

Original Research Article

Co-relation of ASA-PS with post operative complications and morbidity in hysterectomy patients

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ABSTRACT

Background: Today, ASA grading is done for any surgical case performed under anesthesia. ASA PS is significantly associated with post-operative morbidity and mortality. For gynecologists, hysterectomy is the most common operation performed by gynecologists, next to caesarean section. The primary focus of this study was to review the ASA-PS of hysterectomy patients.

Methods: This retrospective study was performed in the department of Anesthesiology, in collaboration with Department of Obstetrics and gynecology. All women who underwent hysterectomy were included in this study.

Results: In this study, out of 100 patients, clinical indication was fibroid in 45 (45%) patients, menorrhagia in 15 (15%) patients, adenomyosis in 25 (25%) patients, uterovaginal prolapse in 5 (5%) patients, endometrial polyp in 5 (5%) patients and ovarian tumor in 5 (5%) patients. ASA-PS grade 1 was seen in 65 (65%) of patients, 25 (25%) of patients had ASA-PS grade 2, 10 (10%) of patients had ASA-PS grade 3 while none of the patients had ASA-PS grade 4 and 5. 4 (4%) patients had urinary tract infection, 2 (2%) patients had deep vein thrombosis, 1 (1%) patient had myocardial infarction and 1 (1%) patients had pneumonia. 25 (25%) patients were obese, 24 (24%) patients had diabetes, 20 (20%) patients had hypertension requiring treatment and 6 (6%) patients had wound infection.

Conclusions: ASA PS has strong, independent association with post-operative medical complications. This along with its simplicity, makes it a valuable prognostic metric.

Keywords: Abdominal, ASA-PS, Hysterectomy, Surgical complications, Vaginal

INTRODUCTION

Pre-anesthesia check-up (PAC) is a medical check-up and laboratory investigations done by the anesthesiologist before an operation

The aim of pre-anesthesia check-up is to identify the appropriate anesthetic techniques to be used, to ensure that perioperative period is without any complications, improved outcomes, and patient satisfaction.¹

The preanesthetic assessment involves the information from various sources including the past medical records, interview, physical examination and medical and laboratory tests.²

In an ERAS program, routine pharmacological anxiolysis is not recommended. Preoperative visit with an anesthesiologist and music is effective in reducing preoperative anxiety. Preoperative education and counseling, avoiding prolonged starvation and preoperative carbohydrate loading are effective.³

The assessment of anesthetic risks associated with the patient's medical conditions, therapies, surgical and other procedures and options for anesthetic techniques is an essential component of basic anesthetic practice.⁴

A routine test is a test ordered in the absence of a specific clinical indication or purpose. These are done to discover a disease in an asymptomatic patient.⁴

An indicated test is a test done for a specific clinical indication which may assist in making decisions about the perioperative management.⁴

To assess post operative complications, one must look for the following in the Recovery Room-Airway obstruction.⁵

- Hypoxia
- Hemorrhage: internal or external
- Hypotension and/or hypertension
- Postoperative pain
- Hypothermia, shivering
- Vomiting, aspiration
- Residual narcosis
- Falling on the floor.⁵

The recovering patient is considered fit to shift to the ward when he or she is:⁵

- Awake, opens eyes
- Extubated
- Breathing spontaneously, quietly and comfortably
- Can obey command
- Not hypoxic
- Blood pressure and pulse rate are satisfactory
- Appropriate and safe analgesia is given.⁵

For adults undergoing an elective procedure, limited solid food should be taken up to six hours prior to anesthesia. Clear fluids may be taken up to two hours prior to anesthesia. Clear fluids are regarded as water, pulp free fruit juice, clear cordial, black tea and coffee. It does not include particulate or milk-based drinks.⁶

The guidelines of the American Society of Anesthesiologists (ASA) for preanesthesia is as follows-

- A - Affirmative history of present surgical condition and past illness
- A - Airway examination
- B - Blood hemoglobin, blood loss estimation, and blood availability
- B - Breathing
- C - Clinical examination
- C - Co-morbidities like diabetes, hypertension, asthma, and epilepsy
- D - Drugs used by the patient and allergies
- D - Details of previous anesthesia and surgeries
- E - Evaluate investigations

- E - End point to take up the case for surgery
- F - Fluid status by following fasting guidelines
- F - Fasting should be of adequate duration for that particular age to prevent aspiration.
- G - Give physical status as per ASA guidelines.
- G - Get informed consent.⁷

The main objective was to evaluate the ASA-PS retrospectively for all the hysterectomies performed in this hospital over one year as independent risk stratification metric for post-operative medical complications.

METHODS

The American Society of Anesthesiologists Physical Status classification system (ASA PS) is a method of assessing patient operative risk on a scale of 1-5, Categories 1-5 represent increasing levels of patient impairment. Here 1 is normal health and 5 is moribund.

Authors assessed the validity of the ASA-PS scale and its association with patient's preoperative characteristics and postoperative outcomes.

