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A review study of analgesia and anesthesia in obstetrics and gynecology

Manisha B. Dhote*[1], S.M. Yennawar[2] , J.S. Deshmukh[3]

1. P.G. Scholar,
2. Guide And Associate Professor,
3. HOD and Professor,

Department of Streeroga and Prasutitantra,

C.S.M.S.S. Ayurved Mahavidyalaya, Kanchanwadi, Aurangabad, Maharashtra

***Corresponding author:* Email-** manishapatil705@gmail.com

Abstract-

Analgesia and Anaesthesia have very importance in operative field and they both have some different meanings. Analgesia means the inability to sense pain without loss of consciousness. While Anaesthesia is a state of controlled, temporary loss of sensation or awareness that is induced for medical purposes. It may include Analgesia(relief from or prevention of pain), paralysis(muscle relaxation), amnesia(loss of memory) or unconsciousness. Thus according to the definition of Anaesthesia, Analgesia is the term which itself included in Anaesthesia. Relief of pain during labour and delivery is an essential part in Obstetrics and Gynaecology. Choice of Anaesthesia depends upon the patient's condition and the associate disorders. Anaesthetic complications may cause maternal death also. So the knowledge of Analgesia and Anaesthesia is very necessary in Obstetrical and Gynaecological field.

Keywords: Gynaecological, Analgesia, Anaesthesia, Obstetrics

Introduction-

The beginning of the history of Anaesthesia were largely attributed to the pain management. Various procedures for pain relief and experimentations with different medicines are described in Ayurveda.

There are various processes and solutions for pain relief everywhere in the world. Scholars from all over the world have acknowledged that Acharya

Sushruta is the father of Surgery and during his period Surgery was well developed and advanced. The knowledge of Anaesthesia is of special importance in the development of Surgery and without this it is impossible to perform any type of Surgery.

From this, it is clear that the precise knowledge of the process of Anaesthesia must be known at that time. But unfortunately such references are not available today. So people have a false belief that Anaesthesia was not mentioned in Ayurveda and which is not true.

According to Acharya Sushruta[1]-

प्राक्शस्त्रकर्मणश्चेष्टं भोजयेदातुरं भिषक्। मद्यपं पाययेन्मध्यं तीक्ष्ण यो वेदना सहः ॥ (सु.सू.17/16)

i.e. Sushruta described the Tikshna Sura in the process of Anaesthesia. Also he described various processes and fluids for pain relief like use of 'Vidha chikitsa' , Aphu, Bhang etc.

In the time of Sushruta, patient was proven for Anaesthesia through the preoperative process. There is a reference available in Bhojaprabhandha of performing Surgery when the patient is in an unconscious state. During the Surgery on Raja Bhoja he was seduced by using hypnosis.

In this way, the reference of Anaesthesia related to Obstetrics and Gynecology was taken from Charak Samhita also[2]-

व्यपगतगर्भशल्यां तु स्त्रियमामगर्भां सुरासीध्वारिष्टमधुमदिरा- सवानामन्यतमग्रे सामर्थ्यतः पायमेदः -------- प्रहर्षणार्थं च ॥ (च.शा.८/३१)

Thus Acharya Charak prescribed 'Madira Sevan' for relief of labour pain and for extraction of Mudhagarbha. Thus from these examples it is proved that Ayurveda is the origin of Analgesia and Anaesthesia. But in this article Analgesia and Anaesthesia and Analgesics and Anaesthetic agents are studied according to modern science and its importance in Obstetrics and Gynecology.

Aim-

To study the review of Analgesia and Anaesthesia in Obstetrics and Gynecology

Materials and Method-

Data related with Analgesia and Anaesthesia was collected from modern texts, Journals, Articles and Internet sources and classified according to their types.

- **SEDATIVES AND ANALGESICS[3]-**

In labour and delivery:

-The pain during labour results from a combination of uterine contractions and cervical dilatation.

-The intensity of labour pain depends on the intensity and duration of uterine contractions, degree of dilatation of cervix, distension of perineal tissue, parity and the pain threshold of the subject.

-The most distressing time during the whole labour is just prior to full dilatation of cervix.

-For the purpose of selecting a general analgesic drug, labour has been divided arbitrarily into two phases. The first phase is controlled by sedatives and analgesics and the second phase is controlled by inhalation agents.

