Dental treatment under general anesthesia in Asia - legal and organizational aspects -

Shun-Te Huang DDS, Ph.D.
Department of Oral Hygiene, College of Dental Medicine, Kaohsiung Medical University,
Division of Special Care Dentistry, Kaohsiung Medical University Hospital Kaohsiung, Taiwan.

22nd International Association for Disability and Oral Health (IADH). Berlin, German. October 2-4 2014
Dental treatment under general anesthesia in Asia -legal and organizational aspects-

• A. General information in Asian countries
• B. Dental anesthesia information
• C. Organizational aspects concerning dental anesthesia
• D. Legal aspects concerning dental anesthesia
• E. Dental education aspect concerning dental anesthesia
• F. General anesthesia or sedation for dentist?
• G. Conclusion
911,296 km
A. General information in Asian countries
<table>
<thead>
<tr>
<th>Items</th>
<th>Population (Thousand)</th>
<th>% of population in the world (%)</th>
<th>Population density (person/Km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>3,823,390</td>
<td>60.67</td>
<td>120</td>
</tr>
<tr>
<td>Europe</td>
<td>726,338</td>
<td>11.53</td>
<td>32</td>
</tr>
<tr>
<td>North America</td>
<td>325,698</td>
<td>5.17</td>
<td>15</td>
</tr>
<tr>
<td>South America</td>
<td>543,246</td>
<td>8.62</td>
<td>26</td>
</tr>
<tr>
<td>Africa</td>
<td>850,558</td>
<td>13.50</td>
<td>28</td>
</tr>
<tr>
<td>Oceania</td>
<td>32,234</td>
<td>0.51</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>6,301,464</td>
<td>100.00</td>
<td>46</td>
</tr>
</tbody>
</table>

Asia: the largest continent in the world in both, area and population, constituting nearly one-third of the landmass, 

**Area**: about 49 700,000 km² (19,189,277 sq mi) it covers about 30 percent of Earth's total land area. 

**Population**: more than 4 billion human inhabitants (4.3 billion in 2013), about 60 percent of the world's population.
The process to obtain the Asian countries information

**First step:**
- We collect the following data and information from
  - WHO web site: general and disabled population, GNP, GDP etc.
  - Countries web sites: failed to search the necessary information
    - Some do not have a web site,
    - Some countries web sites do not offer an English version
<table>
<thead>
<tr>
<th>Country In Asia</th>
<th>Population</th>
<th>Territory size (square kilometers)</th>
<th>GDP nominal millions of USD</th>
<th>Number of Disabled</th>
<th>Number of elder people</th>
<th>Number of dentists (per 10,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>410,000</td>
<td>5,762</td>
<td>16,214</td>
<td>N/A</td>
<td>N/A</td>
<td>23.6</td>
</tr>
<tr>
<td>Burma</td>
<td>6,000,000</td>
<td>678,500</td>
<td>56,408</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cambodia</td>
<td>14,701,717</td>
<td>181,040</td>
<td>15,659</td>
<td>N/A</td>
<td>560,000</td>
<td>N/A</td>
</tr>
<tr>
<td>China(PRC)</td>
<td>1,360,720,000</td>
<td>9,600,000</td>
<td>9,181,377</td>
<td>N/A</td>
<td>118,831,709</td>
<td>10.0</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>7,234,800</td>
<td>1,104</td>
<td>273,658</td>
<td>N/A</td>
<td>846,471</td>
<td>28.8</td>
</tr>
<tr>
<td>India</td>
<td>1,210,193,422</td>
<td>3,170,000</td>
<td>1,870,651</td>
<td>N/A</td>
<td>62,930,058</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>237,600,000</td>
<td>1,919,440</td>
<td>870,275</td>
<td>N/A</td>
<td>12,355,200</td>
<td>N/A</td>
</tr>
<tr>
<td>Japan</td>
<td>127,136,000</td>
<td>377,873</td>
<td>4,901,532</td>
<td>6,559,000</td>
<td>31,390,000</td>
<td>79.5</td>
</tr>
</tbody>
</table>

