospitals; compare it, understand it and audit it.

Over the last 10 years abdominal route has been the preferred route of hysterectomy in our setup. Similarly, in China, 84% of hysterectomies were performed by an open abdominal approach. In Taiwan, the transition of open abdominal hysterectomy predominance to laparoscopic hysterectomy predominance occurred in two phases (between 2003–2005 and 2008–2012). The rate of abdominal hysterectomy decreased from 62.7% to 36.5%. It was concomitantly associated with an increase in laparoscopic hysterectomies. Similarly in the US too, the hysterectomy route has shifted considerably from abdominal to laparoscopic. Even in this era of minimally invasive surgeries, comparison of various routes of hysterectomy has found the vaginal route to be the best.

The American College of Obstetricians and Gynaecologists recommends, the vaginal route as the first option for hysterectomy, whenever feasible, even in the era of minimally invasive surgery. Vaginal hysterectomy is less invasive, with lower complication rates as compared to abdominal, laparoscopic, and robotic routes. In our cohort consistently vaginal route has been the less favoured one, for the non-prolapse cases. This may owe to the fact that our hospital caters a large number of trainees, who first need to be well versed with anatomic details and basic training in gynaecological surgeries. This can be best achieved by an open abdominal approach. However, as vaginal hysterectomy is the universally accepted best approach for hysterectomy for benign conditions, we must incorporate it in the training and skill transfer programs as well. Various studies have reported that the choice of route of hysterectomy is also influenced by the surgeon's age and gender.

Around 92% of all hysterectomies in our setup

were for benign gynaecological conditions. Most common indication has been symptomatic leiomyoma followed by pelvic organ prolapse. Despite the availability and popularisation of conservative approaches for the management of leiomyoma, remains the leading indication of hysterectomy globally.

The rate of complications (minor and major) ranged between 0.2% and 4.0% over the years. Haemorrhage requiring transfusions is the most common complication and the incidence has shown an increasing trend over the years. We hypothesize it to be due to the dynamic shift of the senior-junior doctor ratio, in recent years, as most of the junior doctors being in the transition phase of their career. World-over this silent loss of expert clinicians, mentors, and trainers, has significantly affected the quality of patient care and skill transfer of trainees. Across specialties this loss of support framework is postulated to add pressure on clinicians, leading to more burn-out, and increasing adverse events.

In a cross-sectional study from Tanzania, more than 40% of women who underwent hysterectomy had complications within 10 days of surgery. The common complications in their cohort included haemorrhage, need of transfusion, anaemia, and postoperative fever. A population-based cohort study from the Danish hysterectomy database reported an overall incidence of major complications in 7% and minor complications in 9.4% of hysterectomies over a 10-year period from 2004 to 2015. Following this another study was published from the same Danish database, wherein they reported a 50% reduction in the incidence of complications, after reducing the proportion of abdominal hysterectomies and increasing laparoscopic hysterectomies. With 85% of their cases carried out laparoscopically the incidence of major and minor complications was reduced to 4.1% and 5.7%, respectively. Mortality following hysterectomy has been less than 0.5% in our setup. In the Danish database, it was reported to be 0.27%.

This discrepancy in complication rate among various reports is owing to the fact that there is

no uniform system of documenting surgical complications. It has been acknowledged that surgical complications are difficult to classify which impairs the comparison between centres. In 2004, Clavien and Dindo validated a classification system for surgical complications in five grades, based on the treatment intervention. This approach permits to identify all the events that could affect the morbidity and mortality of the patients in an organized way for international comparisons. A recent study used the Clavien and Dindo classification to report intraoperative complications and reoperations of hysterectomy in the context of elective surgery. Their findings provide clear and orderly data related to the risks of elective hysterectomy. Not only is it useful to preoperatively identify the risks and to provide detailed information during the informed consent for each hysterectomy group, it is also important to compare the rate of complications between different studies.

A recent study found unexpected gynaecological malignancy in 38 of 6648 cases who underwent hysterectomy for benign indications, yielding an incidence rate of 0.58%. They reported 20 cases (0.31%) with endometrial cancer, eight cases (0.12%) with uterine sarcoma, seven cases (0.10%) with ovarian cancer, one case (0.01%) with tubal cancer, and two (0.03%) with cervical cancer. This emphasizes the need of adequate screening for cancers and proper evaluation of every patient before posting them for hysterectomy.

In a nutshell hysterectomy which is the most common gynaecological surgery performed worldwide is whole lot diverse in various socio-demographic-geographical distribution. Across the globe there are variations in women undergoing hysterectomy in its prevalence, patient preferences, route of surgery, distribution of complications and long-term follow up.

There is definite need to have regular audits to look back and improve clinical practices. These audits will not only help the individuals/hospitals /institutions to regularize the practices but will also help create national level guidelines

and recommendation. Those can be implemented to optimize quality of life among women by balancing their conservative/surgical option. Choosing the most appropriate route, practicing techniques to minimize complications.

The guidelines when formulated based on national level data will be more coherent to be implemented by all. In today's medicolegal world it is also important to be well versed with the guidelines and recommendations and choose our options. Auditing and reflecting your practices will not only improve the healthcare delivery in your hands but also keep you safe medicolegally.

Suggested Reading

1. Pandey D, Hebbar S, Reddy Inukollu P, et al. An audit of hysterectomy in a teaching hospital in India: Story of a decade. *J Chin Med Assoc.* 2023;86(5):506-514.
2. Nor AM, Jagdeesh K, Mohd FAS, et al. Peripartum hysterectomy clinical characteristics and outcomes- a hospital based retrospective audit study. *Med J Malaysia.* 2023;78(6):756-762.
3. Leung PL, Tsang SW, Yuen PM; Quality Assurance Subcommittee in Obstetrics and Gynaecology, Hospital Authority, Hong Kong. An audit on hysterectomy for benign diseases in public hospitals in Hong Kong. *Hong Kong Med J.* 2007;13(3):187-93.
4. Singh A, Govil D. Hysterectomy in India: Spatial and multilevel analysis. *Womens Health (Lond).* 2021;17:17455065211017068.
5. Desai S, Campbell OM, Sinha T, Mahal A, Cousens S. Incidence and determinants of hysterectomy in a low-income setting in Gujarat, India. *Health Policy Plan.* 2017;32(1):68-78.
6. Tiwana KK, Nibhoria S, Monga T, Phutela R. Histopathological audit of 373 nononcological hysterectomies in a teaching hospital. *Patholog Res Int.* 2014;2014:468715.

JOURNAL SCAN

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Dysfunction of complement receptors CR3 (CD11b/18) and CR4 (CD11c/18) in pre-eclampsia: a genetic and functional study

Lokki AI, Teirilä L, Triebwasser M, Daly E, Bhattacharjee A, Uotila L et al; finnpec. BJOG. 2021 Jul;128(8):1282-1291.

Abstract

Objective: To study genetic variants and their function within genes coding for complement receptors in pre-eclampsia.

Design: A case control study

Setting: Pre-eclampsia is a common vascular disease of pregnancy. The clearance of placenta-derived material is one of the functions of the complement system in pregnancy.

Population: We genotyped 500 women with pre-eclamptic pregnancies and 190 pregnant women without pre-eclampsia, as controls, from the FINNPEC cohort, and 122 women with pre-eclamptic pregnancies and 1905 controls from the national FINRISK cohort.

Methods: The functional consequences of genotypes discovered by targeted exomic sequencing were explored by analysing the binding of the main ligand iC3b to mutated CR3 or CR4, which were transiently expressed on the surface of COS-1 cells.

Main outcome measures: Allele frequencies were compared between pre-eclamptic pregnancies and controls in genetic studies. The functional consequences of selected variants were measured by binding assays.

Results: The most significantly pre-eclampsia-linked CR3 variant M441K ($P = 4.27E-4$, OR = 1.401, 95% CI = 1.167–1.682) displayed a trend of increased adhesion to iC3b ($P = 0.051$). The CR4 variant A251T was found to enhance the adhesion of CR4 to iC3b, whereas W48R resulted in a decrease of the binding of CR4 to iC3b.

Conclusion: Results suggest that changes in complement-facilitated phagocytosis are associated with pre-eclampsia. Further studies are needed to ascertain whether aberrant CR3 and CR4 activity leads to altered pro- and anti-inflammatory cytokine responses in individuals carrying the associated variants, and the role of these receptors in pre-eclampsia pathogenesis.

Author comments

The important phagocytic complement receptors CR3 and CR4 belong to the family of β 2-integrins, surface receptors of leukocytes that play critical roles in innate and adaptive immune responses. The study proposed that the genetic variants in CR3 and CR4 may affect the ability of the maternal system to respond to placental or endothelial injury or could influence other interactions that these receptors may have during pregnancy. A correlation of complement activation and antiangiogenic activity has been established, although it remains unclear whether complement activation is the cause or the consequence of the antiangiogenic balance observed in pre-eclampsia.

Women with small-for-gestational-age neonates have a significantly higher expression of CR3 in their peripheral blood granulocytes and monocytes than is normal for pregnant women. Slightly elevated expression levels of CR3 have been observed in granulocytes in women with pre-eclampsia. In contrast, CR4-expressing monocytes have been observed in normal quantities in the peripheral blood of women with pre-eclampsia. CR4 contributes to pro-inflammatory functions of monocytes, macrophages and dendritic cells. Future research will decipher whether disturbances in the functions of integrins, such as those reported in the study, contribute to a shift towards a more pro-inflammatory immune response, and whether the phenomenon is observed in non-

severe as well as severe pre-eclampsia. On the other hand, in discordant cases a disruption in the function of the key receptors may result in the dysregulation of inflammation in early pregnancy or, perhaps more importantly, the clearance of placental particles or trophoblast cells during late pregnancy.

Effect of direct surgical treatment in pregnancy-related uterine arteriovenous malformation

Zhang W, Cui S, Mao Z, Hao Y, Tan Y, Ban Y, Cui B. BMC Pregnancy Childbirth. 2023;23(1):673.

Abstract

Background: Uterine arteriovenous malformation (UAVM) is a relatively rare but potentially life-threatening situations abnormal vascular connections between the uterine arterial and venous systems. Lack of recognized guidelines and clinic experience, there is a lot of clinic problems about diagnosis and treatment. By analysing the clinical data of patients with pregnancy-related UAVM, we aim to confirm the safety of direct surgeries and the benefit of pretreatment (uterine artery embolization or medical therapy) before surgery, and to explore more optimal therapies for patients with pregnancy-related UAVM.

Methods: A total of 106 patients in Qilu Hospital of Shandong University from January 2011 to December 2021 diagnosed of pregnancy-related UAVM were involved in this study. Depending on whether preoperative intervention was performed, the patients were divided into direct surgery group and pretreatment group (uterine artery embolization or medical management). Clinical characteristics, operative related factors and prognosis were analyzed.

Results: The most common symptom of pregnancy-related UAVM was vaginal bleeding (82.5%), which could also be accompanied by abdominal pain. Pretreatments (uterine artery embolization or medical therapy) had no obvious benefit to the subsequent surgeries, but increased the hospital stay and hospital cost. Direct surgery group had satisfactory success

rate and prognosis compared to pretreatment group.

Conclusion: For pregnancy-related UAVM, direct surgery has good effects and high safety with shorter hospital stays and less hospital cost. What is more, without uterine artery embolization and other medical therapy, patients could remain better fertility in future.

Author comments

Uterine arteriovenous malformation (AVM) is a rare but serious condition without a universally accepted definition and has a reported incidence of 0.63% after a delivery or abortion. It can lead to heavy uterine bleeding, with significant morbidity. Arteriovenous malformation results from abnormal connections between the uterine arterial and venous systems. Classic treatment options, such as uterine artery embolization and hysterectomy, have serious reproductive implications. Consequently, conservative treatment options represent a fertility preservation opportunity.

Limitations of this study are that this is a retrospective study and there were some bias in the condition of the two groups. A prospective randomized controlled study in the future are needed. Secondly, due to the relatively low fertility requirement and small number of patients succeeded in pregnancy subsequently, it is difficult to evaluate the effect of pretreatment on patient's fertility. Longer-term follow-up are required to evaluate the outcomes of pretreatment approaches.

Hence the guidelines on ways to improve evidence for the assessment of treatment options for this rare disease is necessary and novel study designs and analyses are needed.

