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Local infiltration anesthesia (LIA) and novel technique for effective pain relief following elective primary hip and knee replacement: Innovative study

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Aims & Objectives: In this study we report on our experience using LIA (Local Infiltration Anesthetic) in addition to the Novel Technique and Proprietary NM developed in Leeds-Bradford and infiltrated at 4-5mls/hour for 48 hours post surgery.

Materials & Methods: Between October 2013 and October 2015, 62 patients undergoing primary total knee replacements (TKR) were prospectively followed up. 3 groups of patients were studied. All patients studied had spinal anesthesia (SA) with 300-400mcg diamorphine. Group 1: GA. No LIA and no NM, 20 patients. Group 2: SA plus NM for 48 hours post operatively with catheter placed anteriorly under the patella, 21 patients. Group 3: SA plus LIA plus NM for 48 hours post operatively with catheter placed posterior in the knee joint, 21 patients. Between June 2011 and July 2014, 173 consecutive patients undergoing primary total hip replacements (THR) using the posterior approach was also prospectively followed up. Group 1: GA only, 31 patients, Group 2: SA only, 37 patients, Group 3: SA plus LIA1 only, 38 patients, Group 4: SA plus LIA2 only, 34 patients, Group 5: SA plus NM for 48 hours, 33 patients. Demographics reveal similar distribution between the two groups in terms of age and sex.

Results & Complications: The patients without LIA or NM required more morphine in the first 12 hours postoperative period than the other groups. 70% (n=14) of these group 1 patients required 10mg morphine following TKR compared to only 2% (n=1) of patients requiring 10mg of morphine when LIA and NM were used. The increased morphine requirement continued for 48 hours postoperatively in group 1, whereas none of the patients in groups 2 or 3 required morphine after 36 hours. Statistical analysis revealed no difference of morphine requirements with different catheter placement. Fewer patients suffered from nausea and vomiting or urinary retention in the group with LIA and NM (p-value <0.05, Mann-Whitney test). There were no infections DVT or other complications in any of the groups.

Conclusion: This study demonstrates that patients following TKR treated with LIA and NM after 48 hours required significantly less morphine during this time. This benefit was most marked in the first 24 hours after surgery and the benefit was maintained for 48 hours. Fewer patients required opiate analgesia when LIA plus NM was used compared to the other groups. The highest significance was at 0-12 hrs for patients requiring up to 20mg morphine usage ($\chi^2(2) = 46.713$, $p=0.000$); and 0-12hrs for patients requiring 30mg morphine usage ($\chi^2(2) = 46.310$, $p=0.000$).

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