

**Original article:**

## **Study of effects of complications of intravenous dexmedetomidine and intravenous midazolam in patients undergoing tympanoplasty under monitored anesthesia care**

**Dr Rahul Patil , Dr Raviraj Kamble\***

Department of Anaesthesiology , GMC Miraj , Maharashtra

Corresponding author \*

**Abstract:**

**Introduction:** According to American society of anesthesiologist (ASA) a monitored anesthesia care is used during which the patient undergoes local anesthesia along with sedation and analgesia. The 3 fundamental elements of MAC are a safe sedation, control patients anxiety and pain control.

**Material and methods:** The present study was carried out in a tertiary health care centre. Sixty patients with American Society of Anesthesiologists (ASA) status I/ II undergoing tympanoplasty under monitored anesthesia care with local anesthesia and sedation were included in the study. A written informed valid consent was obtained from all patients. The study was prospective, randomized double blind trial. Randomization was done by card method. The anesthesiologist conducting the study, the patient and the anesthesiologist who followed up patient in postoperative period were all blinded to keep the study double blind.

**Results :** In our study the surgeon's satisfaction score was higher in group D than group M.

in our study the patient's satisfaction score was greater in group D than group M.

**Conclusion:** From present study we conclude that Dexmedetomidine is a very useful anesthetic Agent in tympanoplasty and modified radical mastoidectomy along with local anesthetic agent as , it is a good sedative agent , it provides controlled hypotension and a clear surgical field with less bleeding , better patient and surgeon satisfaction and with minimal side effects.

**Keywords:** Dexmedetomidine, tympanoplasty, modified radical mastoidectomy

**Introduction:**

According to American society of anesthesiologist (ASA) a monitored anesthesia care is used during which the patient undergoes local anesthesia along with sedation and analgesia. The 3 fundamental elements of MAC are a safe sedation, control patients anxiety and pain control. Under conscious sedation the patients are able to answer to orders appropriately and to protect airway. Consciousness evaluation is extremely important during surgical procedure performed with MAC. MAC can be performed with patient controlled sedation techniques or with continuous intravenous infusion or with target controlled infusion.<sup>1,2</sup>

Tympanoplasty and Mastoidectomy are descriptive terms defining surgical procedures that address pathology of the tympanic membrane and middle ear. Tympanoplasty multiplies reconstruction of tympanic membrane. But also deals with pathology within ear cleft, such as chronic infection, cholesteatoma, or an ossicular chain problem. Tympanoplasty is usually performed under general anesthesia although patients who are reluctant to undergo general anesthesia may be given local anesthesia supplemented with IV sedation<sup>2</sup>, such as less bleeding, cost effective, postoperative analgesia, faster mobilization of the patient, and the ability to test hearing

intraoperatively<sup>3</sup>. MAC typically involves administration of local anesthesia in combination with IV sedation, anxiolytic and/or analgesic drug<sup>4</sup>, which is common practice during various ENT surgical procedures.

#### **Material and methods:**

The present study was carried out in a tertiary health care centre. Sixty patients with American Society of Anesthesiologists (ASA) status I/ II undergoing tympanoplasty under monitored anesthesia care with local anesthesia and sedation were included in the study. A written informed valid consent was obtained from all patients. The study was prospective, randomized double blind trial. Randomization was done by card method. The anesthesiologist conducting the study, the patient and the anesthesiologist who followed up patient in postoperative period were all blinded to keep the study double blind.

#### **Inclusion Criteria :**

1. Age 18-50 years
2. ASA I/II
3. Patients undergoing tympanoplasty.
4. Weight 35-70 Kg.
5. Duration.of.surgery.upto.90.minutes.

#### **Exclusion Criteria:**

1. Patients refusal
2. Patients with pre-existing cardiac, neurological or other illness
3. Known hypersensitivity to drugs.
4. History of taking sedative drugs.
5. Pregnant patients
6. Obese patients

Preanesthetic evaluation was done in all patients a day prior to surgery and all routine investigations like complete haemogram, Kidney function test, Liver function test, Random blood sugar and ECG (in patients with age > 40 years) were done.

Xylocaine sensitivity test was also performed.

#### **Statistical analysis**

Statistical analysis has been carried out in the present study. Results on continuous measurements were presented as Mean± SD. Unpaired T test (two tailed, independent samples) was used to find the significance of study parameters on continuous scale between two groups (inter group analysis) on metric parameters.