SNAPSHOT

TLH made easy

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“Mastering laparoscopic surgery is a fusion of knowing anatomy intimately, harmonizing with ergonomic precision, and wielding energy sources skilfully”

With time India has seen an exponential increase in use of endoscopic surgeries with more and more gynecologists opting for the minimal invasive way even in Tier 2 and Tier 3 cities. Over the last two decades the contraindications have changed into valid indications of total laparoscopic hysterectomy (TLH). Technologies like ultrasonic shearer and advanced bipolar devices have made it easier for more gynecologists. The basic knowledge of anatomy, a skilled assistant and good ergonomics are few basic requirements in case of Level 2 and Level 3 laparoscopic surgeries. In this article, certain aspects will be discussed to make TLH easy.

Patient position & Port Placement:

It is very important to make surgical operation theatre (OT) environment comfortable by placing all the equipment at right place. This makes less strain on surgeon's body in prolonged and difficult surgeries.

Operating table height should be such that surgical instrument should lie at the elbow level. This is very important as most of the gynecologists are not tall with an average height between 150-165 cm. It has been suggested that the optimum height for laparoscopic surgery should be located at a factor of 0.7–0.8 of the length from the floor to the elbow height of the surgeons or the optimum OT table height to be at pubic level. This arrangement minimizes discomfort to arms and shoulders. The OT should have an arrangement of broad stools that can be used in the setting of inequality of height between surgeon and assistant.

Position of the monitor should be slightly left of the vaginal end so that it can be seen by surgeon

and its assistance without any strain on the back muscles. The upper end of the monitor should lie at 15 degree of eye level so as to have minimum strain on neck and the distance of monitor should lie between 80-120 cm.

Cautery paddles should be placed at the same level of standing posture and nearby to foot without any cluttering when using 2 or more energy sources.

Good trendelenberg position with low lithotomy and arms tucked by the side to get the maximum bowel free space and maximum place for hand movements is very important. Previous night bowel preparation with peglec helps in keeping the bowel compressed specially in difficult TLH.

Port position (figure 1):

Ergonomically contralateral port placement makes surgery easier to perform with better hand eye coordination. Ipsilateral port placement on the other hand is ergonomically better and is less tiring, especially for shorter women. This makes it more popular in India which has more of small female surgeons.

In the presence of adhesions, the Palmer's point is a better approach. In this technique the Veress needle is inserted 3 cm below the left subcostal in the midclavicular line. It may be considered in obese women or those with previous laparotomy, increasing the chances of midline adhesions around the umbilicus.¹ It can also be used in very thin patients. Two important points that needs to taken care of are empty stomach (use ryles tube) and no splenomegaly.

For women with umbilical hernia or periumbilical adhesions, Lee Huang Point is another option of veress insertion. It is at the mid- upper abdomen, with the same principles of entry at 45 degrees for thin women and at 90 degrees for obese women.

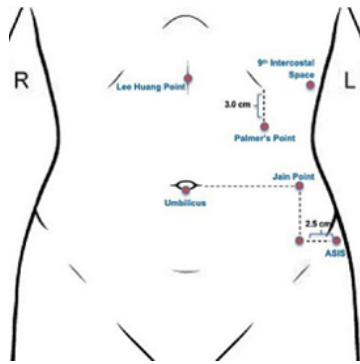


Figure 1: Various central port sites in difficult surgeries

The other option, newly introduced in India is Jains Point. It lies at the L4 level, on the left side of the abdomen, 10–13 cm lateral to the umbilicus. This area point is usually free from adhesions as most surgeries form adhesions usually in the midline or the right side. In contrast to the Palmers point, it can be used for main working ports.²

The 5 mm ports can be placed higher up in case of big uteri. But very high placement of the operating ports can cause problem during vault suturing as the distance between the port and the operating area becomes longer making normal size instruments to reach at target place difficult.

Procedural tips:

Identification of the anatomy can be done by first locating the round ligaments. In case of adhesions and also to keep bowel away from field, congenital adhesion of the sigmoid (figure 2) on the left side can be removed. This keeps bowel far off from the pedicles and allows better maneuverability and vision, especially in complicated cases.

The coagulation and cutting of the round

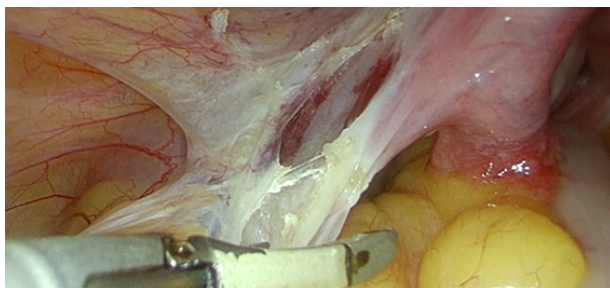


Figure 2: Removal of congenital bowel adhesions on left side

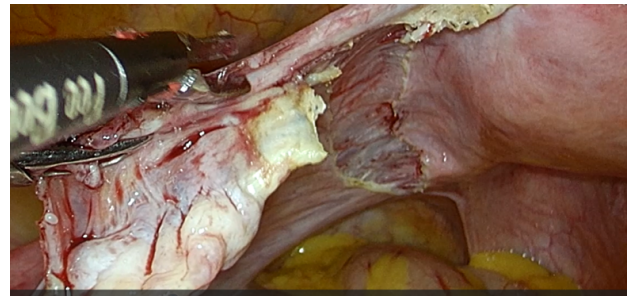


Figure 3: Opened posterior leaf of broad ligament till uterosacral ligaments

ligaments should be done as lateral as possible as it gives access to adhesion free space in case of previous surgeries and also it provides the shortest bloodless route to the Utero-vesical fold. Posterior leaf of broad ligament should be opened till uterosacral ligament which ensures ureteric safety (figure 3)

Dealing with Big uterus

One of the common problems with big uterus is decreased vision. Vision can be improved by a higher primary port for the camera, like the mid umbilical point as discussed above. Use of a thirty degree telescope is required. Another tip is to use a panoramic view instead of a zoomed in view, as the uterus is very close to the camera.

It has been seen that manipulation with a myoma screw scores over the use of a vaginal manipulator alone in big uteri. The type of myoma screw is also important. A sturdy, long myoma screw which is inserted perpendicular to the myometrium is required. The direction of pull also varies from smaller uteri. It should stretch the uterus cephalad for a traction- counter traction concept of dissection. Traction during the dissection of the bladder and Uterine Artery on left side involves movement of the hand holding the myoma screw towards the maternal left thigh. Few gynecologists may prefer an additional right lower port to push the uterus cephalad for better traction. Myoma screw should not be used in cases of suspected endometrial malignancy and pyometra.

Use of Uterine artery ligation at origin

The vascularity is increased in women with fibroid uterus and endometriosis. The spread out

broad ligaments may not be avascular. Use of good coagulation on two sides of the dissection may help. Uterine artery can be clipped or coagulated at origin, which reduces the vascularity massively.^{3,4} Visualization and dissection of the retroperitoneum is very difficult in big uteri, so not only should the surgeon be skilled in retroperitoneal dissections in comparatively smaller uteri, but it is equally important for the assistants to be skilled to give the right view and the right tractions.⁵ This also helps in delineation of the ureter. With limited space for work, the coagulation may spread to the ureter if not visualized.

Adherent bladder:

One of the most common difficulties arise from bladder adhesions, increasing the chances of bladder trauma. Either cold scissors or Ultrasonic Shearers or bipolar shearers can be used for separating the bladder. The best approach in such cases is to use the lateral Approach to the bladder.⁶ One can cut the round ligament as lateral as possible and just by holding the opened broad ligament peritoneum and lifting it will help the CO2 to go inside and create a space for dissection. In dense adhesion holding only the peritoneum will not help and one should hold the bladder with nontraumatic grasper to create a space along with stretching of the uterus. It is important to remember that dense adhesions are generally present at midline and at the site of previous scarred uterus. Sharp dissection, creating a space by CO2 entry and then gentle push is the key for successful bladder separation.

Endometriosis

Endometriosis grade 3 and 4 is a Level 3 endoscopy surgery which only skilled endoscopists should undertake.

In such cases, not only is the anatomy distorted, but the adhesions and obliterated pouches make it very challenging to complete the TLH. The palpation which is possible in open methods is missing, however, the excellent vision in very narrow spaces compensates for the earlier disadvantage. Traction- counter traction usually helps in the dissection.

Ureter should be visualized starting from above the pelvic brim, where the adhesions may be less. Retroperitoneum can be opened up from the brim, as is done in posterior approach to open the retroperitoneum. Ureter can be directly visualized before coagulating the pedicles. In these cases it is important to lateralize the ureter and delineate till the cervical part of uterosacral ligament. The dissection can be started at infundibulopelvic ligament and the incision is carried cranially, this will help in identifying the ureter in case of distorted anatomy which can be now followed for lateralization. Incision is given medial to rectum in pararectal area and extended downwards till uterosacral ligament so as to have blood less dissection and safety of ureters.

In case of obliterated pouch of Douglas the above technique will help along with creation of rectovaginal space by sharp dissection. The ultrasonic shearer or any shearer can be used for space creation just by opening the blades of instruments.

In cases of partially visible endometrioma with bowel adhesions all around, always do adhesiolysis first. One can use vasopressin infiltration in the cyst and in the uterus before starting dissection.

Use of vaginal manipulator

The manipulator has its unique role of pushing the bladder, making approach to bladder adhesions easier. An appropriate size cup also pushes the ureter laterally, making colpotomy safer. A too wide a cup, can however compromise the ureter, which lies at 1-1.5 cm from the vaginal fornix normally. Post colpotomy the manipulator also seals the vagina thus maintaining the pneumoperitoneum. Manipulator cups help in elevating the fornix high enough to safe guard the bladder, bowel and ureter.

Specimen retrieval

The uterus can be debulked within the peritoneal cavity by the process of inbag morcellation or vaginal morcellation can be done using different techniques like intramyometrial coring, wedge resection,

myomectomy etc. Before any of these techniques, foleys catheter should be deflated to reduce trauma from the foleys bulb traction. A wide uterus, narrow subpubic arch, narrow vagina as in cases of virgin vagina, fundal fibroid are all factors which impose difficulties in vaginal morcellation of big uterus. Surgeons who are not comfortable with either vaginal morcellation or inbag morcellation can go for a small minilaparotomy for retrieval of tissue, however this negates the very advantage of endoscopy. Some have also used electrosurgery to bisect the uterus or cut the uterine tissue inside the peritoneum.

Recent use of single port surgeries pose new challenges in tissue retrieval. Other than the option of vaginal morcellation, trans umbilical tissue retrieval has also been done by few. This is suited for women with a narrow pelvic cavity or no prior vaginal delivery. But one needs to the pros and cons, the ease of procedure and the time involved in it.

Identification of injuries:

Complications may be silent and should be looked out for.

- For diagnosis of bowel injuries, surgeons may fill up air/ methylene blue in the rectosigmoid with a no. 16 F disposable suction catheter per anus and look for any leaks peroperatively. Another way is to do milking of the bowel on two sides of the adhesiolysis area, to look for any leaks.
- Bladder integrity can be checked at the end of hysterectomy with methylene blue dye in case of any doubt.
- For ureteric integrity one can do cystoscopy to see the ureteric opening but many a times they present late so high index of suspicion should be kept in mind in case of renal angle pain, fever, abdominal distension etc.

Take Home Points:

- Having an ergonomic placement of equipment, OT table and patient position are necessary.
- Correct port placement according to the size of uterus and history of previous surgeries.

Use of Palmers Point or Jains point may be considered if midline adhesions are anticipated.

- For altered anatomy as in endometriosis or in big uteri it may be preferable to open up the retroperitoneum to visualize the ureter.
- Use of vaginal manipulator is beneficial for bladder delineation or for defining the vaginal fornix.

The video can be accessed at: <https://youtu.be/ACOPoJdaKxE?feature=shared>

References

1. Thepsuwan J, Huang KG, Wilamarta M, et al. Principles of safe abdominal entry in laparoscopic gynecologic surgery. *Gynecol Minim Invasive Ther.* 2013; 2(4): 105-9.
2. Jain N, Srivastava S, Bayya SLP, Jain V. Jain point laparoscopic entry in contraindications of Palmers point. *Front Surg.* 2022;9:928081.
3. Uccella S, Garzon S, Lanzo G, et al. Uterine artery closure at the origin vs at the uterus level in total laparoscopic hysterectomy: A randomized controlled trial. *Acta Obstet Gynecol Scand.* 2021;100(10):1840-8.
4. Kale A, Aksu S, Terzi H, et al. Uterine artery ligation at the beginning of total laparoscopic hysterectomy reduces total blood loss and operation duration. *J Obstet Gynaecol.* 2015;35(6):612-5.
5. Tsuzuki Y, Hirata T, Tsuzuki S, et al. Does the experience of the first assistant affect organ injuries in laparoscopic hysterectomy for benign diseases? *Arch Gynecol Obstet.* 2023;307(2):453-8.
6. Ibrahim Saif E. Lateral Approach Technique to Minimize Bladder Injury During Abdominal Hysterectomy in Cases with Previous Cesarean Sections: An Observational Study. *J Gynecol Women's Health.* 2018; 12(3): 555837.

