USE OF CONSCIOUS SEDATION DURING EXTRACTION PROCEDURES - A REVIEW

R. Nivesh Krishna

Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India,

Bala Krishnan

Professor, Department of Oral surgery, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai - 600077.

Corresponding author

Bala KrishnanDepartment of Oral surgery,Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences,Saveetha University,162 , PH Road , Chennai 600077,Tamil Nadu, India

Abstract: Sedation in dentistry has been a widely studied topic because of its necessity in modern dentistry. Dental fear and anxiety aren't only common in children but also significantly prevalent among adults due to inexperience and high intensity of pain. Sharing of airways between the anaesthetist and the dentist therefore remains the best challenge even today.Dental anxiety may be a condition commonly related to avoidance of dental treatment and increased medical and surgical risks. Conscious sedation dentistry, also mentioned as procedural sedation and analgesia, is the procedure whereby sedatives are administered before a procedure to help a patient reduce anxiety and relax. The sedative just helps ease dental fear, therefore the patient gets comfortable through your procedure. The target of this review is to know the utilization of conscious sedation during the extraction procedure highlighting its significance and benefits. Recently, it's been proved that conscious sedations are often delivered using processes that have marked adverse effects. These involve special sedation techniques that risk causing unintended deep sedation. To review use of conscious sedation during extraction procedures in clinical experience to know the importance and advantage of an equivalent sedative drug which is safe as well as easy to be used in dentistry for both pediatric patients and adults.

Keywords: Conscious Sedation, Anaesthesia, Dentistry, Nitrous oxide, Midazolam.

INTRODUCTION:

Conscious sedation is defined as a way during which the utilization of a drug or multiple drugs regulates a state of depression of the central nervous system of the patient. It enables the anaesthetist to provide a calm treatment during which verbal contact with the patient is maintained throughout the process of sedation[1]. The varied drugs and techniques utilized in providing conscious sedation for dental treatment should carry a margin of safety wide enough to render loss of consciousness unlikely. Dental anxiety while seated within the dental chair, affects both children and adults and may act as a serious barrier to the receipt of care. The UK adult dental health survey of 1998 up to 45% of adults claimed that fear was their reason for non-attendance at the dentist. Of this number, it's estimated that one third are severely anxious (phobic) and two-thirds are moderately anxious[2]. Many patients are often managed with simple behavioural management techniques. However, where these haven't been effective or aren't felt to be appropriate the utilization of conscious sedation in many cases will provide a secure and effective management choice to the patients. The aim of this text is to spotlight the important aspects of the supply of conscious sedation in medical care for all of the dental team[3].

GOALS OF CONSCIOUS SEDATION:

The goals of Conscious sedation technique involves:

- Promoting patient safety and Welfare
- Facilitating provision of quality care
- Minimising the extremes of disruptive behaviour of patient
- Promoting a positive psychological response to treatment
- Returning the patient to a physiological condition during which safe discharge is feasible[4,5]

CONSCIOUS SEDATION TECHNIQUES:

The standard techniques of inhalation sedation with nitrous oxide and oxygen and intravenous sedation with midazolam are effective for the majority of patients. the foremost appropriate technique must be selected for each individual patient to satisfy their needs[6]

Indications for Conscious Sedation:

•Dental phobia and anxiety

- •Traumatic and long dental procedures
- •Medical conditions aggravated by stress like angina, asthma and epilepsy
- •Mentally challenged individuals
- •Ineffective local anaesthesia thanks to any reason
- •Patients with other ailments associated with mind[7,8]

GENERAL PRINCIPLES OF CONSCIOUS SEDATION:

Every patient should be assessed before choosing the conscious sedation procedure. The assessment should include:

- Full medical and dental history of the patient before providing the treatment with conscious sedation.
- Taking consent for a course of dental treatment under conscious sedation from the patient or attender

• a quick explanation of the sedation technique proposed are going to be supportive[9]

• Before starting with the procedure, the patient must tend to clear and comprehensive pre- and postoperative instructions in writing.

• Though empty stomach isn't required for patients undergoing inhalation sedation using laughing gas, it's better to recommend a light-weight meal consumption, minimum 2 hours before the procedure[10]

OPERATING / PROCEDURE SETUP :

•The institution/clinic should have monitoring and resuscitation equipment alongside the trained manpower to handle any emergency situation.

•Monitoring: Monitoring equipment like ECG, pulse oximeter, ETCO2, NIBP, and defibrillator should be handy in working condition

•Crash cart should be available with all the resuscitation equipment and medicines required to resuscitate a patient

•Every procedure should be administered after ensuring the supply of appropriate size suction catheter, adequate oxygen supply, functioning flowmeters and tubing for oxygen delivery to patient, and appropriate-sized airway equipment.[11,12]

METHODS OF DRUG DELIVERY FOR CONSCIOUS SEDATION :

The drugs utilized in conscious sedation vary supported delivery method we might wish to adopt:

•Oral- The patient swallows a tablet containing a drug like diazepam (Valium) or triazolam (Halcion).

