Kathmandu University Medical Journal (2005) Vol. 3, No. 3, Issue 11, 294-295

Case Note

Bilateral simultaneous total knee replacement under combined spinal epidural anaesthesia

Shrestha BR[1], Nagendra KC[2]
[1]Department of Anaesthesiology, Kathmandu Medical College, [2]Department of Anaesthesiology, Birendra Military Hospital

Abstract
This is a case report of 68 yrs old lady who underwent simultaneous both knee joint replacement for chronic and advanced osteoarthritis. The case was performed solely under combined spinal and epidural anaesthesia (CSE). CSE is a neuroaxial block performed for different types of lower limb and abdominal surgeries.

Key words: total knee replacement, combined spinal epidural, anaesthesia

The candidate for total knee replacement surgery is usually elderly patients with different other systemic co-morbidities. Continuous epidural analgesia effectively manages postoperative pain, allows early ambulation and reduces mortality in total knee replacement surgery by decreasing deep vein thrombosis and thromboembolism[1]. This old lady underwent bilateral total knee replacement under combined spinal epidural anaesthesia. She could walk early in the postoperative period which was possible with the help of "walking epidural".

Case Report
A 68 years old lady was planned for simultaneous bilateral total knee replacement. Pre Anaesthetic evaluation revealed ASA II physical status with history of long standing hypertension well controlled with Amlodipine 5 mg, denies any past history of anaesthesia and any coronary symptoms. A physical activity was limited due to her long standing knee joint pain. Spine (cervical, lumbar) was without deformity and airway assessment revealed MPG II. Other systemic review and preoperative biochemistry, haematology and coagulation profile were within normal limits. Night before surgery and in the morning patient was premedicated with oral Diazepam 5 mg.

In sitting position with strict aseptic measures epidural space at L4-L5 was reached using combined spinal epidural set. At the same level subarachnoid block was performed using inj 0.5% Bupivacaine heavy 3 ml.

Insertion and fixation of epidural catheter was then done after the test dose and conforming the tip of catheter lying epidurally, but not intrathecally or intravascularly. Local anaesthetic was added via epidural catheter when two segments regression of the sensory level achieved following subarachnoid block. Intraoperatively patient was monitored for possible cardiopulmonary physiological deviations and post bone cement unwanted complications. Perioperative monitoring of the patient was aided with ECG, SPO2, NIBP, CVP, and UO.

Preanaesthetics haemodynamic parameters were HR 80 beats per min, BP ranging from 130/70 – 145/85 mmHg. The mean HR and BP intraoperatively were 62±10 per min and 105±15 mmHg systolic, 68±9 mmHg diastolic respectively. Epidural was continued for 4 consecutive days postoperatively. Total duration of surgery for left knee was 1 hr 45 min and it was 1 hr 35 min for the right knee.

The sensory level following SAB was at T8-T10 level before surgery started. When the level was found below T10, top ups with epidural 0.25% bupivacaine were carried out. The addition started in this case after 120 mins. Patient was sedated with inj. Midazolam 0.1 mg/kg and was arousable on verbal command in between.

Discussion
The prognostic outcome of cardiovascular status under GA + regional Vs sole regional anaesthesia for TKR is the same[1]. Patients who have TKR with epidural anaesthesia have been shown by Sharrock et al to have fewer Perioperative thromboembolic complications than when only GA was used.

Correspondence
Dr. Babu Raja Shrestha
Department of Anaesthesiology and Critical Care,
Kathmandu Medical College, Sinamangal, Kathmandu

The overall rate of DVT decreased from 64% with GA to 48% with epidural anaesthesia and the rate of proximal thrombi decreased from 9% to 4%. Beside this, the sole regional anaesthesia has added advantages, like it avoids the possible complications of GA and this makes patient monitoring efficient as certain symptoms may be detected earlier when patient remain awake intraoperatively. DVT and pulmonary thromboembolism is one of the recognized postoperative complications of TKR[2,6].

The incidence of thromboembolism may be further increased in bilateral TKR. Dorr et al found a 12% prevalence of fat embolism syndrome with simultaneous bilateral TKR, as documented by neurological changes with hypoxemia (PO_2 < 50 mmHg)[3].

In the retrospective review done by Pavone V, Johnson T, Sanlog Ps et al[4], 1002 TKR were done under regional anaesthesia. The different complications encountered during Perioperative period were arrythmias (5%),congestive heart failure (0.2%), lower extremity deep vein thrombosis (13%), fat embolism (3%), pulmonary embolism (0.4%),acute renal failure (0.4%). So selection of patients, surgical procedure, comorbidities and anaesthetic plan needs to be discussed preoperatively for individual patients.

Cazeneuve JF, Berlemont D et al reported 60 cases of ASA I (15 cases TKR , 45 cases THR) who had CSE for the surgery and reported efficient Perioperative analgesia , early mobilization and better functional results[5].

Use of opioids narcotics well controls the postoperative pain but it delays early ambulation due to sedation and may cause respiratory problems.

NSAIDs are also usually prescribed but in extensive surgery like TKR, higher doses and frequent aliquots of the drugs limit its uses in elderly population due to its effect of renal impairment.

Use of epidurals in TKR has become a popular practice world wide. The significance is obviously still higher when both knees are artificially replaced in single sitting one after another. Well managed epidural service takes control over the pain effectively and efficiently. The patient was infused with LA + pethidine epidurally via syringe pump. This helped in ambulation and physiotherapy right from the 2nd postoperative day.

The mortality from DVT in TKR is reduced following epidural in recent years.

The advantages of epidural in TKR are:

1. Effective postoperative pain control.
2. Walking epidural hastens early physiotherapy and ambulation.
3. Epidural changes rheology of blood and decreases the platelets aggregations thereby reduces DVT and thromboembolism.

Conclusion

Well managed epidural has gained popularity amongst orthopaedic surgeons who have done specialization in the field of total knee arthroplasty. Epidural manage Perioperative pain effectively, helps to decrease mortality from thromboembolism postoperatively and hasten early mobilization of the patients.

Acknowledgements

Sincere gratitude to the patient and her whole family for enjoying the painless postoperative days with epidurals and appreciating the role of anaesthesia service.

Reference

1. Sharrock NE, Haas SB, Hargett MJ et al: Effects of epidural Anaesthesia on the incidence of deep vein thrombosis after total knee replacement, J Bone Joint Surg 73-A 502, 1991.
2. Sharrock NE, Hargett MJ, Urquhart B et al: Factors affecting DVT rate following Total Knee Replacement under epidural Anaesthesia J Arthroplasty: 8:133, 1993.
3. Dorr LD, Boiardo RA: Technical Consideration in Total Knee Replacement, Clin Ortho 205: 153, 1986.
4. Pavone V , Johnson T et al :Clin Orthop.2004 April;(421):155-61,Perioperative morbidity in bilateral one-stage TKR.
5. Cazeneuve JF , Berlemont D and Pouilly A. : Rev chir Orthp Reparatrice Appar Mot. 1996 ,82(8) 705-8.
6. Montilla CB, Harlocker TT et al, Frequency for Pulmonary embolism,Deep vein thrombosis following hip or total knee arthroplasty Anesthesiology,2002 May,96(50):1140-6.