Ancillary role of the intensive care unit to aid in recovery of an obstetric patient

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Introduction

The incidence of intensive care unit (ICU) requirement for an obstetric patient during pregnancy and peripartum period ranges from 0.7 to 13.5 per 1000 deliveries with higher proportions of the total ICU admissions in developing countries. The indications for ICU admission are shown in table-1.

The goals of critical care management are diverse, multidimensional and especially pertinent as the patients are usually young and previously fit. Thus, all decisions must be considered keeping maternal and fetal safety in perspective. Promoting a maternal critical care model incorporating the demands of the contemporary obstetrical environment is the need of the hour to reduce maternal morbidity and mortality (Figure1).

Ancillary care

This refers to interventions that sustain life and avert complications, but do not treat the fundamental cause of critical illness.

- Elements of ancillary care:
- Oxygenation and ventilation
- Sedation and pain control
- Monitoring
- Hemodynamic support (intravenous fluids and vasopressors)

Table 1: Indications of ICU admission

• Post partum hemorrhage
• Severe preeclampsia or eclampsia
• Medical conditions like cardiovascular disease
• Venous thromboembolism
• Acute respiratory failure
• Acute fatty liver
• Viral hepatitis
• Thrombotic microangiopathy
• Diabetic ketoacidosis

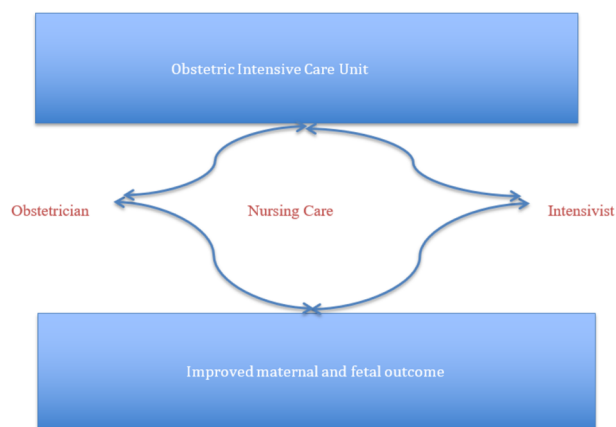



Figure 1: Multidimensional model of an Obstetric Critical Care Unit

- Nutritional support
- Stress ulcer prophylaxis
- Venous thromboembolism prophylaxis
- Nursing care.
- Patient Safety

1. Mechanical Ventilation

Mechanical ventilation may be required for various reasons like acute respiratory distress syndrome, eclampsia, amniotic fluid embolism, pulmonary edema, heart failure and following major trauma. The minute ventilation should be adjusted accordingly to target PaCO₂ between 30-32 mmHg. This replicates the normal maternal physiology and maintains a respiratory alkalosis that is mediated via progesterone.

A PaCO₂ lower than 30 mmHg should be avoided in view of the fact that significant respiratory alkalosis causes a reduction in uterine blood flow and maternal hypercapnia that amounts to a PaCO₂ > 40 mmHg will result in fetal respiratory acidosis. Higher partial pressure of oxygen with positive end expiratory pressure is required in obstetric patients to create a gradient across the placenta for effective fetal oxygenation and to



adjust for the increased closing volumes. Non-invasive ventilation has not proven assuring in pregnant patients due to fact of non-compliance with the tight fitting mask and risk of aspiration. Hence, should only be advocated if the patient has an adequate respiratory drive, absence of excessive secretions and is hemodynamically stable.

2. Sedation

Sedation is invariably required to tolerate mechanical ventilation. Almost all the drugs used for sedation and analgesia are capable of entering the fetal circulation. Hence, the choice of agent should be made depending on its adverse effect profile.

Midazolam is considered superior to lorazepam, as the latter has been linked with teratogenic effects in animal studies, although the clinical relevance of these findings is unclear. Propofol is transferred across the placental barrier and may be associated with respiratory depression in the neonate. Limited case reports are available to evaluate propofol's role in critically ill obstetric patients. Hence, its use should be restricted until more prospective data is obtainable. Evidence evaluating the safety and efficacy of dexmedetomidine in obstetric patients is lacking.

3. Analgesia

Any opioid is acceptable but nonsteroidal antiinflammatory drugs should be avoided in late pregnancy due to oligohydramnios and premature closure of the ductus arteriosus.

4. Neuromuscular blockade

Neuromuscular blocking drugs should be avoided unless the patient has refractory respiratory failure despite sedation. Cisatracurium can be considered as a suitable first-line agent as its excretion is not affected by renal or hepatic dysfunction.

5. Hemodynamic support

The foremost step in the management of hypotension is directed towards administration of intravenous fluids and placing the patient in left lateral decubitus position. Maintaining a strict fluid balance is necessary to prevent pulmonary edema due to fluid overload and renal failure owing to volume depletion.

Hypotension which persists despite, initial interventions requires vasopressor therapy as sustained maternal hypotension leads to reduced uterine blood flow. The first line vasoactive agent is norepinephrine in obstetric patients with hypotension or shock due to critical illness who fail to respond to aggressive volume replacement. Phenylephrine can be a good second line agent in obstetric patients with septic shock. Hydrocortisone can be considered in patients with refractory septic shock who fail to respond with aggressive fluid resuscitation and vasopressor therapy.

6. Monitoring

Routine monitoring like continuous heart rate, rhythm, respiratory rate, blood pressure, temperature and arterial blood gasses must be done as for a conventional ICU patient. Invasive hemodynamic monitoring is helpful when volume status assessment is critical for ensuring an optimal balance between intravenous fluids, diuretics and vasoactive drugs. Central venous pressure monitoring is accomplished by a central venous catheter and pulmonary artery catheters are rarely needed.

Fetal heart rate and uterine monitoring are also essential and its frequency is dependent on the clinical scenario and weeks of gestation.

An emerging useful tool in the assessment of a hypotensive obstetric patient in the ICU is a critical care ultrasound. Point of care ultrasound (POCUS) is being increasingly used in the assessment of acute respiratory failure during pregnancy. Transthoracic echocardiography is a non-invasive diagnostic tool, which helps in differentiating the life threatening causes of hypotension in critically ill obstetric patients.

7. Nutritional Support

Nutrition in pregnancy is essential for the development of a healthy baby. Progesterone induced relaxation of the gut might lead to constipation and possible intolerance to enteral feeding. The edges of enteral feeding are numerous over parenteral and is preferred when feasible. The risk of aspiration may be reduced by ensuring a semi-recumbent position while administering enteral feeds and regular confirmation of nasogastric tube position. Anti-

aspiration prophylaxis in the form of H2 blockers and proton pump inhibitors is advocated.

- The target nutrition for the fetus varies according to the gestational period, the first trimester does not require extra calories. For the second and third trimester, an extra 300 and 452 calories per day respectively are required. Carbohydrates should make up for 70% of the caloric requirements and lipids for the rest 30%. Proteins are primarily required to compensate for the negative nitrogen balance of a patient in the intensive care. The iron content is approximately double than for a non-obstetric patient that is: 4-6 mg/day. Docosahexaenoic acid, an omega-3 fatty acid has proven beneficial in terms of neonatal visual acuity and neural testing. The calculation of total calories must be done taking into account that inotropes double the total calorie requirement and with each centigrade increase in temperature, the caloric need goes up by 10%.

Nutritional assessment by standard parameters like weight gain and serum albumin cannot be considered reliable in view of the physiological increase in weight and decrease in albumin during pregnancy. Serum transferrin and pre-albumin are used as indicators in evaluating the response to nutritional assistance in pregnancy.

8. Thromboprophylaxis

The risk of DVT in an obstetric patient of the ICU is four times more than other patients in the same unit which is due to estrogen mediated increase in clotting factors and decreased flow to the inferior vena cava by virtue of pressure by the gravid uterus. Recommended drugs are unfractionated heparin and low molecular weight heparin like enoxaparin, dalteparin and tinzaparin and should be initiated early in the course of ICU stay unless contraindicated. In cases of heparin induced thrombocytopenia, danaparoid has been suggested as a safe alternative. Research with fondaparinux is promising with regards to being safe and effective.

9. Infection/Sepsis

The World Health Organization statement on maternal sepsis is established on the suspicion of

or confirmed infection with signs of mild to moderate organ dysfunction like tachycardia, tachypnea, hypotension, altered mental status and reduced urine output. The new strategy focuses on prompt actionable measures like administration of antibiotics, respiratory and hemodynamic support along with measures for sustaining vital organ functions and preventing complications in the initial hour of sepsis identification.

Emerging tools for early identification of maternal sepsis includes the obstetric comorbidity index that prospectively identifies women at risk for serious maternal morbidity in a clinical setting and thus serves as a risk-assessment tool. Point of care ultrasound and noninvasive echocardiography are also becoming evident as dynamic detection methods of sepsis in obstetric patients admitted in critical care units. Extracorporeal membrane oxygenation has been successfully used in both the antepartum and postpartum periods of pregnancy.

10. Nursing care- Healing after critical event stabilization

Initiation of breast-feeding with mother-child bonding comes after the primary condition for which ICU admission was required, is dealt with. Nurses in obstetric ICU's frequently conduct a postpartum assessment to discuss regarding breast or bottle-feeding with the mother, milk expression, medication safety issues and baby care. Research has shown that significant postpartum bleeding poses challenges in initiating and sustaining breast-feeding and may lead to long-term emotional effects on the mother. Hence education, motivation and support for the mother are essential in overcoming this seamlessly. Providing education to nurses as real time professional development programs to improve self-efficacy especially amongst those working in obstetric intensive care units has been found beneficial. Nursing care provides complete healing to the recovering obstetric patient and thus ensures good outcomes for both the mother and child.

11. Patient Safety

Ensuring safety of obstetric patients is vital in intensive care as errors in documentation, non-

compliance in following protocols, delays in identifying worsening clinical condition can lead to catastrophic consequences. A clear plan and all necessary equipment necessary for an emergency delivery including peri-mortem caesarean section should be available in ICU. A structured approach involving education and training of the staff, integrating risk management protocols, incorporating patient's in their own care along with solutions to prevent harm is essential.

Conclusion

Critically ill obstetric patients are challenging to manage and require collaboration between intensivists and obstetricians for optimal care. The most important way to prevent obstetric complications is appropriate antenatal care. All staff of the obstetric ICU should undergo a multidisciplinary training to identify the early signs of critical illness in pregnancy in order to enhance their competencies in managing these patients. Understanding the key concepts of obstetrics that include the physiological changes, pharmacokinetics of the drugs administered and the course of diseases that complicate pregnancy along with early involvement of a multidisciplinary team to deliver comprehensive care, helps improve both maternal and fetal outcomes of an obstetric patient in the ICU.

Summary

- Critical care unit admission for an obstetric patient results in significant maternal and fetal mortality.
- The most frequent indications for intensive care unit admission in obstetric patients are postpartum hemorrhage and the hypertensive disorders that include severe preeclampsia or eclampsia.
- Ancillary care refers to supportive care interventions that sustain life and prevent complications but do not treat the underlying cause of critical illness.
- The main consideration in mechanical ventilation is related to arterial carbon-dioxide level that should be between 30-32mmHg.
- Almost all the drugs used for analgesia and sedation cross the placenta and so the

adverse effects should be contemplated prior to selecting an agent.

- Norepinephrine as the first line drug is preferred if vasopressors are required in pregnant patients with hypotension or shock due to critical illness and phenylephrine as the second choice in cases of refractory shock.
- An upcoming useful tool in the assessment of a hypotensive obstetric patient in the intensive care is a critical care ultrasound.
- Nutritional requirements for the fetus varies according to the gestational period and assessment by standard parameters like weight gain and serum albumin cannot be considered reliable.
- Point of care ultrasound and noninvasive echocardiography are becoming evident as dynamic detection methods of sepsis in obstetric intensive care unit patients.
- Nursing care provides complete healing to the recovering obstetric patient and improves mother- child bonding, culminating into better maternal and fetal outcomes.