•Intramuscular- The patient is given an effort of benzodiazepine, like midazolam (Versed), into a muscle, presumably in your upper arm or your butt.

•Intravenous- The patient will receive a line in an arm vein containing a benzodiazepine, like midazolam (Versed) or Propofol (Diprivan).

•Inhalation- The patient is given a facial mask to wear and inhale the sedative drug.[13]

PHARMACOLOGY OF DRUGS USED IN CONSCIOUS SEDATION:

It is mandatory to secure an intravenous (IV) line with the help of an appropriate-sized IV cannula before administering any drug or inhalational anesthesia. In many cases, mild anxiolytic along with local anesthesia is sufficient to reduce fear and anxiety in the patient.[14]

NITROUS OXIDE-Mixture of nitrous oxide (N_2O) and oxygen is used as a sedative. N_2O is a colorless gas used as an inhalational anesthetic agent. It is an anxiolytic/analgesic agent that causes CNS depression and varying degrees of muscle relaxation and euphoria with hardly any effect on the respiratory system.[15] It is very safe as the patient remains conscious and responsive and reflexes are retained. The use of N_2O is contraindicated in patients with common cold, porphyria, and COPD.

SEVOFLURANE-Sevoflurane is an ether inhalational anesthetic agent with low pungency, a non irritant odor, and a low bloodgas partition coefficient. Its low solubility feature facilitates precise control over the depth of sedation and supports a rapid and smooth induction and emergence from sedation. Sevoflurane, therefore, remains an ideal induction agent before starting infusion of a total IV anesthetic such as propofol to maintain sedation[16]

SUFENTANIL-Sufentanil is a synthetic opioid analgesic drug, which is 5–10 times more potent than its parent drug fentanyl and also 500 times potent as morphine. It has shorter distribution and elimination half-lives. For outpatient surgery, IV sufentanil pro-

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duces equivalent anesthesia to isoflurane or fentanyl. Recovery is rapid, and postoperative analgesia requirement is less[17]. However, side effects such as reduced chest wall compliance and high incidence of nausea and vomiting and prolonged discharge time as compared to midazolam make it an unpopular choice for premedication.

BENZODIAZEPINES- Benzodiazepines, including diazepam and midazolam, have proved to be safe and effective for IV conscious sedation. Their sedative and selective anxiolytic effects and wide margin of safety contribute to their popularity in dentistry. Apart from anxiolysis and amnesia, benzodiazepines are known to possess skeletal muscle relaxation and anticonvulsant activity; however, these drugs have no analgesic properties. Its effects are enhanced by various drugs such as opioids, clonidine, antidepressants, antipsychotics, erythromycin, antihistaminic, alcohol, and antiepileptics and should be avoided or used with caution. All practitioners using these drugs must have flumazenil, the specific benzodiazepine receptor antagonist, as one of the emergency drugs in the institution. Flumazenil causes rapid reversal of all benzodiazepines[18,19].

PROPOFOL-Propofol is chemically described as 2,6-diisopropylphenol. Being insoluble in water, it is available in white, oil-inwater emulsion which facilitates IV delivery of this fat-soluble agent. Propofol is readily oxidized to quinine which turns the suspension yellow in color after approximately 6 h of exposure to air. With sevoflurane, propofol is given usually at a dose of 1 mg/kg body weight, followed by a maintenance dose ranging from 0.3 to 4 mg/kg/h[20].

OPIOIDS-All the above-mentioned drugs do not have analgesic effects except ketamine. Opioid analgesic, therefore, needs to be supplemented. Fentanyl is a short-acting opioid 60–80 times more potent than morphine and with a rapid onset of analgesia and sedation. Duration of action is 30–60 min. Fentanyl can be administered by parenteral, transdermal, nasal, and oral routes(Murray et al. 2004).

COMPLICATIONS:

The main complications related to conscious sedation are :

- Hypoxia
- Nausea and vomiting
- Inadvertent general anesthesia (over sedation)[22]

MONITORING THE PATIENT:

All patients undergoing intravenous sedation must be monitored continuously and thoroughly with pulse oximetry. There must be a regular record of various vital signs like pulse rate, oxygen saturation and blood pressure of the patient throughout[23]. Hypoxemia is a major complication following conscious sedation in pediatric patients. Traditional methods of monitoring sedated pediatric patients include visual observation of skin color, depth and rate of respiration, listening to heart and breath sounds using a precordial stethoscope. Oxygen administration reduces hypoxia during procedures carried out during sedation and therefore should be readily available[24,25].

CONCLUSION:

The article concludes that the use of conscious sedation is significant and has a wider scope in modern dentistry. The provision of adequate anxiety control is an integral part of the practice of dentistry. All patients prefer appropriate anxiety control for any dental procedure. The application of conscious sedation should be carried out more effectively and precisely so that it maintains a healthy gap from general anesthesia and unconsciousness. More concern should be taken when this process is applied on pediatric patients. Seditionists must be aptly trained to perform sedations on patients.

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