

# A Comparative Clinical Study to Evaluate Efficacy of Clonidine versus Dexmedetomidine for Induced Hypotension in Functional Endoscopic Sinus Surgeries

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## 1. Introduction

Functional endoscopic sinus surgeries (FESS) is a surgical treatment of long-standing sinus infections like recurrent sinusitis, nasal polyps (antral or ethmoidal), fungal infections, chronic rhinosinusitis (unresponsive to medical treatment), sinonasal tumour, etc when conservative treatment fails. With advancement of technology, better illumination and visualization, there is dramatic change in surgical intervention by FESS. The important problem in the surgery is the small space, and continuous bleeding from the sinuses as sinuses have rich blood supply. The sinuses are surrounded by important organs like eyes and brain, so good surgical skill is utmost important to the surgeon for success in doing FESS surgery. Hypotensive anaesthesia is a method used to control blood pressure in a deliberate and predictable manner thereby reducing blood flow to surgical area and in turn reducing blood loss and it will improve surgical field. FESS is good to be performed under the controlled hypotensive technique (i. e. mean arterial pressure (MAP) ranging from 60 and 70mmHg); this can enhance surgical field, and decrease operation time. In FESS, pre-operative intra-venous (IV) administration of the clonidine can decrease surgical time, and improve the surgical results through the less bloody field. Intra operative infusion of Dexmedetomidine reduces the perioperative analgesic requirements its effect is easily titrated so, having all these criteria make dexmedetomidine is more suitable drug for controlled hypotension. In our study, an attempt was made to compare the efficacies of Clonidine, and Dexmedetomidine with reference to intra-operative bleeding and quality of surgical field during controlled hypotensive anaesthesia induced by either intravenous Clonidine or intravenous Dexmedetomidine via infusion pumps during elective functional endoscopic sinus surgeries under general anesthesia for better control of intra operative blood loss and good patient outcome during surgery.

## 2. Methods

The proposed study titled as “A comparative clinical study to evaluate efficacy of Clonidine versus Dexmedetomidine for induced hypotension in functional endoscopic sinus surgeries” was carried out in Swaroop Rani Nehru Hospital associated with Moti Lal Nehru Medical College, Prayagraj over a period of one year from June 2020 to May 2021 after approval from ethical committee of institution and obtaining written and informed consent from all patients. Patients

selected for this study were randomly divided into two groups-Group D and Group C. **GROUP-D** patients received IV Dexmedetomidine[at]1µg/kg diluted in 10ml NS solution over 15 minutes, before anesthetic induction followed by 1 µg/kg/hr infusion.; **GROUP-C** patients received IV Clonidine[at]1.5µg/kg diluted in 10ml NS over 15 minutes before anesthetic induction followed by 1 µg/hr infusion.

### Inclusion Criteria:

- Patient with written informed consent.
- Adult patients between 18 – 50 years of age, of either sex.
- Weight between 45-75kg
- ASA grade I, and II patients

### Exclusion Criteria:

- Patient refusal,
- ASA grade >2
- Severe cardiovascular disease.
- Patient with severe hepatic and renal disease
- History of bleeding disorders
- Patients on oral anticoagulants
- CSF rhinorrhea
- History of hypertension

Demographic profile was measured by Mean, standard deviation and percentage. Hemodynamic parameters were measured by Anova Test. Unpaired ‘t’ student test was used. P value (<0.05) was considered significant.

## 3. Observations

MAP	Group C (n=30)	Group D (n=30)	p-value
Pre-operative	92.6±4.3	91.3±3.9	0.224
5 min	95.3±4.9	90.1±4.3	0.001
10 min	92.6±5.5	88.6±5.8	0.008
20 min	89.1±5.7	82.5±5.0	0.001
30 min	80.7±5.5	72.2±5.2	0.001
40 min	75.8±5.6	69.2±4.8	0.001
50 min	72.4±4.5	68.3±4.9	0.001
60 min	71.8±4.4	68.4±5.0	0.007
70 min	71.2±4.6	68.0±3.9	0.005
80 min	70.0±4.5	67.8±3.7	0.076
90 min	69.1±4.1	67.4±3.0	0.072

The above table 1 compares the mean arterial pressure between the two drugs and it was found that the heart rate

was significantly lower in group D at 10 minutes and thereafter ( $p < 0.05$ )

Score	Group C (n=30)	Group D (n=30)	p-value
Score 0=no bleeding	1 (3.3)	2 (6.7)	0.022
Score 1=minor bleeding	9 (30.0)	16 (53.3)	
Score 2=minor bleeding aspiration required	10 (33.3)	9 (30.0)	
Score 3=minor bleeding frequent aspiration required	6 (20.0)	2 (6.7)	
Score 4=moderate bleeding	4 (13.3)	1 (3.3)	
Score 5=severe bleeding	0 (0.0)	0 (0.0)	

Table 2 compares the bleeding score between the groups and it was found that the bleeding was more in group-C than group-D and the difference was statistically insignificant ( $p < 0.05$ )

#### 4. Results & Conclusion

- 1) The distribution of the studied patients on the basis of their demographic profile and the association between the groups was found to be statistically insignificant as the groups were equally matched ( $p > 0.05$ )
- 2) The association was found to be statistically insignificant except Time to reach aldrete score  $\geq 9$  which was significantly lower for group-D than group-C ( $p < 0.05$ ).
- 3) The heart rate was significantly lower in group D at 10 minutes and thereafter ( $p < 0.05$ ).
- 4) The the heart rate was significantly lower in group D at 10 minutes and thereafter ( $p < 0.05$ )
- 5) The bleeding was more in group-C than group-D and the difference was statistically insignificant ( $p < 0.05$ )
- 6) The number (%) of patients treated with fentanyl and Mean fentanyl dose/patient ( $\mu\text{g}$ ) was significantly higher in group-C also, I<sup>st</sup> Post-operative analgesic requirement was significantly late in group-D ( $p < 0.05$ )
- 7) The incidence of bradycardia and hypotension were significantly more in group-C than group-D ( $p < 0.05$ )
- 8) The good and excellent score was more in group-D and the difference was statistically significant ( $p < 0.05$ )
- 9) The good and excellent score was significantly more in group-D than group-C ( $p < 0.05$ )