

Patient Awareness During General Anaesthesia

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Patient awareness during general anaesthesia refers to explicit memory of intraoperative events, which involves spontaneous or conscious recall. It may occur with or without sensation of pain, and recollection may be vivid, such as operating room conversation, or vague, such as dreams or unpleasant sensation associated with operation.

Incidence of awareness varies with clinical situation and anaesthetic technique. Awareness with pain is less common (1:3000) than that without pain (3:1000) reasons for this difference in incidence may be due to concomitant use of local anaesthetics or opioids or the analgesic properties of volatile anaesthetics.

Common causes of increased incidence of awareness can be grouped under following headings:

1. Types of surgery:

- Obstetric e.g., Caesarean section - doses and concentrations of anaesthetics are reduced to a minimum to prevent neonatal depression and uterine hypotony/atony. Intraoperative awareness in such cases ranges from 1-2%
- Major trauma usually results in haemodynamic instability and this dictates low doses of anaesthetics. Incidence of awareness may be as high as 48% depending on the extent of trauma.
- Cardiac Surgery: relies on narcotic-relaxant technique to minimise myocardial depression. Incidence of awareness is about 1%

2. Anaesthetic technique:

- Muscle relaxants in combination with nitrous oxide and opioid alone, without any inhalational agents.
- TIVA- because of the variability in dosage requirements and elimination rates.
- Out patients anaesthesia- requires rapid patient recovery, hence relies on short active agents and light anaesthesia.

3. Equipment malfunctions:

- Empty or malfunctioning vaporizers.
- Leaks or partial disconnection of circuits.

4. Anaesthetist's clinical misjudgement:

- Unanticipated difficult intubation with inadequate anaesthesia.
- More reliance on relaxants.

Various indicators described to detect awareness are:

- (a) Clinical signs of light anaesthesia which utilises pressure, rate, sweating and tears (PRST) scale. But these indicators may be modified by the anaesthetic agents used.
- (b) Forearm isolation technique- Forearm is isolated with a tourniquet to prevent entry of muscle relaxant and allow the patient to use his hand on command.

In general, following reversal of muscle relaxant at the end of caesarean section, patient's response to command within 15 sec. of N₂O cessation, suggests that there has been a risk of awareness.

Although volatile agents have some amnesiac properties, the concentration needed is not exactly known. It is described to be at least 0.8 MAC. Addition of amnesic agents (eg., benzodiazepines, scopolamine, I.V. anaesthetics) lowers the concentration needed to prevent recall. But on the otherhand, some patients need higher concentrations (eg. multiple GA's, chronic alcoholism, hypernatraemia, hyperthermia)

Experience have led to following specific recommendations to prevent awareness:

- (a) Through machine check pre-operatively.
- (b) Use of amnesic agents a pre-medicants or as adjuvants to anaesthesia.
- (c) Additional dosage of I.V., induction agents during prolonged or difficult intubation.
- (d) Avoidance of relaxants unless necessary for surgical conditions.
- (e) Use of volatile agents or I.V. agents along with N₂O and opioids.
- (f) As hearing is the last sense suppressed by anaesthesia, use of headphones or ear plugs by the patients during anaesthesia.

References:

1. Awareness under General anaesthesia. In Miller RD: Anaesthesia, Fourth ED. Churchill Living stone, 1994, pp 300-303
2. Lyons G., Mac Donald R: Awareness during Caesarean section. Anaesthesia, 1991, 46:62-64