This retrospective study was conducted in the department of Anesthesiology in collaboration with department of Obstetrics and Gynecology at KDMC Hospital and Research Centre, Mathura, Uttar Pradesh. All women in the reproductive age group and post-menopausal age who underwent hysterectomy with or without Salpingo-oophorectomy were included in this study from January 2017 to March 2018. Emergency obstetric hysterectomy and hysterectomy for malignant diseases were excluded.

Inclusion criteria

Patient's age above 30 years who have undergone hysterectomy for benign conditions.

Exclusion criteria

- Patient's age <30 years who have undergone hysterectomy
- Hysterectomy performed for Obstetrical indication
- Hysterectomy performed for malignant conditions

RESULTS

Table 1: Details of patient.

Details	
1	Patient's age
2	Type of hysterectomy (abdominal, vaginal or laparoscopic)
3	Clinical indication
4	ASA-PS
5	Post operative complications-Related to anesthesia and Surgical

Data was entered in Microsoft excel sheet and analyzed. Statistics was taken out in percentages.

The primary outcome of interest was 30-day medical complications, defined as having post-operative outcomes and co-morbidities.

In present study, out of 100 patients, 72 (72%) patients were in the age group of 41-50 years, 15 (15%) were from 31-40 years, 8 (8%) were from 51-60 years while 5 (5%) were above 60 years of age (Table 2).

Table 2: Age distribution.

Age distribution	No. of patients	Percentage (%)
31-40 years	15	15%
41-50 years	72	72%
51-60 years	08	08%
>60 years	05	05%
Total	100	100%

Benign conditions of uterus and ovary are most commonly seen in 41-50 years age for which hysterectomy is needed. So, majority of our study group was found in this age.

In present study, out of 100 patients, clinical indication was fibroid in 45 (45%) patients, menorrhagia in 15 (15%) patients, adenomyosis in 25 (25%) patients, uterovaginal prolapse in 5 (5%) patients, endometrial polyp in 5 (5%) patients and ovarian tumor in 5 (5%) patients. Fibroid and menorrhagia being estrogen dominant conditions, both were seen predominantly in this study group (Table 3).

Table 3: Clinical indication for hysterectomy.

Clinical indication for hysterectomy	No. of patients	Percentage (%)
Fibroid	45	45%
Menorrhagia	15	15%
Adenomyosis	25	25%
UV Prolapse	5	5%
Endometrial Polyp	5	5%
Ovarian tumor	5	5%

Table 4: Type of hysterectomy.

Type of hysterectomy	No. of patients	Percentage (%)
Abdominal hysterectomy	46	46%
Vaginal hysterectomy	44	44%
Laparoscopic hysterectomy	10	10%

In present study, abdominal hysterectomy was performed in 46 (46%) patients, vaginal hysterectomy in 44 (44%)

patients while laparoscopic hysterectomy was performed in 10 (10%) patients. For uterine size more than 12 weeks and with previous 2 or more cesarean section and for ovarian tumors, abdominal hysterectomy was preferred. For less than 12 weeks uterine size, non-descent vaginal hysterectomy was preferred. Laparoscopic hysterectomy was done in less number due to cost factor (Table 4).

The ASA (American Society of Anesthesiologists) Physical Status Classification System is a simple scale. It describes fitness to undergo anaesthesia.

In present study, ASA-PS grade 1 was seen in 65 (65%) of patients, 25 (25%) of patients had ASA-PS grade 2, 10 (10%) of patients had ASA-PS grade 3 while none of the patients had ASA-PS grade 4 and 5 (Table 5).

Table 5: ASA System.

ASA	ASA - PS	No. of patients	Percentage (%)
ASA 1	A normal healthy patient	65	65%
ASA 2	Patient with mild systemic disease	25	25%
ASA 3	A patient with severe systemic disease	10	10%
ASA 4	A patient with severe systemic disease that is a constant threat to life	0	0%
ASA 5	A moribund patient who is not expected to survive without the operation	0	0%

Table 6: Post operative complications.

Complications	No. of patients	Percentage (%)
Deep vein thrombosis, pulmonary embolism	2	2%
Reintubation	0	0%
Need for ventilator	0	0%
Renal insufficiency/ Failure	0	0%
Coma/ Stroke	0	0%
Cardiac arrest/Myocardial infarction	1	1%
Peripheral neural deficit	0	0%
Pneumonia	1	1%
Urinary tract infection	4	4%
Systemic sepsis	0	0%
Mortality	0	0%

Post-operative complications were minimum in this study. 4 (4%) patients had urinary tract infection, 2 (2%) patients had deep vein thrombosis, 1 (1%) patient had

myocardial infarction and 1 (1%) patients had pneumonia (Table 6).

In this study, co-morbidities were present but well controlled. 25 (25%) patients were obese, 24 (24%) patients had diabetes, 20 (20%) patients had hypertension requiring treatment and 6 (6%) patients had wound infection.

None of the patients had dyspnea, severe chronic obstructive pulmonary disease or bleeding disorders (Table 7).

Table 7: Co-morbidities.