Health at a Glance 2009: OECD Indicators
<table>
<thead>
<tr>
<th>Country in Asia</th>
<th>Population</th>
<th>Territory size (square kilometers)</th>
<th>GDP nominal millions of USD</th>
<th>Number of Disabled</th>
<th>Number of elder people</th>
<th>Number of dentists (per 10,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>30,000,565</td>
<td>329,845</td>
<td>312,433</td>
<td>359,893</td>
<td>1,500,000</td>
<td>15.5</td>
</tr>
<tr>
<td>Philippines</td>
<td>103,770,000</td>
<td>300,000</td>
<td>272,018</td>
<td>3,000,000</td>
<td>3,895,000</td>
<td>N/A</td>
</tr>
<tr>
<td>Singapore</td>
<td>5,180,000</td>
<td>704</td>
<td>295,744</td>
<td>150,000</td>
<td>450,000</td>
<td>29.4</td>
</tr>
<tr>
<td>South Korea</td>
<td>51,030,000</td>
<td>99,646</td>
<td>1,221,801</td>
<td>2,511,159</td>
<td>5,056,000</td>
<td>54.4</td>
</tr>
<tr>
<td>Taiwan</td>
<td>23,392,038</td>
<td>35,980</td>
<td>474,700</td>
<td>1,117,521</td>
<td>2,690,085</td>
<td>55.6</td>
</tr>
<tr>
<td>Thailand</td>
<td>65,720,153</td>
<td>513,000</td>
<td>387,156</td>
<td>1,900,000</td>
<td>5,539,002</td>
<td>13.9</td>
</tr>
<tr>
<td>Vietnam</td>
<td>90,900,000</td>
<td>331,688</td>
<td>170,565</td>
<td>N/A</td>
<td>5,000,000</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- The Asian and Pacific region has by far the largest number of people with disabilities in the world.
- Most of them are poor, their concerns unknown and their rights overlooked.

Health at a Glance 2009: OECD Indicators
The process to obtain the Asian countries information

**Second step**

- Questionnaire and interview
- **Objects**: 15/49 countries or areas in Asia may potentially develop the special care dentistry and dental anesthesiology as followed:
  - Brunei, Burma, Cambodia, Hong Kong, Indonesia, India, Japan, Malaysia, Philippines, PR China, Singapore, South Korea, Thailand, Taiwan and Vietnam
- Description by specialists or experts in the fields concerning dental anesthesia, special care dentistry and pediatric dentistry from each country
- There is bias, variations, mis-understandings existing in the following description and statements due to collected year, surveyed groups or institutions and survey methods
The response from Asian countries and areas

• Insufficient information was offered
• The responded countries are Japan, Malaysia, Philippines, South Korea, Singapore, Thailand and Taiwan
• The countries and areas which have organized and established an
  • Association/society of pediatric dentistry or related association:
    • Hong Kong, India, Indonesia, Japan, Malaysia, Philippines, PR China, Singapore, South Korea, Thailand and Taiwan (11 countries)
  • Association/society of special care dentistry or related association:
    • Hong Kong, India, Indonesia, Japan, Malaysia, Philippine, South Korea, Thailand, and Taiwan (9 countries)
  • Association/society of dental anesthesiology or related association:
    • Japan, South Korea and Taiwan (3 countries)
• The following report will focus on Japan, Malaysia, Philippines, Singapore, South Korea, Thailand and Taiwan
B. Dental anesthesia information
The development of dental anesthesia in Japan

• The dental anesthesiology developed in Japan very early,
  • In 1964 to 1970, several anesthesiology departments were established in dental universities and their affiliated hospitals in Japan.
• In 1968, Japan started a study group for dental anesthesiology, and then the Japanese Society of Dental Anesthesiology (JSDA) and its certification system were established in 1973 and 1977 respectively.
• Now JSDA have 2,414 members distributed in dental hospitals and in dental clinics.
• Well trained dentist is allowed to conduct GA and sedation for dental patients legally.
• The JSDA published a journal every 3 months with many scientific and clinical research papers with scientific evidence.
• Based on the remarkable scientific evidence researches, JSDA made guidelines for sedation in 2009.
The development of dental anesthesia in Korea

• Anesthesiology is developed very early, The Korean Association of Anesthesiologist (KAA) had been established 60 years ago, having more than several thousand members, more than 200 anesthesiologists had well trained and being certified.
• Medical anesthesiology association domain the GA and even sedation issue for dental patients in hospitals
• Sedation conducted by dentists in dental clinics
• Korean Association of dental anesthesiologist (KADA) was established in 2001, they have approx. 700 members, among that, pediatric dentists were the most, oro-maxillary facial surgeons second, medical anesthesiologist attended too.
• KADA made guideline for dental sedation basically followed the ADA regulations
The development of dental anesthesia in Taiwan