Suggested Reading:

1. Guntupalli KK, Hall N, Karnad DR, Bandi V, Belfort M. Critical illness in pregnancy: part I: an approach to a pregnant patient in the ICU and common obstetric disorders. *Chest*. 2015;148(4):1093-1104.
2. Ashana DC, Chen C, Hauschildt K, et al. The Epidemiology of Maternal Critical Illness between 2008 and 2021. *Ann Am Thorac Soc*. 2023;20(10):1531-1537.
3. Blanco P, Abdo-Cuza A. Point-of-care ultrasound in the critically ill pregnant or postpartum patient: what every intensivist should know. *Intensive Care Med*. 2019;45(8):1123-1126.
4. World Health Organization. Statement on Maternal Sepsis Sepsis: a leading cause of maternal deaths. *Dep Reprod Heal Res World Heal Organ*. 2017;1-4. Available at: <http://apps.who.int/iris/bitstream/10665/254608/1/WHO-RHR-17.02-eng.pdf>. Accessed on 02 December 2023.
5. Kurdi M S, Rajagopal V, Sangineni K S, et al. Recent advances in obstetric anaesthesia and critical care. *Ind J Anaes* 2023; 67(1): 19-26.
6. Padilla CR, Shamshirsaz A. Critical care in obstetrics. *Best Practice & Research Clinical Anaesthesiology*. 2022;36(1):209-25.
7. Luebcke C, Foli KJ, Wolverton C, Kirby KF. Improving Nurse Self-Efficacy in Caring for Critical Care Obstetric Patients. *The Journal of Continuing Education in Nursing*. 2023;54(5):208-15.

Adenomyosis: An update

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Introduction

Uterine adenomyosis is a common gynaecological condition characterized by benign invasion of endometrial tissue, glands and stroma into myometrium at varying depths. Term 'adenomyosis' was coined by Frankl in 1925. Until few decades before, adenomyosis was considered a disease of peri-menopausal women. However, with delay in childbearing, there is a higher risk of adenomyosis in younger women which has potential detrimental effects on fertility and reproductive outcomes.

Epidemiology

Accurate prevalence of adenomyosis is unknown. Overall incidence rate is around 1% (Upson et al, 2020). Before 40 years of age, it affects nearly 2 in 10 women while in above 40 years, incidence may be as high as 8 in 10 women. Naftalin et al (2012) reported that adenomyosis is detected on transvaginal ultrasonography (TVS) in approximately 21.9% women attending gynaecology clinics for complaints like heavy menstrual bleeding, pelvic pain, infertility or irregular bleeding. Estimated prevalence among hysterectomy specimens range from 8.8 to 61.5% depending on indications for surgery. In women with endometriosis, prevalence of adenomyosis is reported as high as 89% on TVS and 65% on pelvic magnetic resonance imaging (Upson et al, 2020). Upto 87% prevalence is reported in women with endometriosis and infertility (Kissler et al, 2008).

Etiopathogenesis

Two main theories proposed to explain probable pathways of disease development include invasion of myometrium by endometrial tissue and de novo generation of endometrial tissue. Most accepted hypothesis is theory of invasion by Bergeron et al. It proposes that there is an invasion of basal endometrium into

myometrium through an altered or absent junctional zone. Repeated uterine overstretching damages myocytes and connective tissues leading to inflammation and increased local production of estrogen. The hyper-estrogenic environment further leads to increase in uterine contractions damaging JZ. Endometrial tissue then invades myometrium leading to formation of adenomyotic lesions. It explains higher prevalence of adenomyosis in multiparous women and patients with prior uterine surgeries such as caesarean delivery and dilation and curettage. Alternate theory is based on de novo metaplasia of displaced embryonic pluripotent Mullerian remnants. These adult stem cells may be activated by tissue injury leading to origin of ectopic endometrial tissue within uterine wall. This theory explains cases of adenomyosis in rudimentary uterus in certain Mullerian agenesis patients.

Risk factors include early menarche, increased body mass index, history of myomectomy, endometrial ablation and tamoxifen use (Vannucini et al). Smoking has shown protective effect on adenomyosis due to low concentration of estrogen amongst smokers. Effect of combined oral contraceptive is unclear as some studies have reported higher prevalence in users and some researchers have shown no association with their use.

Current evidence supports role of certain genetic and epigenetic alterations in pathogenesis of adenomyosis. Variants in several genes such as cytochrome P450 (CYP), catechol-O-methyltransferase (COMT), matrix metalloproteinases (MMP-1 and MMP-2), fibroblast growth factors (FGF-1 and FGF-2), vascular endothelial growth factor (VEGF) and cyclooxygenase 2 have been shown to increase susceptibility to adenomyosis.

Clinical Features

Adenomyosis may be asymptomatic or

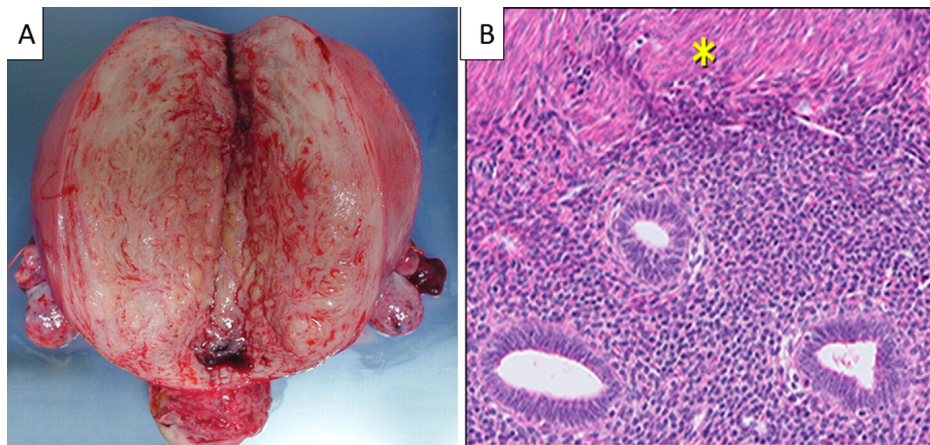


Figure 1A showing gross pathological specimen of uterus with cervix and bilateral fallopian tubes in a 45-year-old multiparous woman with severe dysmenorrhea and heavy menstrual bleeding. **Figure 1B** shows ectopic endometrial glands and stroma surrounded by hyperplastic myometrium (asterisk). Courtesy All India Institute of medical Sciences, New Delhi.

associated with variety of symptoms. Severe dysmenorrhea with prolonged menstrual bleeding is considered its classic symptom. Other symptoms include dyspareunia, chronic pelvic pain, pelvic pressure or infertility. Often, uterine fibroids or endometriosis coexist. Due to local myometrial inflammation, there is abnormal decidualization and potentially defective placentation leading to implantation failure and recurrent pregnancy losses. These patients have lower live births after spontaneous conception or using assisted reproductive techniques. Risk of certain antenatal complications such as miscarriage (two to three fold), pre-eclampsia (eight fold), small for gestational age (four fold) and caesarean delivery is also increased (Buggio et al, 2021). A systematic review concluded that there is an estimated 30% decrease in likelihood of clinical pregnancy after in vitro fertilization cycles in women with adenomyosis (Vercellini et al, 2014).

Clinically, adenomyotic uterus is often tender and uniformly enlarged corresponding to 12-14 weeks size gravid uterus. Intra-operatively, adenomyotic tissue is hard with ill-defined planes with normal myometrium. On pathological examination, the uterine body is asymmetrically enlarged and globular with uterine smooth muscle hypertrophy (Figure 1A). Grossly, adenomyotic tissue appears gray and trabeculated with ill-defined hypertrophic

smooth muscles. There may be foci of calcifications, haemorrhage areas and hemosiderin deposits. Histologically, ectopic endometrial tissue is seen within myometrium at different depths with cystic enlargement (Figure 1B). Two principal forms of the disease: focal and diffuse are described.

An important differential diagnosis is accessory and cavitated uterine mass (ACUM). It is an entity used to describe accessory cavity lined by functional endometrium within an otherwise normal uterus which results in severe dysmenorrhea and chronic pelvic pain in young females.

Diagnosis

A definitive diagnosis of adenomyosis is made by histopathology. Currently, diagnosis is often predicted on non-invasive methods like TVS and pelvic MRI.

Transvaginal 2D Ultrasound (TVS)

TVS is first line imaging modality with an estimated sensitivity of 64% and specificity of 84% in detecting adenomyosis. A systematic ultrasonic evaluation helps in estimating uterine size, volume, anterior-posterior diameter, myometrial asymmetry, echogenicity, JZ and myometrial lesions (Figure 2). Disease is considered localised or diffuse if involvement is lesser than or greater than 50% of the uterine volume, respectively. Morphological Uterus

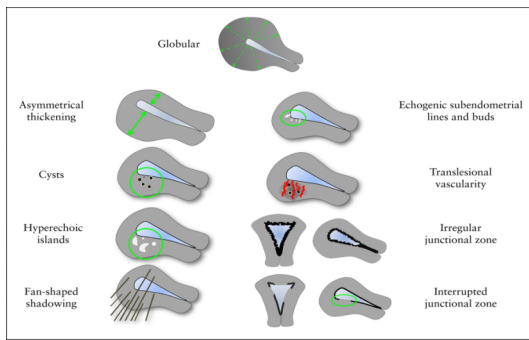


Figure 2: Morphological Uterus Sonographic Assessment (MUSA) criteria for diagnosis of adenomyosis. Adapted from Van den Bosch et al.

Sonographic Assessment Group (MUSA), 2015, has proposed the following ultrasonographic features for detection of adenomyotic lesions (Figure 2):

- i. Asymmetrical thickening of the myometrium
- ii. Myometrial cysts (2-9mm in the superficial myometrium)
- iii. Hyperechoic islands
- iv. Fan-shaped shadowing
- v. Echogenic sub-endometrial lines and buds
- vi. Trans-lesional vascularity
- vii. Irregular junctional zone
- viii. Interrupted junctional zone

Pelvic Magnetic Resonance Imaging (MRI)

MRI is an accurate non-invasive technique with a sensitivity and specificity of almost 78% and

93%, respectively, in detecting adenomyosis (Figure 3A and B). Several authors have suggested the following features on MRI suggestive of adenomyosis:

- i. Tiny myometrial cysts (3mm or more) hyperintense on T2 sequence
- ii. One or more posterior or anterior myometrial lesions separated from JZ
- iii. Poorly defined thickened JZ measuring more than 12 mm
- iv. Linear striations running from basal layer of endometrium toward the myometrium
- v. Increase in JZ/myometrium ratio
- vi. Enlarged smooth regular uterus

Based on these features, certain classifications have been proposed (Table 1).

Hysteroscopy

Hysteroscopy enables direct visualisation of uterine cavity and may be of valuable diagnostic importance in certain cases of recurrent pregnancy loss, implantation failure and infertility. Certain hysteroscopic features such as hyper-vascular endometrial lining, strawberry pattern of endometrium and haemorrhagic cystic lesions may indicate presence of adenomyosis (Figure 4).

Management

Adenomyosis is a challenging disease to treat particularly in women with subfertility. Most

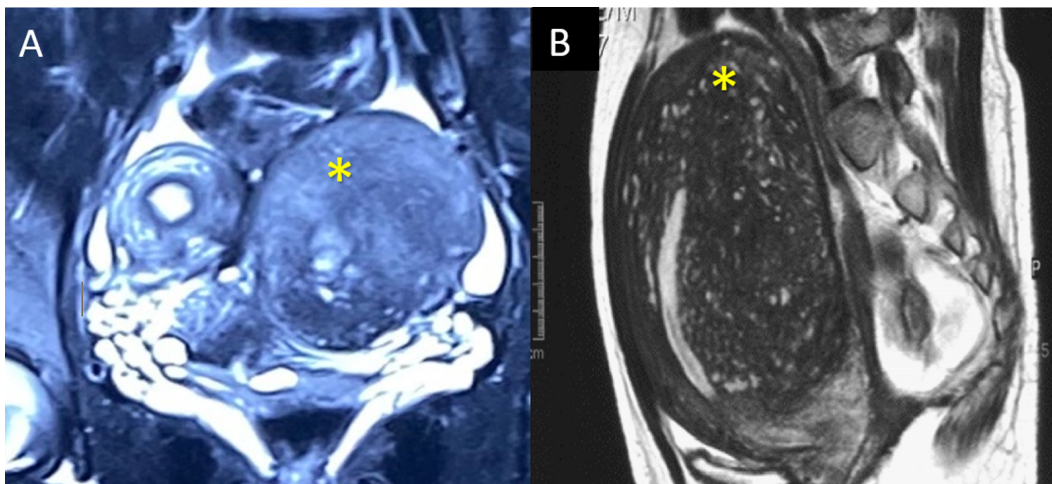


Figure 3: A showing coronal section of MRI imaging of a 19-year-old female with severe dysmenorrhea with bicornuate uterus and diffuse adenomyosis in the left horn (asterisk). Figure B showing sagittal section of MRI pelvis with an enlarged uterus and diffuse adenomyosis in a young nulliparous woman with infertility. Courtesy All India Institute of medical Sciences, New Delhi.

