



ORIGINAL RESEARCH PAPER

Cardiovascular

OFF PUMP CORONARY ARTERY BYPASS UNDER THORACIC EPIDURAL ANAESTHESIA AND ENDOTRACHEAL GENERAL ANAESTHESIA – A COMPARITIVE ANALYSIS

KEY WORDS:

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ABSTRACT

Minimally invasive procedures in surgery, anaesthesia and cardiopulmonary bypass trauma during cardiac operations are in continuous development in an effort to reduce peri- operative mortality and morbidity. The present technique of beating heart coronary artery bypass under thoracic epidural anaesthesia makes possible CABG in an awake patient. The study population included patients in Group A in whom OPCABG was performed in a awake patient under high thoracic epidural anaesthesia and Group B in whom OPCABG was performed in an intubated patient under general anaesthesia. Post operative period was monitored meticulously. Advantages of awake OPCAB are haemodynamic stability, steady heart rate, good analgesia, less oxygen demand, good coronary blood flow, termination of stress response, improved pulmpnary and renal functions, less inotropes, decreased neurocognitive dysfunction. Awake OPCAB under TEA denoted fast track surgery with speedy recovery, less ICU, ward stay and early discharge. Off pump CABG in an Awake patient is an innovative procedure.

INTRODUCTION:

Minimally invasive procedures in surgery, anaesthesia and cardiopulmonary bypass trauma during cardiac operations are in continuous development in an effort to reduce peri-operative mortality and morbidity.

- The present technique of beating heart coronary artery bypass under thoracic epidural anaesthesia makes possible CABG in an awake patient.
- Off pump beating heart CABG in an awake patient usually decrease the adverse effects typically associated with ventilation and cardiopulmonary bypass resulting in reductions in morbidity and length of hospital stay.

MATERIAL AND METHODS:

This study was completed in the dept for a period of one year.

The study population included patients in **Group A** in whom OPCABG was performed in a awake patient under high thoracic epidural anaesthesia and **Group B** in whom OPCABG was performed in an intubated patient under general anaesthesia.

The epidural catheter was put in the most prominent inter vertebral space between C7-T3.

In group A anaesthesia was achieved with 2% xylocaine with 1:2,00,000 epinephrine.

The purpose was to achieve anaesthetic block at T1 to T8 and motor block of intercostal muscles while preserving the diaphragmatic respiration with the patient awake

In group B general anaesthesia was achieved with Sevoflurane and oral cuffed endotracheal tube of appropriate size.

Post operative period was monitored meticulously. Post operative events, drainage and number of transfusions given were noted.

Post operative pain perception was assesed using visual analog scale.

Activities of daily living, compliance to physiotherapy, intensive care stay, ward stay, hospital stay and cost of surgery were calculated.

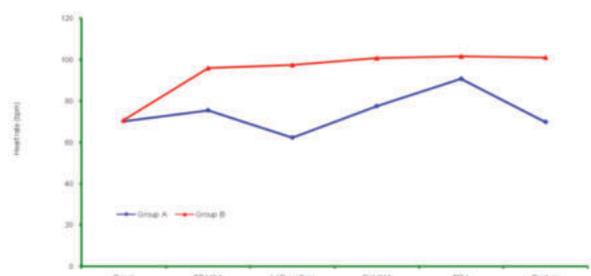
Statistical Methods

- Results on continuous measurements were presented in mean \pm SD and results on categorial measurements were presented in number (%).
- Significance was assessed at 5% level of significance.
- Student 't' test (two tailed) was used to find the significance of study parameters on continuous scale between two groups
- Significance of parameters like SPO2 was assessed using Mann-Whitney U test.
- Chi-square/ Fischer Exact test was used to find the significance of study parameters on categorial scale between two groups.
- The statistical software namely SPSS 15.0, stata 8.0, Med Calc 9.0 and systat 11.0 were used for the analysis of data.