• In 1965-1980, a shortage of anesthesiologists in the hospitals,
  • Fostered dentists to be anesthesiologists in several medical centers
    • Conduct general anesthesia independently
    • Cancelled by the Taiwan Association of Anesthesiologist (TAA) in 1990
  • Fostered anesthesia nurses in some medical centers
    • To assist anesthesiologists to conduct general anesthesia
    • Supervised by anesthesiologists
• Those trained dentists:
  • Mostly retreated to the dental profession
  • Several dental anesthesiologists persisted
    • Part of them now initiated dental anesthesiology
  • Only one went to study pediatric dentistry and special care dentistry
    • Started to conduct dental anesthesia for pediatric patients and special needs patients
The development of dental anesthesia in Taiwan

• Five medical centers financially supported by the Ministry of Health and Welfare:
  • In 1995
    - Established special care dentistry with the development of GA/sedation
  • In 2010
    - To extend special care dentistry (GA/sedation equipment and training courses were included)
    - To conduct continuous education of dental anesthesia, life support and resuscitation to general practitioners

• Local practitioners started using sedation for implant and pediatric dentistry from 2011
  • Study groups organized for the further development of sedation
    - By the federation of dental clinics in north and south Taiwan
    - Started to study and conduct clinic-based dental treatment under mild/moderate sedation
    - For implants and pediatric patients
    - Seldom for special needs patients in clinic base
The development of dental anesthesia in South-east Asian countries—Hong Kong, Indonesia, Malaysia, Philippines, Singapore and Thailand—

- These countries developed association for pediatric dentistry for more than 10 years, and established association for special care dentistry in recent 5 years, but not for dental anesthesia
- Departments of pediatric dentistry and special care dentistry established in less than 20% of hospitals
- Department of dental anesthesiology is not established in any hospitals at all
- The anesthesiologists offer general anesthesia for
  - Hospital-based oral surgeons mostly
  - Partly for pediatric dentistry
  - Rarely for special care dentistry
- Very few dentists have tried to develop dental sedation
  - Most dentists think it is beyond the dentistry field
  - May not be accepted for reasons of safety and quality by anesthesiologists.
  - May increase the risk of malpractice.
- Some local practitioners conduct N₂O or oral sedation by the trained dentists themselves.
- The priority of development of the special care dentistry and geriatric dentistry is very urgent in recent 5 years, dental anesthesiology may be developed in near 10 years
The development of dental anesthesia in PR China

• PR China has several complicated dental education systems varied from 3-year to 8-year program.
• Dental students studied dental anesthesia fragmentally in oral surgery and pediatric dentistry.
• Dental procedures under GA or sedation was conducted by anesthesiologist, not dentist.
  • Dentist has the same worry about the risk problem as South-east Asian countries had.
• PR China established association for pediatric dentistry for long time but neither for special care dentistry, nor dental anesthesiology.
• Even they did not develop dental anesthesia very well before, they started to develop sedation for implants in several cities currently.
• The development of dental anesthesia will be very potentially developed in the future.
## Dental anesthesia
### General information

<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Thailand</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>127,270,000</td>
<td>50,400,000</td>
<td>23,102,426</td>
<td>65,720,153</td>
<td>29,000,000</td>
<td>100,000,000</td>
<td>3,840,000</td>
</tr>
<tr>
<td>Population of disabled and % in general population</td>
<td>6,559,000 (5%)</td>
<td>2,511,159 (4.9%)</td>
<td>1,131,097 (4.84%)</td>
<td>1,900,000 (3.3%)</td>
<td>359,893 (1.2%)</td>
<td>3,805,394 (3.3%)</td>
<td>150,000 (2.5%)</td>
</tr>
<tr>
<td>Dentist/population ratio</td>
<td>1/1,260</td>
<td>1/1,800</td>
<td>1/1,744</td>
<td>1/6,621</td>
<td>1/5,187</td>
<td>1/9,821</td>
<td>1/2,260</td>
</tr>
<tr>
<td>Dentist/disabled population ratio</td>
<td>1/64.6</td>
<td>1/91.0</td>
<td>1/87.0</td>
<td>1/191.4</td>
<td>1/64.4</td>
<td>1/294.7</td>
<td>1/88.3</td>
</tr>
</tbody>
</table>
C. Organizational aspect concerning dental anesthesia
- Dental society/association-
# Dental anesthesia
## Association/Society