- **Commonly used sedatives and analgesics-**

In 1st phase of labour

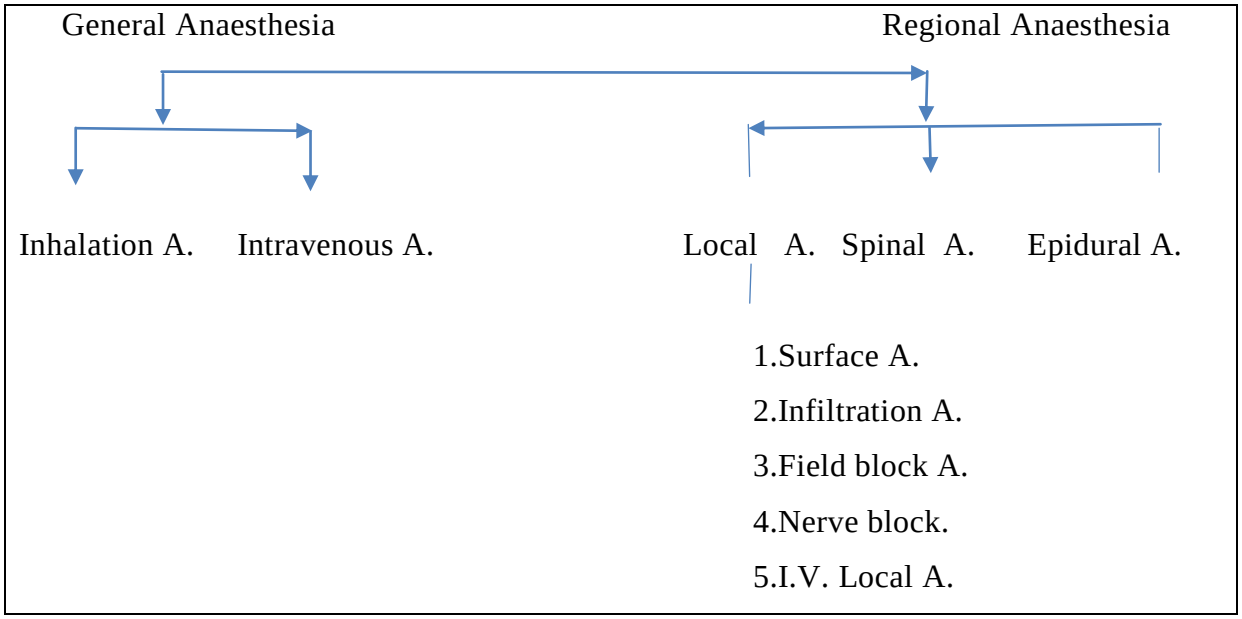
DRUGS	USES
Pethidine	- Generally used in the first phase of labour and indicated when the discomfort of labour merges into regular, frequent, and painful contractions. -Initial dose 100mg(1.5mg/kg body wt) IM
Fentanyl	-Short acting synthetic opioid and is equipotent to Pethidine. -It has less neonatal effects and less maternal nausea and vomiting and needs frequent dosing.
Phenothiazines	-Commonly used in labour in combination with an opioid -Weak antiemetic drug and causes sedation in the mother.
Narcotic antagonists-Naloxone	-These are used to reverse the respiratory depression induced of opioid narcotics. -Naloxone is given to the mother 0.4mg IV in labour. It may have to be repeated.
Benzodiazepines (Diazepam)	-It is well tolerated by the patient. It does not produce vomiting and helps in the dilatation of cervix. -The usual dose is 5-10mg. -It may be used in larger doses in the management of pre-eclampsia. However, Diazepam is avoided in labour. **-Flumazenil:** Specific benzodiazepine antagonist. It can reverse the respiratory depression effect of benzodiazepines.

In 2nd phase of labour

-Inhalation methods- premixed nitrous oxide and oxygen

-Used from 8cm dilatation of cervix to delivery

-Self administered



-Entonox is most commonly used inhalation agent during labour in the UK.

- **ANAESTHESIA AND ITS TYPES[4,5]-**

A] GENERAL ANAESTHESIA[6]-

It means abolition of all sensations, i.e. touch, pain, posture, and temp with a state of reversible loss of consciousness.

It has got three components:

1. Analgesia
2. Hypnosis
3. Muscle relaxation

- Muscle relaxants[7]-

1. Depolarising muscle relaxants
2. Non-depolarising muscle relaxants

Depolarising muscle relaxants-(Succinyl choline): It is the only depolarising muscle relaxant in clinical use. Commonly used immediately after the induction drug to facilitate intubation. It is a short acting muscle relaxant with rapid onset of action.

