

## COMPARATIVE STUDY OF MODIFIED RADICAL MASTECTOMY PERFORMED UNDER LOCAL ANAESTHESIA WITH DEXMEDETOMIDINE INFUSION VS. GENERAL ANAESTHESIA

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### ABSTRACT

#### BACKGROUND

The incidence of breast cancer is on the rise in developing countries. Though, there have been significant advances in general anaesthesia, surgery in elderly and those with comorbid illness still have an attendant morbidity and mortality. After the introduction of local anaesthesia by Kolher in 1884 and in spite of steady refinement, local anaesthesia is still not being widely used in major general surgical procedures.

#### MATERIALS AND METHODS

The study was conducted in Government Medical College, Calicut, a tertiary care centre in Kerala. The outcome of Modified Radical Mastectomy performed under Local Anaesthesia (LA) and dexmedetomidine infusion was compared to similar cases done under General Anaesthesia (GA).

#### RESULTS

Rapid recovery from sedation leading to early restoration of normal physical activity was observed in the LA group when compared to GA group. Early initiation of oral feeds was possible in the former group as Postoperative Nausea and Vomiting (PONV) was significantly less. Effective postoperative pain relief and significant reduction in respiratory complications was observed in the LA group compared to GA group.

#### CONCLUSION

Modified Radical Mastectomy under LA and procedural sedation with dexmedetomidine was significantly better in selected cases when compared to similar cases done under GA with respect to early recovery pain relief and decreased incidence of respiratory complications.

#### KEYWORDS

MRM, LA and Procedural Sedation, GA, Dexmedetomidine.

**HOW TO CITE THIS ARTICLE:** Ramesan C, Priya R, Indu Suseela, et al. Comparative study of modified radical mastectomy performed under local anaesthesia with dexmedetomidine infusion vs. general anaesthesia. *J. Evid. Based Med. Healthc.* 2016; 3(89), 4861-4863. DOI: 10.18410/jebmh/2016/1024

#### BACKGROUND

There is an ever increasing incidence of breast cancer in developing countries. Worldwide carcinoma breast is the most common cancer and leading cause of death among females accounting to 23% of cancer cases and 14% cancer deaths.<sup>1</sup> Breast cancer is the most common malignancy in urban Indian female and 2<sup>nd</sup> most common cancer in rural women.<sup>2</sup> This contributes to more than 30% of all cancers in females.<sup>3</sup> Modified Radical Mastectomy (MRM) is the commonly performed surgery as a standard of care and general anaesthesia is the commonly preferred mode of anaesthesia.

Local anaesthesia is a safe and simple technique and does not prolong operating time. It allows the patient to be awake, reduces stress of surgery and provides postoperative analgesia and early recovery and discharge from PACU.<sup>4</sup> Taking into consideration, the increased patient load in our institution, usage of LA and procedural sedation will benefit a significant proportion of patients especially elderly moribund patients declared high risk or rather unfit for GA.

Dexmedetomidine,<sup>5</sup> a clonidine congener possess anxiolytic sedative analgesic and sympatholytic properties with no absolute contraindications. It produces conscious sedation with preservation of airway reflexes and analgesia with opioid sparing effect.<sup>6</sup> It has a short half-life and sleep produced resembles natural sleep.

#### MATERIALS AND METHODS

Prospective comparative study conducted in Government Medical College, Kozhikode, for a period of 18 months. We included 32 patients in Group I who underwent MRM under LA + dexmedetomidine infusion and 32 patients in Group II who underwent MRM under GA.

*Financial or Other, Competing Interest: None.*  
*Submission 06-10-2016, Peer Review 20-10-2016,*  
*Acceptance 27-10-2016, Published 05-11-2016.*

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*DOI: 10.18410/jebmh/2016/1024*



Data regarding various intra and postoperative parameters were entered in Microsoft Excel and analysed using SPSS 18 software.

**Study Design**

Study Design - Prospective observational design.  
 Study Period - 1½ years (January 2013 to June 2014).  
 Study Setting - General Surgery wards in Government Medical College, Kozhikode.

**Inclusion Criteria**

- Patients with carcinoma breast preferably operable breast cancer posted for MRM.
- Patients who were willing for the procedure under LA.
- Elderly patients with comorbid illness unfit for GA.

**Exclusion Criteria**

- Moribund patients unfit for any surgical procedures.
- Patients with huge breasts/extremely obese patients.
- Patients allergic to lignocaine/bupivacaine/dexmedetomidine.

**MATERIALS AND METHODS**

After an informed consent, patients were given a loading dose of 1 ug/kg of dexmedetomidine over 10 minutes in 100 uL saline followed by 0.2 ug/kg-0.7 ug/kg titrated to get adequate sedation. Fifteen minutes after the start of infusion, the sedation was assessed and kept below 3 in the Ramsay sedation score.<sup>7</sup> Those who needed sedation were supplemented Inj. Midazolam 0.02 mg/kg. The pain score was assessed by VAS<sup>8</sup> and score of >4 was considered unsatisfactory. This was treated with Inj. Fentanyl in 25 ug increments. For those who could not communicate Wong,<sup>9</sup> Bakers grimace scale was used. The block was performed after achieving adequate sedation and analgesia. All received tumescent<sup>10</sup> infiltration 20 minutes before incision. If the patient has pain or was not satisfied or had cardiac complication, they were converted to GA with controlled ventilation. Vitals (heart rate, pulse and blood pressures) were monitored intraoperatively.<sup>11</sup>

Change in mean arterial pressure of 30%, heart rate <60/minute, respiratory rate <8/minute or saturation <90% with oxygen were considered significant. Sedation and analgesia was monitored postoperatively and time taken for recovery from the effect of dexmedetomidine were also noted. Assessed by Aldrete's score measured from time of stoppage of dexmedetomidine and extubation in GA.