<table>
<thead>
<tr>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Thailand</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assoc for oral surgery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Assoc for ped dent</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Assoc for special needs dent</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Assoc for dent aneth</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Established</td>
<td>1973 (Study group started in 1968)</td>
<td>2001</td>
<td>2010</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
D. Legal aspect concerning dental anesthesia
-Certification, specialty/code, bylaws, guideline and regulation-
Certification, specialty and legal matters

- There is no any code, regulation or bylaw in Asian countries concerning to dentist
  - Conducting general anesthesia
  - License for different levels of sedation

- **In Japan**: Certification and specialty system
  - Well trained dentist (certified or specialized) can conduct general anesthesia or sedation in hospitals

- **In Korea**: Certification system
  - Well trained dentist is allowed to conduct sedation in the dental field, dentist conducting general anesthesia should be supervised by anesthesiologist in hospital

- **In Taiwan**: Regulation to anesthesia equipment and narcotics
  - Dentist is allowed to conduct sedation or general anesthesia legally, but dentist is not allowed to apply the payment concerning general anesthesia in National Health Insurance
  - The purchase of anesthetics and equipment related to general anesthesia needs a hospital license
  - Narcotic anesthetics is limited to be prescript by physicians and dentists who having narcotics prescription permission
  - Developing certification and specialty system is a goal
### Dental anesthesia -Legal aspect-

<table>
<thead>
<tr>
<th>Authority of conducting dental anesthesia</th>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Thailand</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA</td>
<td>Dental anesthesiologist</td>
<td>Dental anesthesiologist, has to be supervised by anesthesiologist</td>
<td>Dental anesthesiologist, cannot apply payment from National Health Insurance</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
</tr>
<tr>
<td>deep sedation</td>
<td>Dental anesthesiologist</td>
<td>Dental anesthesiologist</td>
<td>Dental anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
</tr>
<tr>
<td>moderate/mild sedation</td>
<td>Dental anesthesiologist</td>
<td>Dental anesthesiologist</td>
<td>Dental anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
</tr>
<tr>
<td>Sources of payment</td>
<td>National Health Insurance</td>
<td>National Health Insurance</td>
<td>National Health Insurance</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Person who manages dental anesthesia</td>
<td>Dental anesthesiologist (mostly) Anesthesiologist (partially)</td>
<td>Dental anesthesiologist (few) Anesthesiologist (mostly)</td>
<td>Dental anesthesiologists (very few) Anesthesiologists (Mostly)</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
<td>Anesthesiologist</td>
</tr>
<tr>
<td>Inform consent</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

• Taiwan: Anesthesia nurses supervised by anesthesiologists to assist the work of GA/sedation.
• Japan and Korea: do not have anesthesia nurses
Qualification of specialty

**In Japan**
• To be a specialist should be basically trained with at least 300 cases concerning general anesthesia experiences, 300 cases related to life management experiences within 3 years in any qualified medical or dental institutions
• The qualification or specialty should be renewed every 5 years

**In Korea**
• There is certification system for dental anesthesiologist

**In Taiwan**
• No any certification or specialty system for dental anesthesiologist
• The ACLS (Advanced Cardiac Life Support) license is requested in Taiwan for dentist conducting dental treatment for special needs patients under general anesthesia or sedation
### Dental anesthesia -Specialty-

<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Thailand</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification system</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Established</td>
<td>1977</td>
<td>2008</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Approved by</td>
<td>Japanese Society of Dental Anesthesiology</td>
<td>Korean Association for Dentists</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Number</td>
<td>1,193 (by 2013)</td>
<td>???</td>
<td>No.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Specialist system</td>
<td>Yes</td>
<td>No</td>
<td>No.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Established</td>
<td>2005</td>
<td>No</td>
<td>No.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Approved by</td>
<td>Ministry of Health and Labor</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Number</td>
<td>278 (by 2013)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Guideline for dental sedation

**Japan:**
- Guideline for dental sedation are made as a reference for clinical dentists who are conducting sedation for adult in the daily clinical works.
- In generally, sedation for children, elderly persons and medically compromised patients are conducted by experienced and certified dental anesthesiologists,
- Since they have had well trained in anesthesiology department, they do not need guideline
- This is the reason why they do not have GA guideline or pediatric sedation guideline etc.
- Instead of dental sedation guideline, SOP of sedation for awaked craniotomy or endoscopic examination were ruled in several countries.