Table 1: Classification of adenomyosis based on MRI features

Characteristics	Kishi et al (2012)	Chapron et al (2017)	Bazot et al (2018)
Lesion of internal myometrium	Subtype 1: Intrinsic adenomyosis	Diffuse adenomyosis: JZ \geq 12 mm Maximal JZ/myometrium ratio > 40%	Internal adenomyosis: - Focal adenomyosis - Superficial adenomyosis - Diffuse adenomyosis
Lesion of external myometrium	Subtype 2: Extrinsic adenomyosis	Focal adenomyosis: Poorly defined subserosal mass on posterior/anterior wall of myometrium, separated from JZ by an area of healthy myometrium	External adenomyosis (subserosal myometrial mass associated with a deep endometrial lesion): - Posterior - Anterior
Non-specific lesion localization	Subtype 3: Intramural affliction confined to the myometrium		Adenomyosis: - Intramural solid adenomyoma - Intramural adenomyoma cyst - Submucosal adenomyoma - Subserosal adenomyoma
	Subtype 4: Indeterminate (does not correspond to the other subtypes)		

effective treatment is hysterectomy but not always acceptable. Treatment options depends on fertility desire and age of the patient.

A. Medical Therapy

Till date, no drug has been specifically approved for treatment of adenomyosis. Options are limited to either nonsteroidal anti-inflammatory drugs (NSAIDs) or off-label hormones (oral or

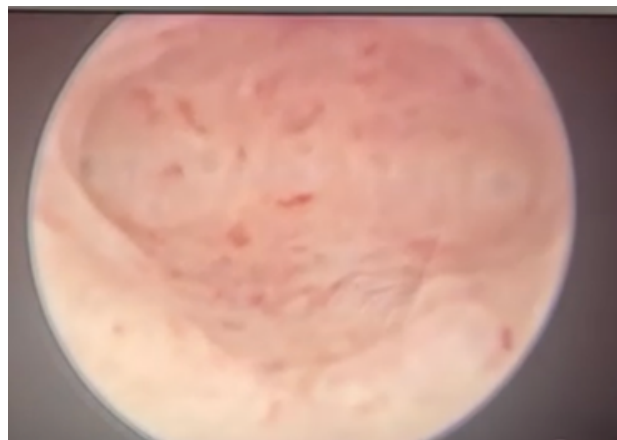


Figure 4 showing hysteroscopic view of hypervascular endometrium. Courtesy All India Institute of medical Sciences, New Delhi.

intra-uterine progesterone, combined oral contraceptive pills, gonadotropin-releasing hormone GnRH analogues, danazol, etc). Medical treatment in particular, long-term GnRH analogues plays an important role in managing women with subfertility and adenomyosis. Commonly used GnRH analogues are goserelin, leuprolide and nafarelin. However, hypoestrogenic side effects restricts their long term use. Levonorgestrel-releasing intra-uterine system (LNG-IUS) is most effective in women who have completed family and do not want surgical treatment. Newer progesterone, Dienogest, has also shown to alleviate pain and bleeding in long-term.

Newer medications including selective progesterone receptor modulators (SPRMs) such as mifepristone, ulipristil acetate, asoprisnil and telapristone acetate have been tried with variable effects. Other agents including GnRH antagonists (elagolix), valproic acid, aromatase inhibitors (letrozole and anastrozole), anti-platelet therapy (thromboxane A2 synthase inhibitor) and vaginal bromocriptine are being

investigated for their role in management of adenomyosis.

B. Surgical Management

Surgical treatment is indicated when medical therapy fails to control symptoms. Extent and route of the surgery depends on age, symptoms, site and fertility desire of the woman. Extent of endo-myometrial resection should be balanced against sufficient conservation of normal uterine tissue to minimize serious consequences of miscarriage, preterm labour, placental complications and even uterine rupture in future pregnancies.

Resection of Adenomyosis Foci

Principles of surgery include proper identification, meticulous excision and closure of uterine defect to ensure adequate healing. It is suggested that at least 9 to 15mm of myometrial thickness should be preserved during the surgery (Otsubo et al). An incomplete excision of lesions makes it difficult to reconstruct uterus and achieve haemostasis. Risk of uterine rupture after surgery has been reported as high as 20%. Hence, patients should be counselled regarding planned delivery at a higher centre. Summary of various fertility sparing surgical techniques is

provided in Table 2.

Surgical Techniques: Complete Removal Techniques

- a. Classic Technique (Hyams et al, 1952; Grimbizis et al, 2008; Wang et al, 2009): It is performed either by laparotomy or laparoscopy. Longitudinal uterine incision over adenomyoma and lesion excised using blunt and sharp dissection using scissors or electrocautery. Uterine wall is closed in two or more layers. In certain cases where recognition of adenomyotic tissue is difficult, ultrasonography may be utilised using hydroultrasonographic monitoring (Nabeshima et al, 2003) or transtrocac ultrasonography (Nabeshima et al, 2008).
- b. Laparoscopic Modifications in wall reconstruction: After laparoscopic adenomyomectomy, in overlapping flap technique (Takeuchi et al 2006), uterine seromuscular layer are overlapped and sutured. While in U-shaped suturing (Sun et al, 2011), uterine reconstruction is done using U-shape sutures at muscle layer and figure of eight sutures in seromuscular layer.
- c. Triple-flap Method (Osada et al. 2011):

Table 2: Showing various fertility-sparing surgical procedures used in the management of adenomyosis.

Classification	Technique	Variant	Described by	Surgical Route	Adenomyosis Type
Complete Excision	Adenomyomectomy	Classic technique	Hyams 1952 Grimbizis et al. 2008 Wang et al. 2009	Laparotomy/ Laparoscopic	Focal
		Modifications			
		<ul style="list-style-type: none"> • U-shaped suturing • Overlapping Flaps 	Sun et al. 2011 Tacheshi et al. 2006	Laparoscopic Laparoscopic	Focal Focal
	Triple Flap Method	Osada et al. 2011	Laparotomy	Diffuse/Focal	
	Cystectomy			Laparotomy/ Laparoscopic/ Hysteroscopic	Cystic adenomyoma
Partial Excision	Partial Adenomyomectomy	Classic technique	Fujishita et al. 2004	Laparotomy/ Laparoscopic	Diffuse/Focal
		Transverse H incision	Fujishita et al. 2004	Laparotomy	Diffuse/Focal
		Wedge resection	Sun et al. 2011	Laparotomy/ Laparoscopic	Focal
		Asymmetric dissection	Nishida et al. 2010	Laparotomy	Diffuse

Described in Figure 5.

- d. Four-petal Method (Kuo et al. 2020): Laparoscopic adenomyomectomy is performed by giving a cruciate incision over adenomyoma and flaps are raised resembling shape of a blooming four-petal flower. This fully exposes lesion and maximizes removal of adenomyotic tissue. Around 1-cm thickness of the myometrium is preserved at subendometrial region and around 0.5 cm thickness of serosa is also left in each "petal." Wound is repaired by anchoring serosal flap to subendometrial tissue avoiding any dead space.

Surgical Techniques: Partial Removal Techniques (Cytoreduction Surgery)

- a. Classic technique: A vertical or transverse incision is made in middle of anterior or posterior uterine wall and adenomyotic tissue is excised piece by piece. Myometrium is closed in one or two layers and serosa is closed in one layer.
- b. Transverse H Incision (Fujishita et al. 2004): It is mainly described for anterior wall adenomyosis. After laparotomy, a vertical

incision is made in uterine wall and two transverse incisions are made perpendicular to initial incision at upper and lower edges (Transverse H incision). Bilateral uterine serosa are widely separated preserving 5-mm thickness of uterine serosa from myometrium along with vertical incision. Adenomyotic lesions are removed using electrocautery or scissors and myometrial edges are closed with a tension-free two-row suture.

- c. Asymmetric dissection (Nishida et al. 2010): Longitudinal incision is given over uterus in an asymmetric manner and adenomyotic tissue removed in thin slices. Cavity is opened and under palpation adenomyotic tissues >5mm of inner myometrium are excised. Uterine cavity is reconstructed with left side covering the right side.
- d. Wedge Resection (Sun et al. 2011): Performed either by laparotomy or laparoscopy. A sagittal incision is given over uterus and adenomyotic tissue is removed via wedge resection and remaining myometrium is sutured using continuous mattress technique.
- e. Cystectomy: Performed in cases of cystic focal adenomyosis.

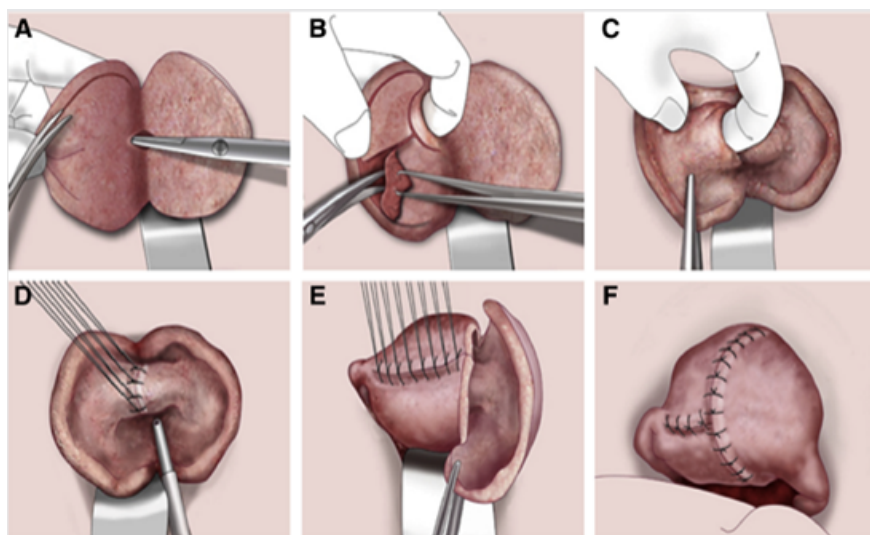


Figure 5: Osada's Technique. After laparotomy incision, uterus is exteriorized. Uterus is bisected in the midline and cavity is entered (A). Adenomyotic tissue is extracted completely under direct palpation using non-electrical scalpel (B). Myometrial flaps are raised by on both sides preserving 1-cm myometrium (C). Endometrium is closed (D). Closure of the flaps approximating the myometrium and serosa of one side in anteroposterior plane (E). Contralateral side is covered over the reconstructed side (F).

Various non-excisional procedures for treatment of adenomyosis are summarised in Table 3.

Conclusion

To provide most suitable treatment for patients, a precise evaluation and individualistic approach is necessary. Advancements in imaging techniques have revolutionized the early detection. With development of new drugs and uterine sparing surgical techniques, the treatment of adenomyosis is highly effective with good outcomes in infertile women.

Suggested Reading:

1. Zhai J, Vannuccini S, Petraglia F, Giudice LC. Adenomyosis: Mechanisms and Pathogenesis. *Semin Reprod Med.* 2020;38(2-03):129-43.
2. Grimbizis GF, Mikos T, Tarlatzis B. Uterus-sparing operative treatment for adenomyosis. *Fertil Steril.* 2014;101(2):472-87.
3. Buggio L, Dridi D, Barbara G. Adenomyosis: Impact on Fertility and Obstetric Outcomes. *Reprod Sci.* 2021;28(11):3081-4.
4. Dueholm M. Minimally invasive treatment of adenomyosis. *Best Pract Res Clin Obstet Gynaecol.* 2018;51:119-37.
5. Van den Bosch T, de Bruijn AM, de Leeuw RA, et al. Sonographic classification and reporting system for diagnosing adenomyosis. *Ultrasound Obstet Gynecol.* 2019;53(5):576-82.

Table 3: Summary of various non-excisional procedures used in management of adenomyosis.

Route	Technique	Described by	Adenomyosis Type
Laparoscopic	Electrocoagulation of myometrium	Wood 1998 Philips 1996	Diffuse/Focal
	Uterine artery ligation	Wang et al. 2002	
Hysteroscopic	Endometrial Ablation	Wood 1998	Diffuse/Focal
	Endometrial Resection	Preuhhupan et al 2010	
	Cystectomy		
Others	HIFU	Yang et al. 2009	Focal
	Alcoholic instillation for cystic adenomyosis	Furman et al. 2007	
	UAE	Wang et al. 2002	
Non-hysteroscopic Endometrial Ablation	Radiofrequency	Ryo et al. 2006	Focal
	Microwave	Kanaoka et al. 2004	
	Balloon	Chan et al. 2001	

Role of MIS in pelvic floor reconstruction

Dinesh Kansal¹, Supriya Mahipal², Yamini Kansal³

¹HOD and Director, ²Associate Consultant, ³Gynae Oncosurgeon
BLK MAX Hospital, Laparoscopic and Robotic surgeon

Descent of one or more of the pelvic organs, anterior vaginal wall, posterior vaginal wall, apex of the vagina (cervix to uterus), or vault (cuff) after hysterectomy is known as Pelvic organ prolapse (POP). Above 50 years of age almost half of the women are affected with POP with lifetime prevalence of 30% to 50%¹.

