

Postoperative confusion in recovery room – a practical approach

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Introduction

Postoperative confusion remains one of the most distressing complications after an anaesthetic. It is distressing to the health care professional, to the family and to the recovery room staff. Delirium has implications on finances, mortality and long-term outcomes. The complications can be minor but there can also be physical harm to the patient, dislodgement of catheters and disruption of the surgical procedure. Although it is more common in the elderly (> 70 years) and the young (≤ 5years) this complications can happen at any age group. Some studies have been done to look at predictors of delirium/confusion in recovery room and this might help in taking preventative measures for the at risk patient.

Postoperative confusion may be equated with emergence delirium as they have a lot of features in common but hopefully of short duration.

Definition of delirium

DSM five criteria for delirium¹

1. Disturbance in awareness and attention
2. Develops over a short period of hours to days and there might be fluctuation
3. Disturbance in cognition (memory, language and perception)
4. Disturbance cannot be explained by pre-existing neuro-cognitive disorder
5. Evidence that the disturbance is due to a direct physiological consequence of another condition/substance/toxins

Postoperative confusion in recovery room should not be confused with postop cognitive disorder (POCD) although it can be viewed as a spectrum of disease process.²

Emergence delirium	Postoperative delirium	POCD
PACU	Within 24 hours-72 hours	Weeks- months

Three types of delirium³

1. Hyperactive delirium: restless, combative and agitated observed in patients with alcohol withdrawal, ketamine administration and cocaine use.
2. Hypoactive delirium: lethargy, decrease alertness/motor activity and awareness seen in patients with encephalopathy from liver failure.
3. Mixed subtype: symptoms may vary depending on time of day

Pathophysiology⁵

The mechanism of delirium seems to be unclear and not fully understood but thought to be multifactorial. Several mechanisms have been proposed

1. Neurotransmitter theory especially acetylcholine. Levels of acetylcholine are reduced in the elderly and in a small study those with low levels had more delirium. This theory is can be supported by the fact that anticholinergic medications are known to cause acute confusion.
2. Surgical stress and increase cortisol level
3. Inflammatory mechanism because inflammatory markers were raised in patients with delirium (tumour necrosis factor and interleukin 1 and 6)
4. Intraoperative hypocapnia and cerebral vasoconstriction
5. Increase in noradrenaline levels



Figure 1: pathophysiology of postoperative delirium⁵

Incidence^{6,7,8,10}

The incidence of postoperative delirium is variable depending on the type of surgery, with reported incidence of 9-65%. Higher incidences are associated with the elderly with femur fractures and following cardiac surgery. Many studies have been done to assess the incidence of postoperative delirium and risk factors and the incidence varies from 12%-50.6%. The incidence of confusion or delirium in the recovery room has limited studies with some saying its 20%.

Predisposing factors for postoperative delirium in PACU^{3,4,6,8,9,10,13}

Patient factors

- Advanced age (>65years)
- Male
- Poor functional status or multiple comorbidities
- Pre-existing delirium, dementia and psychiatric illnesses
- Poor nutritional status
- Visual or hearing defects

Surgical factors^{3,13}

- Long procedures and blood loss with haematocrit less than 30%.
- Orthopaedic fractures: femur fractures are associated with very high incidence but this may be a reflection of comorbid diseases as well.
- ENT and head and neck surgeries and this is thought to be a feeling of suffocation as the patients wake up.

Medications /toxins/metabolic disorders^{3,8,13}

- Alcohol withdrawal
- Medications: long acting benzodiazepines may be associated with increased risk of delirium compared with short acting benzos. Other drugs have been associated with delirium are anticholinergics, antiparkinson (levodopa), antipsychotics (clozapine), anticonvulsants although there is uncertainty.
- Hypoglycaemia
- Hyponatraemia

Causes of confusion in recovery room¹³

- Pain is one the most common causes of confusion in recovery room. One study found that emergence agitation was 80% in those with pain compared with 43.5% in those who didn't have pain.¹⁰
- Metabolic causes: hypoglycemia, hyponatremia, hypernatremia, and hypokalaemia.
- Respiratory: hypoxia was found to be associated with delirium in early studies by Gustafson. Other respiratory causes include hypocarbia.
- Cardiovascular: hypotension, myocardial ischaemia and arrhythmias
- Neurological: strokes, seizures and cerebral oedema
- Drugs: benzodiazepines, ketamine, atropine, inhalational agents especially the newer agents, partial reversal, alcohol and illicit drug withdrawal.