RESULTS

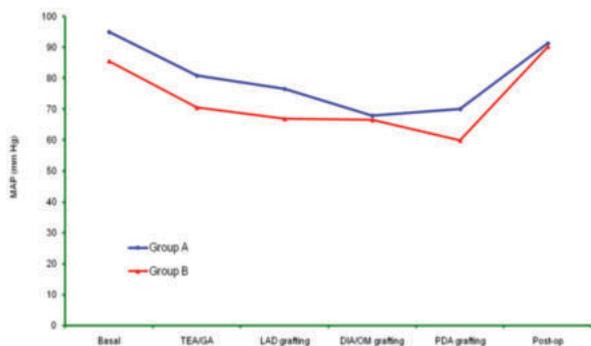
- In group A 30 patients underwent OPCABG under thoracic epidural anaesthesia and in group B 30 patients underwent OPCABG under endotracheal general anaesthesia.
- characters such as gender age, BSA and BMI were compared in between the two groups which showed no significant statistical difference.
- Number of high risk patients were calculated in the two groups. High risk patients were more in group B than in group A.
- Haemodynamic parameters like heart rate, mean arterial pressure, pulmonary artery wedge pressure and SPO2 during intraoperative period were compared.

Heart Rate

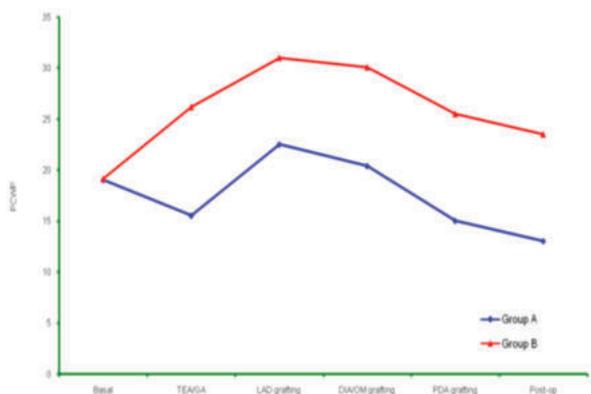


In group A heart rate 65 – 70 bpm and in group B heart rate was 96-100 bpm,

Mean Arterial Pressure

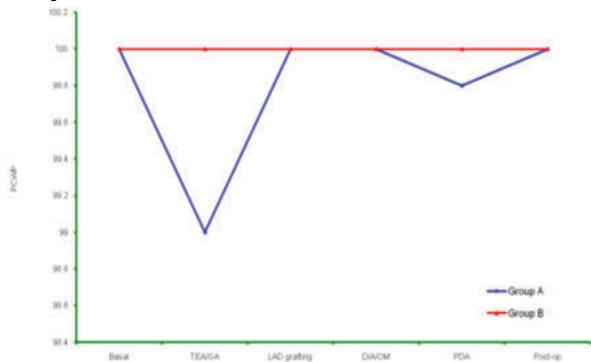


Mean arterial pressure group A = 70 – 95 mmHg and in group B 55 -70 mmHg



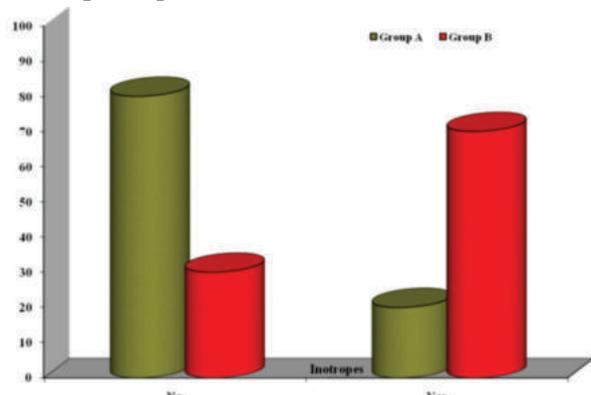
In group A PCWP 15 – 23 mmHg and Group B 25 – 30 mmHg

SPO₂



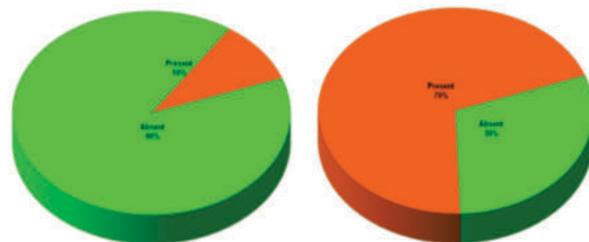
Saturation in Group A 98 -100 % and Group B 100%