#### **Results:**

A total 60 patients of ASA grade I and II posted for tympanoplasty and MRM were randomly selected and divided into 2 equal groups. Group D received inj.dexmed 1µg/kg I.V. over 15 minutes followed by 0.5µg/kg/hr infusion till end of surgery.

Group M received inj. midazolam 0.05 mg/kg I.V. slowly, followed by infusion of 0.01mg/kg/hr till end of surgery.

Thus in our study demographic data (age, gender, weight) in both the groups were statistically not significant.

In our study we came across minimal intraoperative complications with bradycardia in 1 patient in group D, while dry mouth in 1 patient in group D.

Table 1 )

	Group D	Group M
Bradycardia	1 [3.33%]	0
Hypotension	0	0
Prolong sedation	0	0
Nausea/ vomiting	0	0
Dry mouth	1 [3.33%]	0

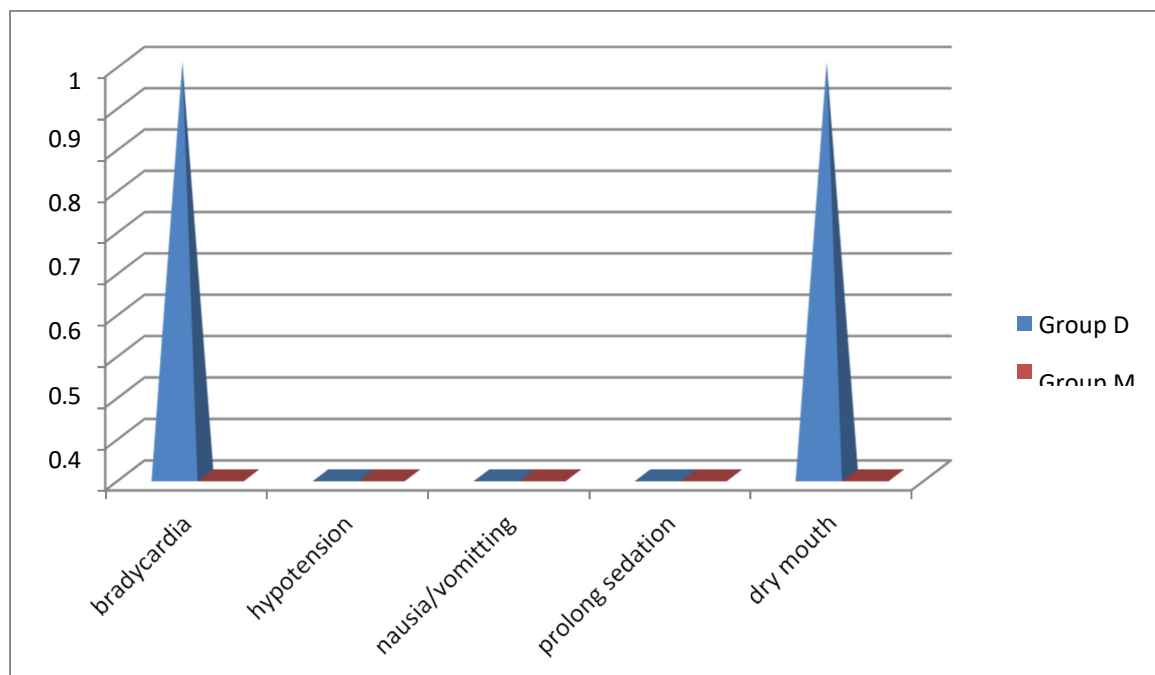


Chart no 1- Intraoperative complications

**SURGEONS SATISFACTION SCORE** – In our study the surgeon's satisfaction score was higher in group D than group M.

**PATIENTS SATISFACTION SCORE** – in our study the patient's satisfaction score was greater in group D than group M.

Table 2)

PARAMETERS	GROUP D	GROUP M
SURGEONS SATISFACTION SCORE	5.433 [ $\pm 0.62$ ]	4.2 [ $\pm 0.55$ ]
PATIENTS SATISFACTION SCORE	5.233 [ $\pm 0.57$ ]	4.367 [ $\pm 0.49$ ]