Classification of Pelvic Organ Prolapse

Pelvic organ prolapse can be staged or graded using the Baden-Walker Classification or the POP-quantification (POP-Q) classification² (pic 1). POP-Q is defined as follows:

- Stage 0: No prolapse
- Stage I: Distal prolapse > 1 cm proximal to hymen
- Stage II: Distal prolapse within 1 cm of hymen, either proximal or distal
- Stage III: Distal prolapse >1 cm below hymen without complete eversion
- Stage IV: Complete vaginal eversion.

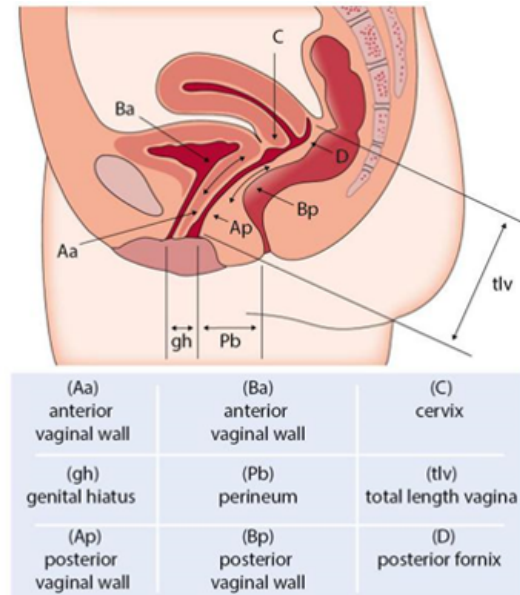
Management

The management of Pelvic organ prolapse is necessary for the patient who are troubled by their symptoms and includes conservative and surgical management. Conservative management is offered to elderly patients with multiple comorbidities, who are unfit for surgery or patients who decline surgery.

Surgical Management

Various vaginal & abdominal treatment modalities are available for treatment of POP.

Earlier vaginal prolapse repair was popular and accepted norm but now laparoscopic and robotic approach is becoming more popular. The success rates in vaginal route is less without mesh and complication rates are high with vaginal mesh which is not FDA approved in contrast to abdominal mesh which is approved

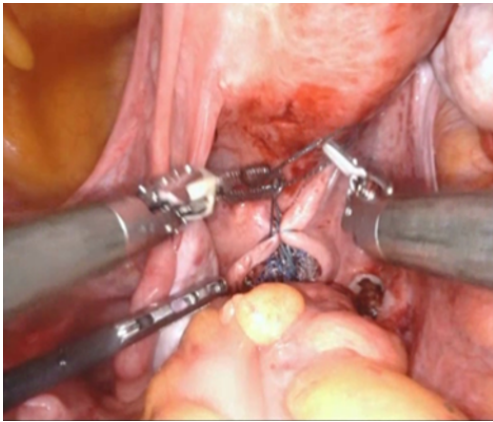


Pic 1 – Pelvic organ prolapse-quantification adapted from Bump et al.

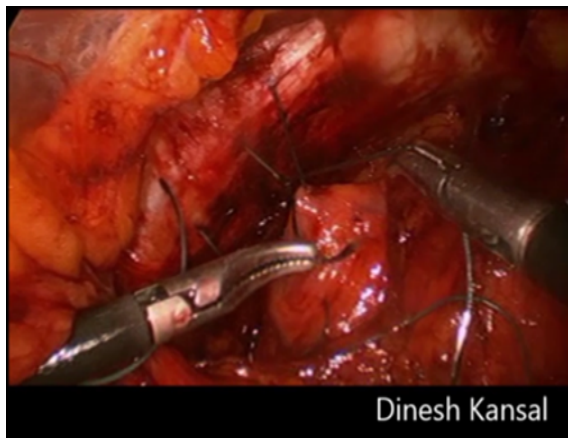
by FDA³. Laparotomy is rarely indicated in prolapse surgery and is completely replaced by Minimal access surgery. There have been several surgeries for correcting prolapse by laparoscopic/ Robotic route including native tissue repair, sacrocolpopexy and pectopexy. Among these, Laparoscopic sacrocolpopexy is the gold standard for the surgical management of POP. Now-a-days laparoscopic pectopexy has been applied in clinical practice as a new technique because of its short learning cycle and fewer operative complications.

Native tissue repair

Native tissue repair uses patients' own tissues instead of mesh to repair anterior and posterior compartment defects and is effective for relieving vaginal bulge symptoms and reducing prolapse within the vagina. It can be done with laparoscopic hysterectomy or following pectopexy for posterior native tissue repair or following sacropexy for anterior native tissue repair.



Pic: 2A Bilateral Uterosacral plication in native tissue repair



Pic: 2B Placement of Burch suture

For laparoscopic Cystocele repair, the exposure of anterior vaginal fascia is done by dissecting bladder down as far as possible till trigone according to grade of cystocele followed by compressing and narrowing of anterior fascia with 2-0 barbed PDS suture. The same suture can be taken posteriorly to repair concomitant posterior defect.

Posterior vaginal fascia is exposed by dissecting rectum from posterior vaginal wall for high rectocele repair or dissection can be extended till levator ani in case of low rectocele. 2-0 barbed PDS suture is used to repair rectocele by taking rows of compressing sutures through posterior vaginal fascia. Mild enterocele can be repaired with same barbed suture by performing Laparoscopic Moschowitz/ Halban procedure along with uterosacral ligament plication (Pic 2A). It can be further strengthened with no 2 ethibond suture which is non absorbable suture and acts like a mesh in case of moderate to severe enterocele taking sagittal or pursestring

sutures.

Additionally, Stress Urinary incontinence if present along with prolapse can be corrected at the same sitting by doing laparoscopic Burch colposuspension by opening space of Retzius and dissecting bladder down followed by taking ethibond sutures in paravaginal tissues on either side of the bladder neck and then attaching to the Cooper's ligaments on the same side (Pic 2B).

The paravaginal repair for lateral cystocele can be done similarly by opening space of retzius and suturing the lateral aspect of the anterior vaginal wall back to its original point of attachment known as the arcus tendineus fascia pelvis (ATFP) or the "white line" using non absorbable suture Ethibond no 2. It reapproximate vaginal wall to the fascia overlying the obturator internus muscle; restoring bladder and urethra to its normal anatomical position.

Laparoscopic Assisted Sacrocolpopexy / Hysteropexy

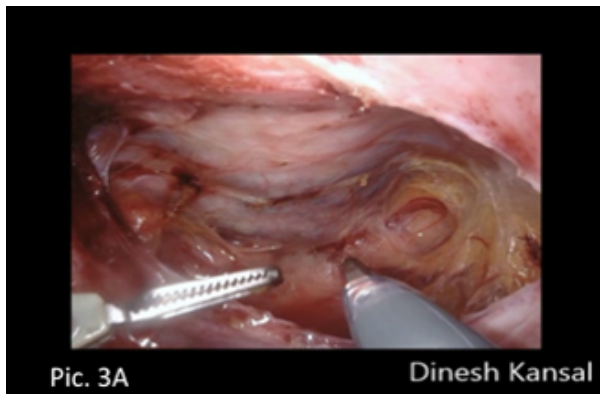
Surgical Technique (Pic 3A-3C)

The patient is placed in Lithotomy position under general anesthesia and pneumoperitoneum is obtained. A Supra or Peri Umbilical 10 mm port is placed for camera. Three other 5 mm ports are made.

Pic. 3B

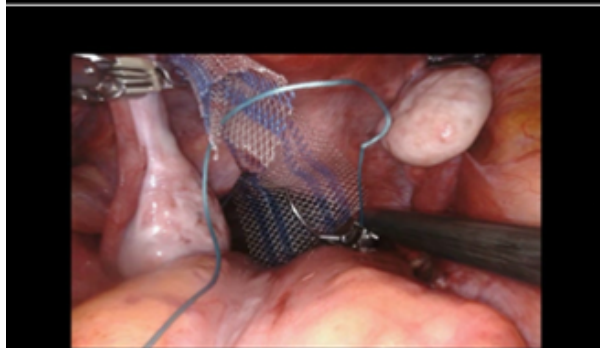
A uterine manipulator is placed inside the uterus. The dissection at the sacral promontory should be done with identification of key anatomical landmarks in close proximity including the aortic bifurcation, right common iliac vein, right middle sacral artery and vein. Identification helps to prevent injury to these structure during dissection. The presacral space is entered through a longitudinal peritoneal incision above the sacral promontory almost up to the aortic bifurcation.

The promontory and the anterior sacrum are cleared off to expose the anterior sacral ligament. The ventral surface of S1 & S2 vertebral bodies are exposed. The peritoneal incision is extended up to the cul-de-sac, keeping the

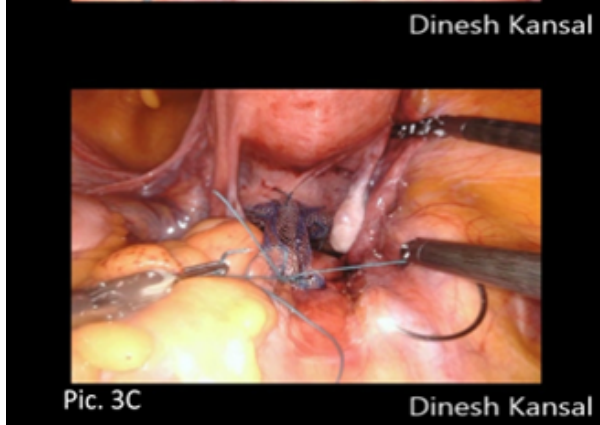


Pic. 3A

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Pic. 3C

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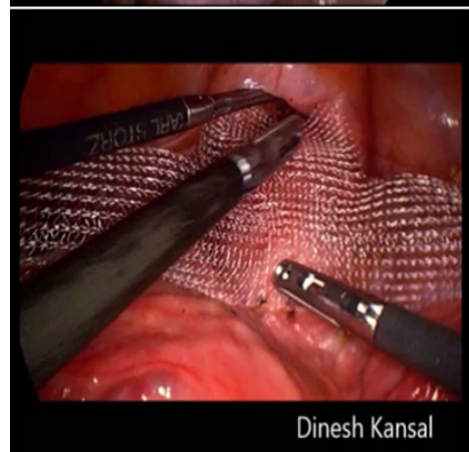
Pic. 2A- Posterior Vaginal Wall Dissection, B- Fixation of Mesh over Posterior vaginal wall, C – Fixation of Mesh over the sacral promontory

ureter in view. The peritoneum is dissected to make space to cover the mesh.

The rectovaginal and vesicovaginal spaces are opened and rectum and bladder are separated from the vaginal wall. The distal extent of the dissection should be carried far enough inferiorly to allow secure attachment of the mesh to at least several centimeters of the posterior vaginal wall. Anterior dissection should extend nearly as far as bladder trigone. A large porous Y shaped polypropylene mesh is used, two leaves of mesh are required and should measure 3-4 cm in width and 14 cm in length. One leaf is attached to rectovaginal fascia



Dinesh Kansal



Dinesh Kansal

Pic: 4A Dissection of vesicovaginal space in vault prolapse **4B:** Attachment of tongue shaped mesh to vaginal cuff

of the post vaginal wall with transverse row of interrupted non-absorbable material.

The second leaf is attached to the pubocervical fascia of the anterior vaginal wall with rows of interrupted transverse sutures. Suture should be tied in such a way that mesh lay flat against the endopelvic fascia and loosely to avoid necrosis and mesh erosion. The proximal arm of the mesh should be fixed in the sacral promontory. The tension of the mesh should be adjusted because excessive tension may cause pain or irritative bladder symptoms after surgery. The mesh is sutured to the anterior longitudinal ligament overlying the sacrum with 2-5 sutures. As the endoscopic approach becomes more common, reports of postoperative Discitis is more common with laparoscopic approach due to penetration of the L5-S1 disc. To avoid discitis surgeons should either confirm the position of S1 body or consider the thickness of the anterior longitudinal ligament, which ranges from 1 to 2 mm, and should avoid deep suture bites that

may penetrate into the disc. The Sacral hysteropexy is similar to sacral colpopexy, except that the anterior leaf of mesh is passed through windows in the broad ligament and then attached to the sacral promontory⁴.