Co-morbidities	No. of patients	Percentage (%)
Obesity	25	25%
Diabetes	24	24%
Dyspnea	4	4%
History of severe chronic obstructive pulmonary disease	0	0%
Bleeding disorders	0	0%
Hypertension requiring medication	20	20%
Wound infection	6	6%

DISCUSSION

In present study, out of 100 patients, 72 (72%) patients were in the age group of 41-50 years, 15 (15%) were from 31-40 years, 8 (8%) were from 51-60 years while 5 (5%) were above 60 years of age (Table 2).

Like our study, Mehta et al, found that most common age group affected was 41-50 years (52%), second most common 30-40 years (38%) and only 5 patients were >60 years.⁸

In this study, out of 100 patients, clinical indication was fibroid in 45 (45%) patients, menorrhagia in 15 (15%) patients, adenomyosis in 25 (25%) patients, uterovaginal prolapse in 5 (5%) patients, endometrial polyp in 5 (5%) patients and ovarian tumor in 5 (5%) patients.

Mehta et al, found that most common indication was dysfunctional uterine bleeding (41%) not responded with medical treatment, second most common fibroid (35%) and third most common indication was adenomyosis (20%) of uterus (Table 3).⁸

Authors found similar results with study by Pathak et al, who found that most common indication for TAH for benign gynaecological condition was fibroid uterus in 49.78%, abnormal uterine bleeding in 11.01%, adenomyosis in 9.25%, Ovarian mass in 8.81%, chronic cervicitis in 8.37% and AUB in 6.60%.⁹

In present study, abdominal hysterectomy was performed in 46 (46%) patients, vaginal hysterectomy in 44 (44.33%) patients while laparoscopic hysterectomy was performed in 5 (6.66%) patients (Table 4).

Similar to our study, Khunte et al, found that total abdominal hysterectomy with bilateral salpingo-oophorectomy was the most common procedure done in 59.0%.¹⁰

The most important finding of the current study was the ability of the American Society of Anesthesiology Physical Status (ASA PS) to independently predict post-operative medical complications and mortality.

In present study, ASA-PS grade 1 was seen in 65 (65%) of patients, 25 (25%) of patients had ASA-PS grade 2, 10 (10%) of patients had ASA-PS grade 3 while none of the patients had ASA-PS grade 4 and 5 (Table 5).

Nicholas J found that 2% of cases with ASA PS of 1, 5% with ASA PS of 2, 14% with ASA PS of 3, 37% with ASA PS of 4, and 71% with ASA PS of 5 developed one or more medical complications, while 0.02% of cases with ASA PS of 1, 0.14% with ASA PS of 2, 1.41% of ASA PS of 3, 11.14% with ASA PS of 4, and 50.87% with ASA PS of 5 resulted in mortality.¹¹

High number of ASA-PS I and II patients were found in the study by Araujo BL et al. Only 8.7% of the patients were classified as ASA-PS III and none was classified as ASA-PS IV, despite the advanced ages in all groups.¹²

Sankar A et al, found that out of 10 864 patients, 5.5% were classified as ASA I, 42.0% as ASA II, 46.7% as ASA III, and 5.8% as ASA IV.¹³

In this study, 4 (4%) patients had urinary tract infection, 2 (2%) patients had deep vein thrombosis, 1 (1%) patient had myocardial infarction and 1 (1%) patients had pneumonia (Table 6).

Sankar A et al, found that 15.9% patients failed to wean from ventilator for more than 48 hours, 15.07% patients had systemic sepsis, 14.25% patients had urinary tract infection, 12.17% patients had Pneumonia, 10.29% had unplanned reintubation, 8.21% had Septic shock, 5.78% had deep vein thrombosis, 3.6% had renal failure, 3.19% had cardiac arrest, 2.96% had MI, 2.84% had pulmonary embolism, 1.97% had stroke and 0.4% had peripheral neural deficit.¹³

In this study, comorbidities were present but well controlled. 25 (25%) patients were obese, 24 (24%) patients had diabetes, 20 (20%) patients had hypertension requiring treatment and 6 (6%) patients had wound infection (Table 7).

Raffaella G found that in ASA class III and IV patients, compared with ASA class I and II, a higher rate of

severe morbidity ($P=0.000$) occurred. The median postoperative stay was similar. No differences between patients with ASA class III and IV and ASA class I and II for median operative time, transfusion rate, or median blood loss were found. Mortality was 3% in ASA classes III and IV.¹⁴

Kevin J et al, found that 25.8% of the patients had a significant perioperative complication. The most common perioperative complication was blood transfusion or blood loss, pulmonary edema, and postoperative congestive heart failure. Risk factors predictive of a perioperative complication were the length of surgery, coronary artery disease, and peripheral vascular disease.¹⁵

CONCLUSION

ASA PS was associated with increased morbidity. It is independently predictive when controlling for other comorbidities. Increases in ASA predicted significant increases in complication rates for morbidity and mortality post-operatively.

Patients with greater ASA classes developed substantially higher rates of post-operative medical complications and mortality when compared to patients in lower ASA classes. The ASA classification system is a simple, valid metric for determining risk of complications and mortality, and is therefore an extremely useful tool for patients and surgeons.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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