Inotropes Required

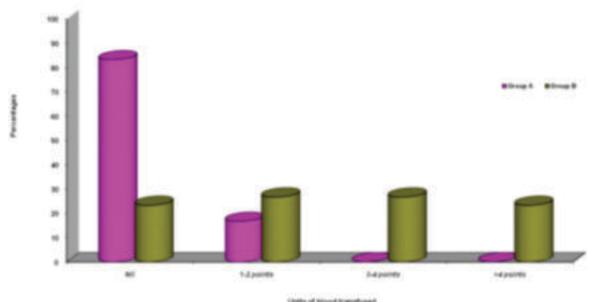
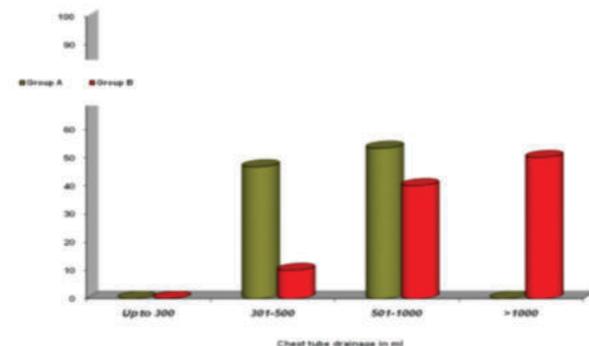


Thus inotropes required were more in group B as compared to group A as shown in the graph

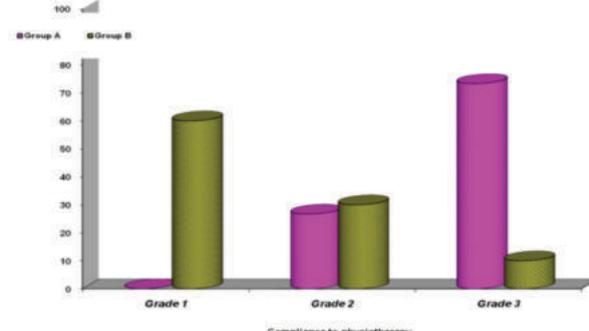
After Surgery Complications Were More In Group B Than In Group A As Shown In The Graph



Post Operative Chest Tube Drainage Was More In Group B And The Requirement of Blood Transfusion Was More Compared To Group A



- VAS score and need of analgesia was compared in between the two group. The perception of pain was significantly lower in group A and need of analgesia was less.
- In group A early mobilization was possible. Activities of daily living were more as compared to group B
- Compliance to physiotherapy was good in group A while it was found to be poor in group B



- The SICU, ward and hospital stay in group A was only 4-5 days while in group B it was 7-10 days which was significantly more.
- In group B morbidity was more as they had prolonged SICU stay.
- Cost of surgery was more in group B than in group A

CONCLUSION

- We conclude the feasibility and safety of performing awake OPCAB under TEA.
- Advantages of awake OPCAB are haemodynamic stability, steady heart rate, good analgesia, less oxygen demand, good coronary blood flow, termination of stress response, improved pulmonary and renal functions, less inotropes, decreased neurocognitive dysfunction.
- Disadvantages of awake OPCAB is willingness of the patient and the surgical team, inability to put epidural catheter in patients having severe cervical spondylosis, temporary neurologic deficits.
- Advantages of OPCAB under endotracheal general anaesthesia are protected airway, ability to perform TEE, absence of problems due to pneumothorax and diaphragmatic palsy, absence of stress of remaining awake.
- Disadvantages of OPCAB under endotracheal general anaesthesia are hypotension and tachycardia leading to myocardial infarction, increased incidence of pulmonary infection due to mucous membrane injury, decreased mucociliary function because of excluding upper airway defence and reduced effectiveness of cough.
- Awake OPCAB under TEA denoted fast track surgery with speedy recovery, less ICU, ward stay and early discharge.
- Off pump CABG in an Awake patient is an innovative procedure and shift from the conventional endotracheal general anaesthesia based cardiac surgery.
- Such an innovative procedure with good patient acceptance, better clinical outcome and presumably lower costs can lead to a new standard for CABG with final vision of minimally invasive and day care heart surgery.

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