**Discussion:**

In our study surgeon's satisfaction score and patients satisfaction score both were higher in group D compared to group M. our results were similar to study of **Parikh DA et al.**, evaluate Dexmedetomidine verses Midazolam – fentanyl in tympanoplasty, they found that there was significant higher patient and surgeon satisfaction score with dexmedetomidine. The decreased heart rate and mean arterial pressure in these patients could have mostly resulted in a better surgical field thus attributing to better surgeon satisfaction. <sup>6</sup>**Vyas DA et al** evaluated dexmedetomidine verses Midazolam in tympanoplasty and mastoidectomy patients also found similar results. He concluded that dexmedetomidine is better alternative to midazolam for sedation, as it provides a calm patient with better intraoperative analgesia and a bloodless surgical field leading to better surgeon and patient satisfaction score.<sup>7</sup>

In our study, the bleeding score was less in group D as compare to group M. which indicates that dexmedetomidine reduces blood loss and also provides better surgical condition compared to midazolam

Our result was similar to study of **Durmus at al**, who conduct study to evaluate efficacy of dexmedetomidine on intraoperative bleeding, anesthetic drug requirement and postoperative pain, and found that blood loss was lower in dexmedetomidine group 9(P<0.05).<sup>8</sup> Kumari I et al also compared use of clonidine and midazolam in MAC for ENT surgery, conducted under local anesthesia. They found that intraoperative bleeding was significantly less in Clonidine group as compared to Midazolam group.<sup>4</sup>

### Conclusion:

From present study we conclude that Dexmedetomidine is a very useful anesthetic Agent in tympanoplasty and modified radical mastoidectomy along with local anesthetic agent as , it is a good sedative agent , it provides controlled hypotension and a clear surgical field with less bleeding , better patient and surgeon satisfaction and with minimal side effects.

### References:

1. John F. Butterworth, David C. Mackey, John D. Wasnick. The Practice of Anesthesiology, 5<sup>th</sup> ed. Chapter 1. In : Morgan and Mikhail's Clinical Anesthesiology. The McGraw- Hill Companies, Inc; 2013. pp. 1-7.
2. Norman Friedman, M.D. et al Tympanoplasty, Grand Rounds Presentation, UTMB, Dept. of Otolaryngology, June 9, 1999.
3. Sarmiento KM Jr, Tomita S. Retroauricular tympanoplasty and tympanomastoidectomy under local anesthesia and sedation. *Acta Otolaryngol.* 2009 Jul;129(7):726-8.
4. Kumari, I., Naithni, U., Bedi, V., Gupta, S., Gupta, R., & Bhuie. (2012). Comparison of clonidine versus midazolam in monitored anesthesia care during ENT surgery - A prospective, double blind, randomized clinical study. *Anaesthesia, Pain and Intensive Care*, 16(2), 157–164.
5. Parikh D a, Kolli SN, Karnik HS, Lele SS, Tendolkar B a. A prospective randomized double-blind study comparing dexmedetomidine vs. combination of midazolam-fentanyl for tympanoplasty surgery under monitored anesthesia care. *J Anaesthesiol Clin Pharmacol* [Internet]. 2013;29(2):173–8. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3713662&tool=pmcentrez&rendertype=abstract>
6. Vyas DA, Hihoriya NH, Gadhavi RA. A comparative study of dexmedetomidine vs midazolam for sedation and hemodynamic changes during tympanoplasty and modified radical mastoidectomy. *Int J Basic Clin Pharmacol* 2013;2:562-6.
7. Bergendahl H, Lönnqvist P, Eksborg S. Clonidine: an alternative to benzodiazepines for premedication in children. *Curr Opin Anaesthesiol* 2005;18:608- 13.
8. Bergendahl H, Lönnqvist P, Eksborg S. Clonidine in paediatric anaesthesia: review of the literature and comparison with benzodiazepines for premedication. *Acta Anaesthesiol Scand* 2006;50:135-43.

Date of Submission: 15 September 2020

Date of Publishing: 05 December 2020

Author Declaration: Source of support: Nil, Conflict of interest: Nil

Ethics Committee Approval obtained for this study? YES

Was informed consent obtained from the subjects involved in the study? YES

For any images presented appropriate consent has been obtained from the subjects: NA

Plagiarism Checked: Urkund Software

Author work published under a Creative Commons Attribution 4.0 International License



Creative Commons Attribution  
4.0 International License

CC BY 4.0

DOI: 10.36848/IJBAMR/2020/16215.55545