**Korea** had sedation guideline following ADA sedation regulations

**Taiwan** does not have sedation guideline either in anesthesia or dental anesthesia,
- Taiwan Association of Anesthesiologists (TAA) has standard of operation procedure for sedation (SOP)
E. Dental education aspects concerning dental anesthesia in undergraduate courses
# Dental anesthesia

## -Dental education in university-

<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>Korea</th>
<th>Taiwan</th>
<th>Thailand</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental university</td>
<td>29</td>
<td>11</td>
<td>7</td>
<td>12</td>
<td>15</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Dental anesthesiology</td>
<td>In every university</td>
<td>In every university</td>
<td>In every university</td>
<td>Teach in different subjects</td>
<td>Teach in different subjects</td>
<td>In most universities</td>
<td>Teach in different subjects</td>
</tr>
<tr>
<td>Compulsory/optional</td>
<td>Compulsory</td>
<td>Compulsory</td>
<td>Compulsory</td>
<td>Compulsory</td>
<td>Compulsory</td>
<td>Compulsory</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Units</td>
<td>1</td>
<td>Very few hours</td>
<td>2</td>
<td>----</td>
<td>----</td>
<td>2</td>
<td>----</td>
</tr>
<tr>
<td>Intern practice</td>
<td>Yes</td>
<td>Yes, very few</td>
<td>Yes, in anesthesia dept.</td>
<td>----</td>
<td>----</td>
<td>Yes</td>
<td>----</td>
</tr>
</tbody>
</table>

---

Shun-te Huang
F. General anesthesia or sedation for dentist?
Advantages of general anesthesia and sedation

• For general persons
  • No pain, no fear and comfort
  • Safe and secured dental procedures
  • Better therapeutic quality and efficiency
  • No complications

• For special needs persons, children and medically compromised patient
  • Decrease the involuntary physical movement
  • Diminish the uncooperative behavior
  • Comfort the emotional change
  • Intensive dental treatment
    • Comprehensive treatment
    • Seldom dental treatment times
The anesthesiologist aspect to the general anesthesia

Merits :
• Respiratory tract is fully protected
• Cardiovascular system management is easier
• The inhalation anesthetics concentration is rather easily to be controlled
• Rather long operation duration is allowed

Limitation :
• Limited to the hospital-base institutions
• Not secured in community-based clinics
The patient’s viewpoints to GA/sedation

Awareness varies due to:
• Countries or tribes
• Culture background
• Socio-economic situation
• Education status
• Individual variation

To general anesthesia
• Worry to general anesthesia
• Anxiety and restless
• Conscious and physiological impact
• Accumulation effects of sedatives
• Financial support

To sedation
• Relatively acceptable by patients

But
The anesthesiologist aspect to the **sedation**

Dental treatment under sedation: **Very dangerous**

- Dentist may hope a deep sedation for decreasing the involuntary movement
- Difficult to manipulate the sedative concentration
- Difficult to secure the respiration
- **Trachea is not protected, risk of choking or suffocation**
  - Patient is in supine position
  - Patient’s mouth has to be opened
  - Dentist’s manipulation is dangerous to respiration
    - Forehead downward and chin up
    - Mandible downward
    - Bite blocker
- **Dentist use a lots of water**
- Dentist use a lots of instruments, materials
General anesthesia is very indicated to oral surgery, oro-facio-maxillary surgery, certain medically compromised patients who need life support and patients was evaluated to be more than ASA grade II

Conscious sedation (mild/moderate sedation) is graduate getting popular in dental field
Increasing needs of conscious sedation (mild/moderate sedation) in dental treatment

- a. Oral hygiene and dental health improved
- b. Parents changes attitude to their children
- c. Some developmental delay status may be ignored
- d. For special needs patients
- e. For medically compromised elderly
- f. For dental phobia patient
- g. For implant patient
a. Better oral hygiene behavior and improved dental health of the public and some special groups

