Application of Conscious Sedation in Dentistry

Nisha Singh¹, Chandan R Agali², Ashok KN³, N Senthil Kumaran⁴, Geetha L⁵, Saraswati Ghosh⁶

1- Post Graduate student, Department of Pedodontics and preventive dentistry, BIDSH, Patna, Bihar, India.
2- Reader, Department of Public health dentistry, TMDCRC, Moradabad, Uttar Pradesh, India.
3- Senior Lecturer, Department of Oral Medicine and Radiology, HSRSM Dental College and Hospital, Hingoli, Maharashtra, India.
4- Department of Pedodontics and preventive dentistry, Chettinad Dental College and Hospital, Chennai, India.
5- Senior Lecturer, Department of Oral Pathology and Microbiology, HSRSM Dental College and Hospital, Hingoli, Maharashtra, India.
6- Professor in Curriculum & Instruction, College of Education, Eritrea Institute of Technology, Mai-Nefhi, Eritrea (Africa).

ABSTRACT

Sedation for dental procedures (with or without local anaesthesia) includes the administration by any route or technique of all drugs which result in depression of the central nervous system. Conscious sedation is administered with an aim to produce a degree of sedation without loss of consciousness, in order to perform a desired function without any hindrance. This technique is being widely followed by paediatric dentists, who utilize the method on uncooperative and anxious patients during any treatment. This technique has many adverse effects. This article reviews the various aspects of conscious sedation in general and paediatric dentistry.

KEYWORDS: Conscious Sedation, Anaesthesia, Dentistry

INTRODUCTION

Conscious sedation is defined as a technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation.¹ The various drugs and techniques used in providing conscious sedation for dental treatment should carry a margin of safety wide enough to render loss of consciousness unlikely.²,³

Recently, it has been proved that conscious sedation can be delivered using processes that have marked adverse effects. These involve special sedation technique that risk causing unintended deep sedation. Children visiting a dentist need effective sedation during any minor procedure because of fear, ill health, behavioural problems, etc. Some procedures are common and anaesthetists should know what sedation techniques are effective and likely to be used by other healthcare practitioners. Conscious sedation can be used in children presenting for anaesthesia.

GOALS OF CONSCIOUS SEDATION

Goals of conscious sedations are:³

- Promoting patient welfare and safety.
- Facilitating provision of quality care.
- Minimizing the extremes of disruptive behaviour.
- Promoting a positive psychological response to treatment.
- Returning the child to a physiological state in which safe discharge is possible.

How to cite this article:
GERERAL PRINCIPLES OF CONSCIOUS SEDATION

Patients should be assessed. The assessment should include:

- Full medical and dental history that needs to be performed before providing the treatment with conscious sedation.
- Informed consent for a course of dental treatment under conscious sedation must be obtained from patient, each parent/guardian, and the child, prior to the conscious sedation appointment.
- An explanation of the sedation technique proposed must be given.
- Before starting with the procedure, the child and their parent or guardian must be given clear and comprehensive pre- and postoperative instructions in writing.
- Fasting is not required for children undergoing inhalation sedation using nitrous oxide but dentists might recommend that a light meal only is consumed in the two hours prior to the appointment.

Patients with serious medical complications should be dealt with extra concern.

- If the patient has any serious medical condition, then they must be referred to specialist medical practitioner before planning for any treatment using conscious sedation. If the patient is seriously medically compromised, then an anaesthetist should be present to provide sedation and monitor the patient during the procedure.
- A parent, legal guardian or other responsible adult must accompany the child to and from the treatment facility.

Documentation should be done.

Proper documentation of the patient should be done. this should include:

- Name and signature of the operator together with the name(s) of the assistants.
- Contain a clear treatment plan, completed medical history and consent form, appropriate radiographs and briefly give an account of the reason for the need for sedation.
- Document the operative treatment that was performed, the name of the drug, concentration and batch number (if appropriate), dosage, route and duration of sedation.
- State which monitors were used (as appropriate) together with their readings.
- Include a time-based record where appropriate.

Training of dental staff should be done.

- The dental team must undergo appropriate training on a regular basis.
- It is essential that primary care dentists who sedate children undergo training that is recognized by appropriate authorities and that their clinical skill and knowledge relating to paediatric conscious sedation, including local anaesthesia, behavioural management and the provision of operative dental care for children, is regularly updated.

APPLICATION OF VARIOUS DRUGS FOR CONSCIOUS SEDATION

<table>
<thead>
<tr>
<th>Drug</th>
<th>Application</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrous Oxide</td>
<td>- Children with mild to moderate anxiety to enable them to accept dental</td>
<td>- Is of less value in those who require multiple extractions,</td>
</tr>
<tr>
<td></td>
<td>treatment better and to facilitate coping across sequential visits.</td>
<td>- Poor attenders and very young children.</td>
</tr>
<tr>
<td></td>
<td>- Can be used to facilitate dental extractions in children.</td>
<td>- Common cold, tonsillitis, nasal blockage are common</td>
</tr>
<tr>
<td></td>
<td>- Is preferred to general anaesthesia for anxious children undergoing</td>
<td>- Pre-co-operative children and women at first trimester of pregnancy are</td>
</tr>
<tr>
<td></td>
<td>elective orthodontic (premolar) extractions.</td>
<td>contraindicated.</td>
</tr>
<tr>
<td></td>
<td>- Is a cost effective alternative to general anaesthesia</td>
<td></td>
</tr>
<tr>
<td>Diazepam and temazepam</td>
<td>- Oral benzodiazepines can be used to relax anxious patients prior to</td>
<td>- There is no role for intravenous diazepam sedation in paediatric</td>
</tr>
<tr>
<td></td>
<td>dental treatment but their</td>
<td>dentistry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
effects can be unpredictable in children.  

<table>
<thead>
<tr>
<th>Drug</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>- May have a potential value as a pre-medication and sedative agent. - Is not recommended for use out with a hospital environment.</td>
</tr>
<tr>
<td>Flumazenil</td>
<td>- Reversal with Flumazenil should not be used as a routine part of the conscious sedation procedure. - Flumazenil may induce convulsions.</td>
</tr>
<tr>
<td>Opioids and other miscellaneous agents with sedative properties (chloral hydrate, hydroxyzine, promethyaine hydrochloride, fentanyl &amp; pethidine)</td>
<td>- Repeated administration of chloral hydrate carries a risk of carcinogenesis. - Fentanyl and other potent opioids should only be used by a qualified anaesthetist in a hospital setting.</td>
</tr>
</tbody>
</table>

**COMPLICATIONS**

The main complications related to conscious sedation are:
- Hypoxia
- Nausea and vomiting
- Inadvertent general anaesthesia (over sedation).

**MONITORING**

All patients undergoing intravenous sedation must be monitored continuously and thoroughly with pulse oximetry. There must be regular record of various vital signs like pulse rate, oxygen saturation and blood pressure. Hypoxemia is a major complication following conscious sedation in paediatric patients. Traditional methods of monitoring sedated paediatric patients include visual observation of skin colour, depth and rate of respiration, listening to heart and breath sounds using a pre-cordial stethoscope.

Oxygen administration reduces hypoxia during procedures carried out during sedation and therefore should be readily available.

**CONCLUSION**

The provision of adequate anxiety control is an integral part of the practice of dentistry. All patients deserve appropriate anxiety control for any dental procedure. The application of conscious sedation should be carried out 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. Seditionist must be aptly trained to perform sedations on patients.

**REFERENCES**


Source of Support: Nil
Conflict of Interest: Nil