**RESULTS**

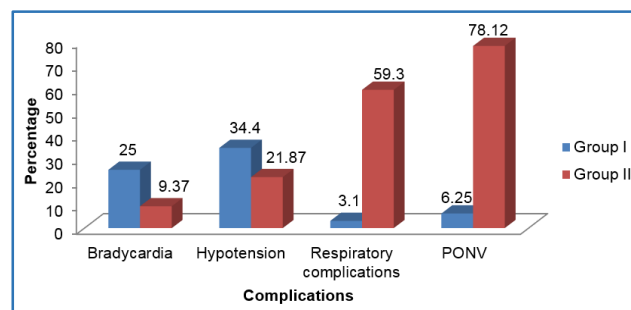
Those who complained of intolerable pain (1), bradycardia (1) were administered GA under controlled ventilation (3.125%), 96.81% of patients had good intraoperative analgesia with haemodynamic stability and satisfactory levels of sedation.

Age Group	Group I	Group II
51-60 yrs.	7	15
61-70 yrs.	16	13
71-80 yrs.	9	4

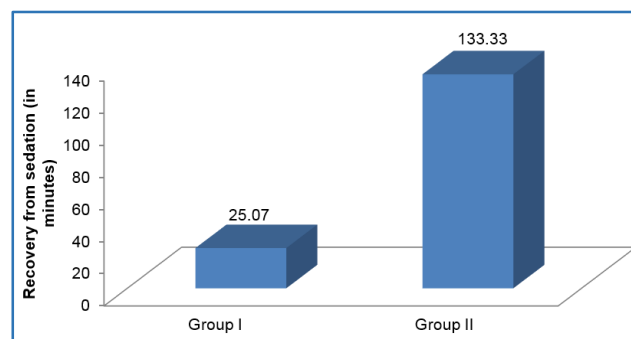
**Table 1. Age Distribution**

Sex	LA	GA
Male	2	0
Female	30	32

**Table 2. Sex Distribution**



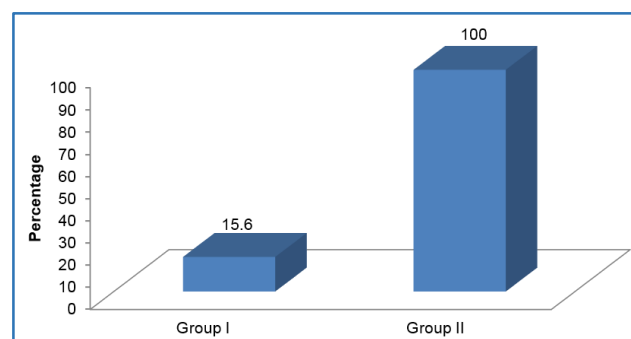
**Chart 1. Complications**



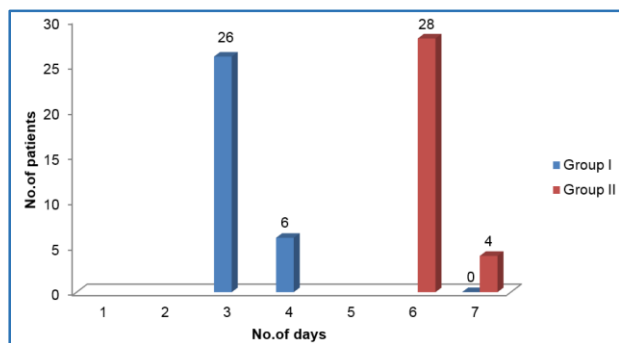
**Chart 2. Recovery from Sedation**

	Mean Duration	SD	SE
Group I	102	7.211	4.163
Group II	89.07	11	2.043

**Table 3. Duration of Surgery**



**Chart 3. Postoperative Pain**



**Chart 4. Duration of Hospital Stay**

## DISCUSSION

Incidence of bradycardia and hypotension were 25% and 34.4% in Group I, which was amenable to usual treatment. It was 9% and 22% in Group II. A similar study done by Bhana N et al, the incidence were 10% and 30%. At clinically, effective dose dexmedetomidine has shown to cause much less respiratory depression.<sup>12</sup>

Postoperative Nausea and Vomiting (PONV) was significantly low in Gp. I when compared to Gp. II where incidence was >78%. This was remarkable advantage over GA where PONV was very common causing patient anxiety delay in resuming oral feeds and aggravation of medical complications.<sup>13</sup>

Early recovery from sedation and immediate restoration of normal physical activity was conspicuous positive outcome in this study. 84.4% patients in LA Gp were pain free up to 8-10 hrs. postoperative, but analgesia has to be supplemented to the GA group. Analgesia up to 18 hrs. can be produced by using large volume of dilute tumescent.<sup>14</sup>

Respiratory complication was 3.1% in Gp I when compared to >60% in GA group. LS Rasmussen et al in their study found out increased incidence of postoperative respiration complications and need for prolonged intensive care after GA.<sup>15</sup> Our results were comparable with this study. 81.25% of LA group were discharged on POD<sub>3</sub>, the P value obtained was 0.016, which is of considerable significance.

## CONCLUSION

- Tumescent anaesthesia and procedural sedation with dexmedetomidine is a promising method of anaesthesia especially in those with relative contraindication for GA.
- Rapid recovery from sedation and early restoration of normal physical activity were positive indices.
- Early initiation of oral feeds was possible due to decrease in PONV.
- Decrease in incidence of respiratory complications and effective pain relief were remarkable.
- This is a promising technique, which can be widely used in future for daycare surgery.
- Dexmedetomidine is well tolerated for sedation and has a wide margin of safety thus proving to be a promising drug potentiating the effects of local anaesthesia.

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