- **General anaesthetic agents and its effects[8]-**

INHALATION AGENTS		**INTRAVENOUS AGENTS**	
Drugs	**Effects**	**Drugs**	**Effects**
1) Halothane	Decreases uterine muscle tone	1) Thiopentone Sodium	-Ultra short acting barbiturate. -It is a standard induction agent - There is little effect on resting uterine tone

			-It crosses placenta rapidly, although foetal blood concentration is far less than that observed in the mother.
2) Isoflurane	Decreases uterine muscle tone but less than Halothane	2) Propofol	Widely used induction agent which has got predictable onset and recovery
3) Sevoflurane	Decreases uterine muscle tone like Isoflurane	3) Ketamine Hydrochloride	It readily crosses the placental barrier and hence should be given in lower doses in pregnant patient
4)) Nitrous oxide	Used to provide Labour Analgesia	4) Fentanyl[9]	-It is neuroleptanalgesic. -Preferred in asthmatics

B] REGIONAL ANAESTHESIA-

- **Commonly used anaesthetic agents[10]-**

Drugs	Uses
Lignocaine	-Used for local/Pudendal block and also for epidural or spinal Anaesthesia for cesarean delivery
Bupivacaine	-Used for Epidural or Spinal for cesarean delivery
Ropivacaine[11]	-Available as 0.2% for providing post operative Analgesia, labour Analgesia and as 0.75% for spinal and epidural Anaesthesia and nerve blocks.

- **Types of regional Anaesthesia and its uses[12]:**

1. **Continuous lumbar epidural block**

-When complete relief of pain is needed throughout labour, epidural Analgesia is

the safest and simplest method for procuring it.

-It should be given when labour is well established.

-For complete Analgesia a block from T10 to S5 dermatomes needed. For cesarean delivery a block from T4 to S1 is needed . Repeated doses of 4 to 5ml of 0.5% bupivacaine or 1% lignocaine are used to maintain Analgesia.

-It is beneficial in cases like PIH, breech presentation, twin pregnancy, and preterm labour.

-Previous cesarean section is not a contraindication. Epidural Analgesia when used there is no change in duration of 1st stage of labour, but 2nd stage of labour appears to be prolonged. This might lead to frequent need of instrumental delivery like forceps or ventouse.

-Vitals should be monitored

-The woman is kept in semilateral position to avoid aortocaval compression.

2. Paracervical nerve block

-It is useful for pain relief during the 1st stage of labour

-5 to 10ml of 1% lignocaine with adrenaline is used. Bupivacaine is avoided due to its cardiotoxicity

-Paracervical block should not be used where placental insufficiency is present

6. Infiltration Analgesia

-It can only relieve the pain of uterine contraction

3. Pudendal nerve block

-It is a safe and simple method of Analgesia during delivery

-Pudendal nerve block does not relieve the pain of labour but affords perineal Analgesia and relaxation

-It is mostly used for forceps and vaginal breech delivery

-It is less danger, both for mother and for the baby than G.A.

4. Spinal Anaesthesia

-It is obtained by inj. of local anaesthetic agent into the subarachnoid space

-S.A. can be employed to alleviate the pain of delivery and during the 3rd stage of labour

-Also used for normal delivery/ for outlet forceps with episiotomy, ventouse delivery and for cesarean delivery.

-Addition of Fentanyl (to enhance the onset of block) or Morphine(to improve pain control) may be done

5. Combined spinal-epidural Analgesia

-A single bolus of 1ml 0.25% bupivacaine with 2.5ug Fentanyl is injected into the subarachnoid space

-The method gives rapid and effective Analgesia during labour and cesarean delivery

Perineal infiltration		Local abdominal for cesarean delivery
-For episiotomy	-For outlet forceps or ventouse (Perineal and labial infiltration)	-This method is rarely used where regional block is patchy or inadequate.
-It is extensively used prior to episiotomy. -A 10ml syringe, with a fine needle and about 8-10ml 1% lignocaine hydrochloride (Xylocaine) are required.	-The combined perineal and labial infiltration is effective in outlet forceps operation or ventouse traction. -A 20ml syringe, a long fine needle and about 20ml of 1% lignocaine hydrochloride are required.	-The skin is infiltrated along the line of incision with diluted solution of lignocaine 2% with normal saline. The subcutaneous fatty layer, muscle, rectus sheath layers are infiltrated as the layers are seen during operation. The operation should be done slowly for the drug to become effective.

Discussion-

In modern science, for the management of every disease, different types of treatment modalities are mentioned and researches are going on for development of different types of medicines also. For the treatment of every disease, conservative and surgical management is necessary. And from this two types of management, Analgesia, Anaesthesia and anaesthetic drugs become very important tool in surgical management of any disease.

Whole discussion is about Analgesia, Anaesthesia and its type, Anaesthetic agents in Obstetrics and Gynecology.

Conclusion-

The Obstetrician-Gynecologist is often solely responsible for Analgesia/Anaesthesia including general and regional blocks during IPD-based and outpatient procedures. This article shows how Analgesia and Anaesthesia plays an important role in the field of Obstetrics and Gynaecology.

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