- Hypothermia
- Surgical factors: sepsis, TURP syndrome and distended bladder and bleeding.
- Rare causes: malignant hyperthermia, neuroleptic malignant syndrome and thyroid storm.

Management^{3,8,13}

- Try and reassure the patient and the relatives
- Minimise amount of noise in the recovery room, as this should be a calm and cheerful environment for patients to slowly return to normal function.
- Exclude pain as a cause of confusion because patients who had pain had twice the incidence of postoperative confusion compared with those who didn't have pain
- Prevent injuries to the patient and to the recovery room staff
- Assess airway, breathing and circulation, as these are easily reversible causes. Does the patient need airway protection, oxygen supplementation or mechanical ventilation? Support the circulation if BP is low with fluids and vasoactive drugs while trying to establish a cause.
- Look for a reversible cause and treat the cause
- Do ABG and blood glucose as this may help in establishing a diagnosis
- Review the anaesthetic chart for medications given intraoperatively, significant cardiorespiratory events that may explain the confusion. Reverse or use antidotes if the cause of the confusion is drug related but be cautious when giving naloxone, as there is a seizure risk.
- Try to avoid physical restraints, as this may aggravate confusion and if there is a need for this then the reason need to be frequently explained to the patient.
- Reunite the patient with family if possible and return audiovisual aids to the patient as this may calm the patient.
- Other investigations that can be considered if cause is still not found are FBC, U&E, ECG, CXR and CT scan.
- If still confused and agitated after the above, continue reassurance, remove urinary catheter and consider some sedation. Midazolam can be used for sedation in small doses of 0.5mg -1mg at a time but caution need to be exercised as there can be paradoxical excitation.
- Haloperidol can be given in small doses if hallucinations persist using 0.5 mg intravenous boluses until the patient is calm. Patient can be sent to the ward on maintenance doses of haloperidol to be over a few days.
- Remember some of the patients with recovery room confusion will recover spontaneously but sadly recovery room delirium predicts POCD with 100% sensitivity and 85% specificity.

Confusion in paediatric patients in the recovery room (a short word)

The confused agitated child in recovery room is very distressing to the recovery room staff, parents and the anaesthetist. This phenomenon may give an impression that the anaesthetic was not good enough.¹¹

The two most common causes of confusion in recovery room are pain and drug induced emergence delirium. Before saying that the child is diagnosed with emergence delirium some serious causes need to be excluded.¹¹

Some of the causes that need to be excluded are the same as those discussed in adult population above.

Hypoxia, pain, hypoglycemia and hypothermia are common in the paediatric patient and need to be excluded in any child who is restless and look confused in recovery room.

The lecture will not discuss emergence delirium (ED) in detail but this phenomenon has been in existence since 1960s. The incidence of ED varies from 10-80% but generally 10-50% depending on the definition, anaesthetic drugs and surgical procedure.¹²

Risk factors are ages 1-5 years, preoperative anxiety, ENT and oral surgery, postoperative pain and the use of newer fast acting inhalational agents.¹² When risk factors exist preventative pharmacological measures should always be considered to avoid this stressful complication despite its self-limitation.

Confusion in children in recovery room should be approached as in the adult population ruling out hypoxia, hypoglycaemia and trying to find a cause and the same time continual reassurance to the care givers that there is no lasting effects from the confusion.

In conclusion confusion or emergence delirium in recovery room is very stressful needing a lot of staff to manage the patient and possibly depriving care from other patients. It is also stressful to the family with longer stay in recovery room, hospital stay and in some patients may lead to post operative delirium and POCD.

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