Laparoscopic Pecto-colpopexy/ Pecto-Hysteropexy

The anterior peritoneum of the uterus is opened, and the bladder is dissected to expose the cervix in preparation for mesh fixation in case of hysteropexy. In patients with a previous hysterectomy, the peritoneum of the vaginal vault is opened from the apex, and the surrounding soft tissue over the apex is dissected anteriorly (Pic 4a) and posteriorly. We then open the peritoneum along the pubic bone between the right round ligament and the right medial umbilical ligament to expose the pectineal ligament. The pectineal ligaments on both sides are prepared just medial to the external iliac vessels and dissected anteriorly for about 3 cm in length. The Obturator nerve is present in inferolateral part of pectineal ligament, should be identified to avoid injury.

A vessel that may be encountered during pectineal ligament preparation is the pubic vein, also called the corona mortis, which is the anastomosis of the external iliac vein and obturator vein and lies on the pectineal ligament⁵. It can simply be cauterized if this vessel is impeding the mesh fixation.. We use ethibond no 2 and barbed PDS suture to fix polypropylene mesh onto the anterior cervix or vaginal vault in tongue shaped manner (Pic 4B). The uterus or vaginal vault is elevated to the natural position without excessive tension by the manipulator. The mesh ends are anchored to the bilateral pectineal ligaments with two interrupted no 2 Ethibond sutures. Posterior compartment defect can be repaired using mesh in cross shaped manner after dissecting rectovaginal space or native tissue repair can be done by barbed PDS suture if mild defect is present. Retroperitonisation of mesh is done by 2-0 barbed PDS suture.

Robotic assisted surgery for UV Prolapse

Since the introduction of robot system daVinci in

urogynaecology in 2005, it has shown to be highly advantageous over Laparoscopy. The robot improves manual dexterity by allowing multiple degree of freedom which helps in fine suturing and eliminates tremors. It has better visualization due to three-dimensional vision system in deep pelvis. It has a shorter learning curve for those already doing laparoscopic or abdominal surgery and desiring to switch to robotic surgery⁶.

Robotic sacrocolpopexy/ Pectopexy is safe and has equivalent outcomes as compare to open and laparoscopic surgery. It has rapidly gained popularity because morbidity is less as compared to abdominal and sacral dissection, knot tying is easier in robotic surgery as compared to laparoscopic surgery due to three-dimensional visualization.

Complications

The most worrying intraoperative complications of laparoscopic Prolapse repair are haemorrhage from the pelvic vessels, injury to bowel, right ureter, and bladder and mesh erosion. The risk of conversion from minimally invasive to open surgery is shown to be 1-5%⁷. Most common perioperative complications for sacropexy are bladder, bowel, ureteral injury, ileus, port site hematoma, urinary retention, fever, urinary tract infection, and vaginal mucosal injury and cardio-pulmonary issues. A higher incidence of postoperative SUI is present in Pectopexy. Mesh complications and post-operative urinary retention are the common complication in prolapse surgery. A Cochrane review reveals that transvaginal mesh repair has more rate of dyspareunia as compared to ASC. There is 0 – 10 % risk of mesh erosion in sacropexy while 18% in transvaginal mesh repair as published in various articles⁸.

Discussion

According to a recent Cochrane review, sacrocolpopexy was associated with a lower rate of recurrent vault prolapsed and painful intercourse than sacrospinous suspension, and a higher success rate and lower reoperation rate than high vaginal uterosacral suspension and transvaginal polypropylene mesh. Laparoscopic

prolapse surgery (Sacrocolpopexy) is considered as the more effective treatment for apical vaginal prolapse which also allows a simultaneous correction of the three pelvic floor compartments defects: anterior, apical and posterior, preserving vaginal integrity with reducing recurrence. The characteristics of this completely minimally invasive surgery, as well as its potential benefits for sexual function (preservation of vaginal length and axis and lower rates of dyspareunia), make this procedure a better option for younger, sexually active women.

Laparoscopic Sacrocolpopexy / Sacrohysteropexy is a complex procedure with steep learning curve which has resulted in decreased adoption of this technique by a wider group of surgeons.

Laparoscopic pectopexy was introduced in 2011 and showed that the procedure offers a feasible, safe, and easier to perform alternative for apical prolapse surgery⁹. Pectopexy also offers advantages over sacrocolpopexy in obese patients. In sacrocolpopexy, there are several important structures including the right ureter, hypogastric nerves, middle sacral vessels, and left common iliac vein over the sacral promontory. Retroperitoneal dissection for anterior longitudinal ligament preparation and bowel handling is challenging in obese patients because of difficulties identifying major landmarks. In contrast to sacrocolpopexy, pectopexy limits the surgical fields in the anterior pelvic space and is less influenced by obesity. A number of studies have compared the clinical efficacy of laparoscopic pectopexy with sacrocolpopexy, which shows that its efficacy is more significant¹⁰.

Conclusions

The surgical management of POP has expanded with the use of minimally invasive surgery. However, emerging technologies have allowed for more minimally invasive approach including the use of laparoscopic/Robotic assisted native tissue repair/ sacrocolpopexy/ Pectopexy... Robotic Assisted surgery for POP is superior to Laparoscopic and Abdominal surgery due to a

short learning curve, and its 3D visualisation, but the high cost associated with the use of the daVinci surgical system and its non-availability in most of the center are the main constraints of using it.

Reference

1. Subak LL, Waetjen LE, van den Eeden S, Thom DH, Vittinghoff E, Brown JS. Cost of pelvic organ prolapse surgery in the United States. *Obstet Gynecol* 2001; 98:646-51.
2. Kobashi K. Evaluation of patients with urinary incontinence and pelvic organ prolapse. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. *Campbell-Walsh Urology*. 10th ed. Philadelphia: WB Saunders; 2012. pp. 1896–908.
3. Karram MM, Walters MD. Surgical treatment of vaginal vault prolapse and enterocele. In: Walters MD, Karram MM, editors. *Urogynecology and Reconstructive Pelvic Surgery*. 3rd ed. Philadelphia: Mosby Elsevier; 2007. pp. 262–87.
4. Kwang Jin Ko, Kyu-Sung Lee. Robotic Sacrocolpopexy for Treatment of Prolapse of the Apical Segment of the Vagina
5. Pulatoğlu Ç, Doğan O, Medisoğlu MS, Yassa M, Ellibeş Kaya A, Selçuk İ, et al. Surgical anatomy of the pectineal ligament during pectopexy surgery: the relevance to the major vascular structures. *Turk J Obstet Gynecol*. 2020;17(1):21–27
6. Paraiso MF, Jelovsek JE, Frick A, Chen CC, Barber MD. Laparoscopic compared with robotic sacrocolpopexy for vaginal prolapse: A randomized controlled trial. *Obstet Gynecol*. 2011;118:1005–13
7. Akl MN, Long JB, Giles DL, Cornella JL, Pettit PD, Chen AH, et al. Robotic-assisted sacrocolpopexy: Technique and learning curve. *Surg Endosc*. 2009;23:2390–4
8. Teresa L. Danforth, Monish Aron, and David A. Ginsberg. Robotic sacrocolpopexy. *Indian J Urol*. 2014 Jul-Sep; 30(3): 318–325.
9. Banerjee C, Noé KG. Laparoscopic pectopexy: a new technique of prolapse surgery for obese patients. *Arch Gynecol Obstet*. 2011; 284(3):631–5.
10. Obut, M., Oğlak, S. C. & Akgöl, S. Comparison of the quality of life and female sexual function following laparoscopic pectopexy and laparoscopic sacrohysteropexy in apical prolapse patients. *Gynecol. Minim. Invas. Ther.* 10, 96–103.

EVENTS HELD

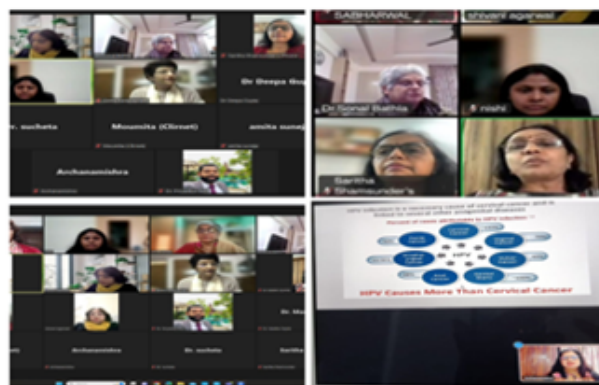
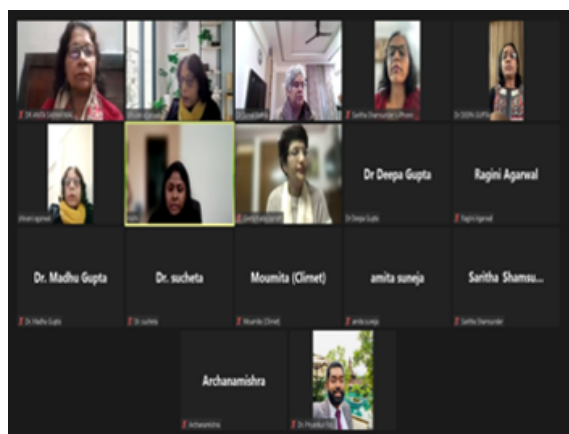
1. Under Aegis of QI Committee AOGD CME on Soft skills was held by the Department of Obstetrics and Gynecologist LHMC, on 8th December 2023, at LHMC.

Apart from thought provoking talks there were role plays on day to day concerns.



2. Community Health & Public Awareness Committee, AOGD, Oncology Committee, AOGD with Public Awareness Committee, FOGSI organized a Webinar On “Protecting Ourselves from Breast and Cervical Cancer” on from 14th December 2023 (Thursday)

from 4.30 pm to 6 pm.



EVENTS HELD

3. AOGD and Delhi PG Forum organized a Case discussion on "HIV in Pregnancy" on 18.12.23 at 7:00 - 8:30 pm.

Coordinator Delhi PG Forum: Dr. Sunita Malik, Dr. Shivani Agarwal.



Association of Obstetricians & Gynecologists of Delhi
Invites you to
DELHI PG FORUM
Case Discussion on
HIV IN PREGNANCY

Post Graduates of Maulana Azad Medical College, Delhi
Monday, 18th December, 2023 | 7:00 - 8:30 PM

CHAIRPERSONS

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Sr Specialist, Dept of OBG, DDU Hospital
- 
Dr. Rekha Bharti
Professor
VMMC & SGT Hospital

MODERATORS

- 
Dr. Sunita Seth
Senior Specialist (DGO)
MMS DGO LHM
CMD ICM
- 
Dr. Shakun Tyagi
Professor, OBGY
Maulana Azad Medical College

PG RESIDENTS

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Dr. Ritu
- 
Dr. Pragna Saini

COORDINATOR DELHI PG FORUM

- 
Dr. Sunita Malik

CO-COORDINATOR DELHI PG FORUM

- 
Dr. Shivani Agarwal

Save The Date for Next Class
PREMALIGNANT LESIONS OF CERVIX
15 January, 2024

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Meeting Organizer
CONFERENCES INTERNATIONAL

1. Yolk sac tumour of cervix in a toddler: A very rare case scenario

Shah Miki, Modi Rahul, Kalra Manas, Aggarwal Satish

Yolk-sac tumour is a rare variety of germ cell tumour and typically involves ovaries. We describe a case of extra-gonadal cervico-vaginal yolk-sac tumour in a 17-month old girl. The child presented with vaginal bleeding and expulsion of mass per-vaginum. Per-rectal examination revealed locally advanced cervico-vaginal tumour. Histopathology and immunohistochemistry of expelled mass suggested yolk-sac tumour. Baseline alpha-feto protein (AFP) levels were 12,308 ng/ml. Local-regional disease with no distant metastasis was seen on MRI pelvis and PET/CT. She received 4 cycles of chemotherapy - BEP (Bleomycin, Etoposide, Cisplatin). Post-chemotherapy AFP levels were 3.92 ng/ml. MRI revealed a residual lesion of 1.2 x 1 cms on left lateral aspect of cervix. Check cysto-vaginoscopy showed normal urinary bladder, lesion on left upper quadrant of cervix with grossly normal vaginal fornices and rest of vagina. A multi-disciplinary team consisting of paediatric oncology, paediatric surgery, radiation oncology and gynecological oncology opted for conservative approach of conization over radical hysterectomy & partial vaginectomy. Final histopathology of the cone revealed no residual disease with clear margins. Plan is for observation and close surveillance. Thus, our case describes a rare scenario of extra-gonadal yolk-sac tumour and outlays importance of fertility-sparing approach for same.