Amount and severity of dental diseases needing treatment decreased
A shorter therapeutic duration is needed
**Mild/moderate sedation may be indicated**

- Massive improvement in:
  - Knowledge of dental sciences, instruments, devices and materials in the dental field
  - Increase of human resources related to dental professionals (dentists, dental hygienists, nurses and assistants)
  - Oral health education programs and oral cleaning tools
  - Cognition of public to the importance of oral health
  - Oral health and prevention orientated
  - Behavior of regular periodic check-up for oral health
b. Parents changes attitude to their children

The number of children needing sedation has increased
The operation duration may be shorter, within 1 hour
Mild/moderate sedation may be indicated

- Overprotection by some parents
- Parents demand for
  - A quiet and happy dental environment for their children
  - Do not hope to hear child crying, struggling and fighting
  - More reasonable explanation and approach
    - Positive reinforcement is encouraged
    - Restraint is an issue of abuse
    - Hand over mouth exercise (HOME) may be improper
c. We may ignored some developmental delay status

- Some children may have
  - Delayed tendency in intelligence, cognition and social communication skills
  - We may not able to diagnose their developmental delay status
  - Even we may miss their developmental delay status

Restraint and HOME may withdraw their learning ability
Mild/moderate sedation may be helpful for reduce their improper behavior
d. For special needs patients

**Diversity in special needs patients**

- **Well cared group:**
  - Brushing very carefully and often
  - Periodic check-up
  - Application or usage of fluoride
  - Shallow or seldom decayed
  - **Mild/moderate sedation for uncontrollable movement**

- **Poorly cared group:**
  - Brushing improperly and seldom
  - Absence of periodic check-up, visit dentist only when pain or swelling
  - Seldom use fluoride
  - Deep, complicated and multiple decayed teeth
  - **May need moderate/ deep sedation or general anesthesia**
Elderly population increased rapidly
• Healthy elderly
• Long-term care elderly
• Medically compromised elderly
• Fragile elderly

Low physical and mental tolerance to long duration of waiting and treatment
• Compromised cardiovascular system, metabolic system
• Anxious and emotionally unstable
• Skeletal problems such as osteosclerosis (rigid neck and spine), osteoporosis
• Poor oral function such as dysphagia, choking due to neuro-muscular dysfunction (mastication, swallowing disorder)

Elderly may need to be sedated mildly in depth and shortly in duration
Comfort their emotion
Prevent the impact to cardio-vascular
Management of vital sign and their life support

e. For medically compromised elderly
f. For dental phobia patient

**Characteristics**
- May have poor dental experience before
- May be somatically or psychologically hypersensitive
- Always with severe and multiple decayed teeth

**Dental procedure by changing sedative dosage**
- Treated under GA or deep sedation at first time to establish confidence to dentist
- Once we got confidence, *graduate decrease the sedative dosage to mild sedation level* to keep patient in conscious and who can accept without fear
- Helping patient:
  - To re-establish the trust for dental procedures and to get their cooperation
  - To take the centric relationship for occlusal adjustment during prosthodontic construction
g. For implant patient

- Mild/moderate sedation is very popular to sedate the patient during conducting implant procedure without anxiety and fear.
- Patient asks for better therapeutic quality, efficiency and without anxious, fear.
How to coordinate between dentist and anesthesiologist?

• Respect each other to opposite professional
• Improve our knowledge and skill to
  • Decrease any dental procedure which may impact to throat and respiration
  • Prevent the occurrence of risk during operation
• Life support and management
G. Conclusion

• Dental anesthesiology:
  • Well developed in Japan
  • Relatively developed in South Korea and Taiwan,
  • May be developed in other Asian countries in the near future
• Short duration, mild/moderate sedation will be more common not only in hospitals but also in local practitioners
• Education program of dental anesthesiology in undergraduate, post-graduate course and career education should be promoted
• Specialty should be induced and developed
• Dental anesthesiology will be a fundamental knowledge, attitude and skill for all dentists:
  • Pain control
  • Comfortable and no fear
  • Risk prevention
  • Life support

We should not forget:
Try to communicate with special needs patients at first
Please Construct a Healthy Oral Condition for Them and Bring Them a Brilliant Smile
Thank you very much for your attention.