A Comparison of Dexmedetomidine and Midazolam for Sedation during Minor Oral Surgery

Thesis

Submitted To Faculty of Oral and Dental

Medicine Cairo University In Partial

Fulfillment of The Requirements

For The Master Degree In

Oral & Maxillofacial Surgery

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(2006)

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(2012)

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بسم الله الرحمن الرحيم

"قالوا سبحانك لا علم لنا إلا ماعلمتنا إنك أنت العليم الحكيم"

صدق الله العظيم

سورة البقره (32)

ACKNOWLEDGEMENT

First of all , I must thank ***Allah*** who granted me the ability to perform this study.

I am most grateful to **Prof. Galal Beheri**, Professor of Oral and Maxillofacial Surgery, Faculty of Oral and Dental Medicine, Cairo University, for his tremendous support that was given to me during the preparation of the study and for his patience and guidance. Without his valuable advice, the quality of this thesis would be severely compromised.

My sincere gratitude is equally extended **Prof**. **Mostafa Makhlouf**, Professor of Anesthesiology , Faculty of Oral and Dental Medicine, Cairo University, for his endless guidance and his unlimited help. My great appreciation for his academic advice and continuous encouragement during my study.

This study would have never been accomplished without the help and assistance of **Dr. Nadia Galal**, lecturer of Oral and Maxillofacial Surgery, Faculty of Oral and Dental Medicine, Cairo University. I would like to express sincere thanks to her.

Finally, I convey my special gratitude to **Prof. Amin Hindi**, Chairman and Professor of oral and maxillofacial surgery , Faculty of Oral and Dental Medicine Cairo University for his support and to all the members of the Oral and Maxillofacial Surgery Department, for their valuable contribution and support during the study.

Dedication

To my great parents
who provided overwhelming
support throughout my life

To my wonderful wife

To my son

To the rest of my family

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

List of Abbreviations

α	Alpha
β	Beta
µg or mcg	Microgram
ADA	American Dental Association
ADR	Adverse Drug Reactions
ASA	American Society of Anesthesiologists
B P	Blood pressure
cAMP	Cyclic adenosine monophosphate
CBCT	Cone Beam Computed Tomography
CMS	Content Management System
CNS	Central Nervous System
COPT	Chronic Obstructive Pulmonary Disease
C T	Computed Tomography
DBP	Diastolic Blood Pressure
DMET	Dexmedetomidine
ECG	Electrocardiogram
FDA	Food & Drug Administration
FIO2	Fraction of Inspired Oxygen
GA	General Anesthesia
GABA	Gamma Amino Butyric Acid
H R	Heart Rate
hr	hour
ICU	Intensive Care Unit
IM	Intramuscularly
IV	Intravenous
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
kg	kilogram
LA	Local Anesthesia
LC	Locus Coeruleus
MAC	Monitoring Anesthesia Care

mcg ***or*** µg	microgram
mg	milligram
min	minute
MMSE	Mini-Mental State Examination
MRI	Magnetic Resonance Imaging
NE	Norepinephrine
NRS	Numerical Rating Scale
OMFS	Oral &Maxillofacial Surgery
OPG	Orthopantogram
PaCO2	Partial Pressure of Carbon Dioxide in the Blood
PaO2	Partial Pressure of Oxygen in the Blood.
PCS	Patient Controlled Sedation
RR	Respiratory Rate
RSS	Ramsay Sedation Score
SBP	Systolic Blood Pressure
sec	second
SNS	Sympathetic Nervous System
$t_{1/2}$	Half-life
Vd	Volume of distribution

Abstract

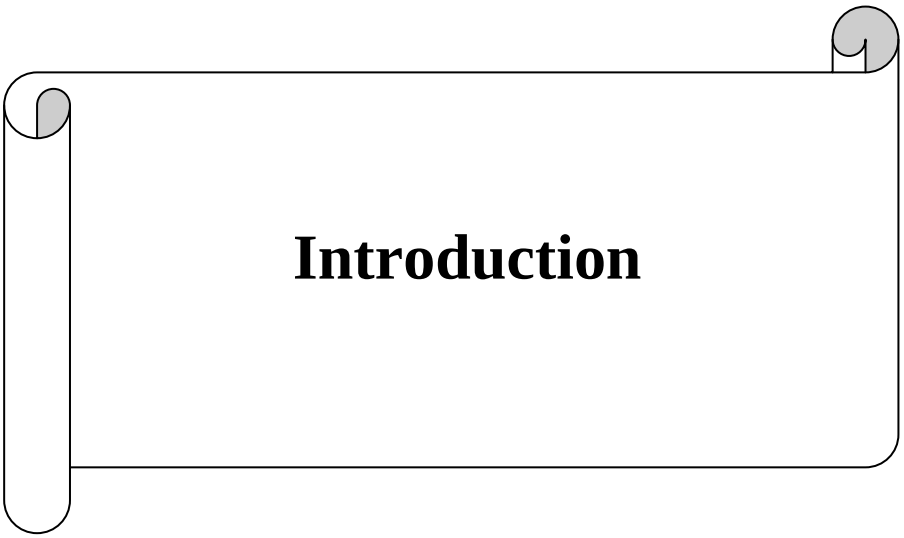
Purpose: The aim of this study was to compare between dexmedetomidine and midazolam for intravenous conscious sedation in minor oral surgery.

Patients and Methods: Twenty healthy patients scheduled to undergo a minor oral surgery were included in this study. Either dexmedetomidine (group I) (1 μg. kg $^{-1}$) or midazolam (group II) (0.1 mg · kg^{-1}) was administered intravenously until the Ramsay Sedation Score (RSS) reached four or the maximum dose limit was achieved. Recovery time was established when RSS reached 2. Numerical Rating Scale was used for assessment of pain of local anesthesia injection, postoperative pain and patient satisfaction. Analgesic consumption for 24 hours postoperatively was recorded. Amnesia was evaluated by the patients' ability to recall the pictures shown after sedation onset. Cardiorespiratory data were collected for evaluating drug safety.

Results: Sedation was achieved by median doses of 69.3 μg *or 1* μg/kg dexmedetomidine and 6.3mg *or* 0.1 mg/kg midazolam. A significantly higher number of patients showed pain reactions in midazolam group. Very weak amnesia was observed in dexmedetomidine group. The heart rate and blood pressure measurements were significantly lower in dexmedetomidine group. There was no significant difference in the respiratory findings.

Conclusion: Dexmedetomidine is a reliable alternative to midazolam for intravenous sedation. It has additional analgesic effect and provides adequate sedation level without serious side effects during minor oral surgery.

Keywords: minor oral surgery, sedation, dexmedetomidine, midazolam.


Introduction