2. Acute Liver Failure In Pregnancy"

Dengue Fever With Hepatitis B –double Trouble

Huma Ali, Sharmistha Garg

A 30 years old female, G3P1L1A1 with 29+2 weeks POG with previous LSCS with Rh negative

with HbsAg positive status, referred in view of dengue fever with deranged liver functions. Developed fever and diagnosed with dengue and low platelet count and derange LFT. Admitted in ICU, developed encephalopathy and acute liver failure (ALF), SGOT/SGPT-9165/2037, INR-2.2, Fibrinogen-0.9, ammonia-311, HBeAg/HCV/HAV/HEV negative. USG reported IUFD in breech presentation. Liver transplant was being discussed. Delivered macerated fetus of 1.2 kg on day6. Patient improved and discharged in stable condition with SGOT/SGPT34/43 on day14.

Liver involvement in dengue ranges from hepatitis to ALF, chances of progression to ALF is 3.2%, and mortality in dengue ALF-80%. All dengue ALF have unusually high transaminitis and hyperacute presentation (<7 days), AST elevation is higher than ALT. Pathogenesis of acute liver failure in patients with dengue is controversial, but is thought to be caused by, direct cytopathic effect on liver, dysregulated immune response to the virus, ischemic/hypoxic injury secondary to hepatic sinusoidal congestion or paracetamol induced. Chronic viral hepatitis may result in more severe liver dysfunction and hemorrhage. A multidisciplinary team approach and timed referral is mandatory.

3. Successful pregnancy outcome in a case of Bernard Soulier Syndrome

Mullamithawala Khadija Asgar, K. Gujral

CASE REPORT: A 33 year old primigravida born out of non-consanguineous marriage, known case of Bernard Soulier syndrome (BSS) came to our hospital for the first time at 36 weeks of gestation due to non-availability of hematologist where she was taking regular antenatal check-ups. She was diagnosed with BSS at the age of 21 when her soft tissue injury in knee did not heal. Her antenatal period was uneventful. After counseling, LSCS was planned at 39 weeks POG in consultation with

hematologist. Preoperatively, she was transfused 6 HLA matched RDPs and 1 SDP, Inj. Tranexamic acid 2 gram over 2 hours was started 4 hours prior to surgery and 3 vials of recombinant factor VII were arranged. Elective cesarean was done under general anesthesia and she delivered a healthy female baby of 2660 gram. 1 SDP was transfused intra-operatively. Inj. Tranexamic acid was continued for the next 24 hours. Her postoperative period was uneventful and she was discharged on day 5. Post-natal check-up till 8 weeks was normal with no history of any bleeding episode. Neonatal platelet count was normal.

DISCUSSION: Bernard –Soulier Syndrome (BSS) is a rare disorder of platelets, inherited in autosomal recessive manner, caused by deficiency of GP Ib-IX-V complex, a vWF receptor, which is important for platelet adhesion.

Clinical manifestations - epistaxis, gingival bleeding trauma related bleeding and menorrhagia.

Diagnosis - Low platelet count, giant platelet on peripheral smear, absence of ristocetin induced platelet aggregation and decreased CD 42b and CD 42a on flow cytometry.

Maternal & fetal risks-APH, primary and secondary PPH, wound hemorrhage/ hematoma and neonatal thrombocytopenia due to maternal alloantibodies.

Pregnancy Management:

- Women with BSS should be informed of pregnancy risks prior to planning conception
- Pregnant women with BSS should be managed by a multidisciplinary team including obstetricians, haematologists and anaesthetists in a tertiary unit with experience in managing such patients and readily available access to platelet and other blood products
- In communities with high consanguinity, the father should be screened to help identify at risk fetuses
- Prenatal diagnosis should be offered if both parents are carriers or for parents of an affected child

- Women should be monitored for the development of anti-HLA and GPIb antibodies to identify fetuses at risk of alloimmune thrombocytopenia.
- If antibodies are present, management is challenging, cordocentesis for fetal platelet count and treatment with maternal steroid and / or IVIG and fetal platelet transfusion or fetal IVIG is recommended

Delivery management:

- Antifibrinolytic agents, recombinant factor VIIa and HLA matched platelet transfusion are the lifelines of management
- DDAVP has also been used
- Tranexamic acid is effective in preventing & controlling bleeding
- Use of recombinant factor VII a (90mg/kg) with tranexamic acid is recommended for uncomplicated vaginal delivery.
- HLA matched platelet transfusion with tranexamic acid is recommended as first line management for C-Section or if bleeding occurs during vaginal delivery.
- Mode of delivery is controversial, however traumatic delivery, especially difficult instrumental delivery is to be avoided.
- Regional analgesia / anaesthesia is contraindicated
- Aggressive use of uterotonics & active management of third stage of labour to minimize the risk of PPH should be the norm
- Close observation upto 6 weeks postpartum is recommended as there is high risk of secondary PPH. Tranexamic acid can be used to cover this period
- Neonatal follow-up for alloimmune thrombocytopenia is recommended

FORTHCOMING EVENTS

1. AOGD and Delhi PG Forum will be organizing a Case discussion on "Premalignant lesions of cervix" on 15th January 2024 at 7:00 -8:30 pm.
Coordinator Delhi PG Forum: Dr. Sunita Malik, Dr. Shivani Agarwal.
2. Next AOGD monthly clinical meeting will be held online on 30th January 2024 at 4-5pm and will be organized by RML Hospital, New Delhi.

Calendar of Virtual Monthly Clinical Meetings 2023-24

Date	Name of Institution
30 th January, 2024	Dr RML Hospital
23 th February, 2024	VMMC & Safdarjung Hospital
28 th , March, 2024	UCMS & Guru Teg Bahadur Hospital
19 th April, 2024	LHMC & Smt. Sucheta Kriplani Hospital
31 st May, 2024	B L Kapoor Hospital



Dil Se.....

White Scrubs and Motherhood

In morning's glow, the mother departs,
In scrubs of white, where healing starts.
A whispered promise in tired eyes,
As the little one to dreamland flies.

The day unfolds in a quiet grace,
The yearling explores, finds her own space.
With toys and giggles, she makes a play,
As Mom readies for the hospital's fray.

Eagerly, the little one awaits,
By the door, where daylight gates.
When Mom returns, joy fills the air,
In her embrace, all worries repair.

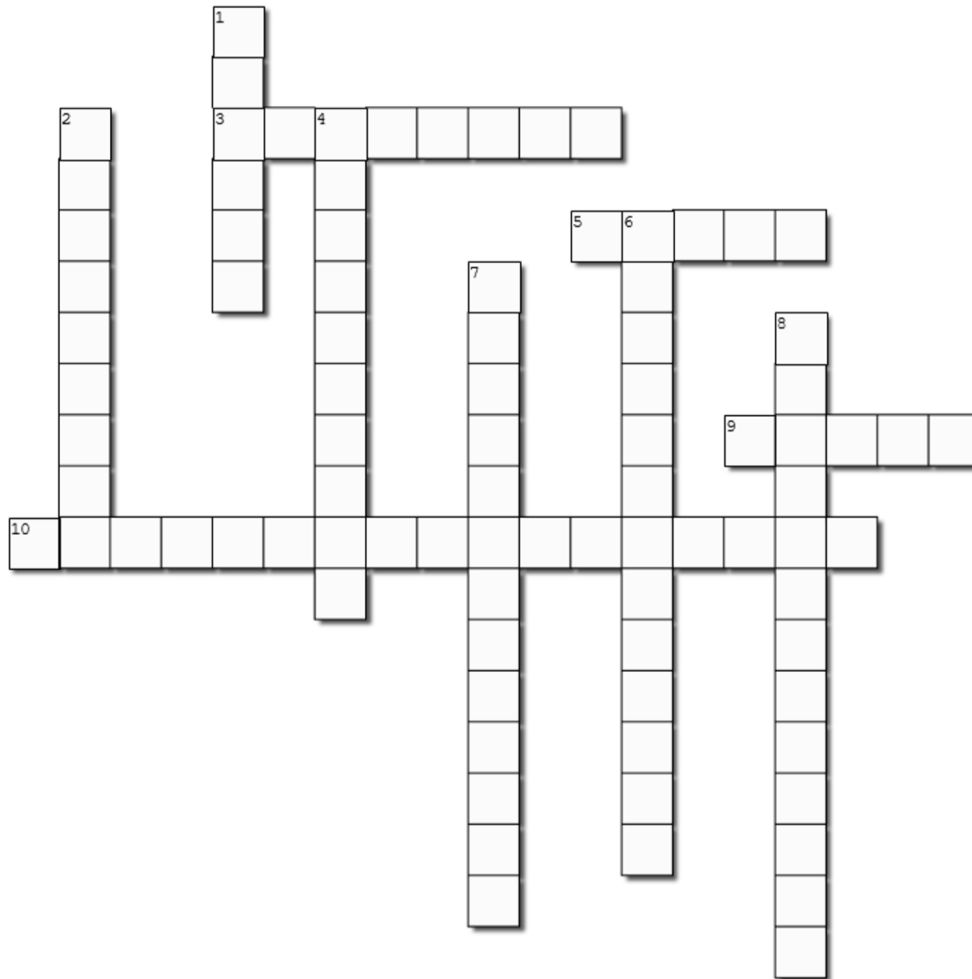
On early days, a special treat,
Mom's presence, oh, so sweet.
Laughter echoes in walls once still,
Mom's day off, a dream fulfilled.

But when shadows lengthen, and work prevails,
The daughter's patience, a story tells.
Her eyes, a beacon, by the window's light,
Longing for Mom, in the fading night.

Ajit kumar

Crossword Puzzle

Bhanupriya



ACROSS

3. Which of the following clinical signs defines progression from the warm phase of septic shock to cold phase of septic shock
5. RUSH protocol in maternal collapse include examination of (acronym)
9. Pulmonary edema occurring within 1-6 hours of blood transfusion (acronym)
10. What is done to uterus during giving chest compression to prevent aortocaval compression

DOWN

1. Burch colposuspension uses which ligament for repair
2. The lateral attachment for Paravaginal repair for lateral cystocele is
4. Infusion of which drug is used in the management of collapse due to intravenous injection of local anesthetic
6. Which of the mediators of sepsis syndrome can cause myocardial depression
7. Which is the specific marker of sepsis
8. A vessel that may be encountered during pectineal ligament handling

Cooper, white line, ligament, introlid, HIMAP, interleukin 6, procalcitonin, corona mortis, TRALL, Left displacement

AOGD Risk Management Support [ARMS] Group

One of the ways to ensure stress-free work environment and optimal patient care is mutual support among professional colleagues. An advisory group was set up last year so that they can be contacted if any of us is caught in a complex clinical dilemma / dealing with aggressive clients or is apprehensive about how to document or effectively troubleshoot a potential problem. The same group will continue to provide timely advice and is led by

Convener- Dr. Vijay Zutshi- 9818319110

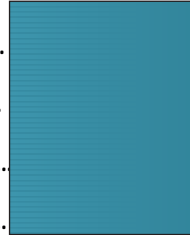
Co convener- Dr. Aruna Nigam- 9868656051

We invite suggestions from all members regarding functioning of this cell which will guide us forming the SOPs. Pl mail to **aogd.ucmsgtbh2023@gmail.com**

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Committee	Chairperson	Contact No	Email id
Adolescent Health Sub-Committee	Dr Jyoti Bhaskar	9711191648	jyrbhaskar@yahoo.com
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Fetal Medicine & Genetics Sub-Committee	Dr Sangeeta Gupta	8368199481/ 9968604349	drsangeetamamc@gmail.com
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Breast and Cervical Cancer Awareness, Screening & Prevention sub-committee	Dr Mrinalini Mani	9911835888	drmrinal5@gmail.com
Infertility & Reproductive Endocrinology sub-committee	Dr Manju Khemani	9810611598	dr.manjukhemani@gmail.com
Community Health & Public Awareness sub-committee	Dr Shivani Agarwal	9868249464	dragarwal.shivani@gmail.com
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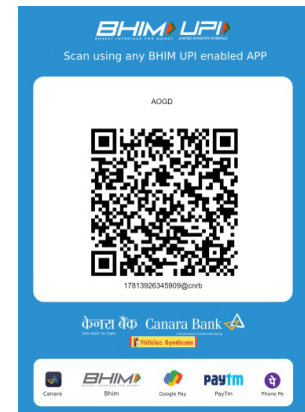
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