Early Mobilisation and Limiting Factors in Patients Undergoing Total Knee Replacement Surgery

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INTRODUCTION
A strong evidence base demonstrates that early mobilisation on day 1 after total knee replacement (TKR) significantly improves short and long term outcomes. To assist quick postoperative recovery and regain of function, ideal analgesia should provide adequate pain control, preserve motor strength to allow mobilisation, as well as minimise opioid requirement and side effects. As nerve blocks may still be active on the day after surgery, it is hypothesised that sensation and strength could be impaired and therefore negatively affect patients’ ability to mobilise.

AIMS
• Assess the incidence of early mobilisation among our TKR patients
• Identify factors which may impair early mobilisation
• Assess the impact of nerve blocks on early mobilisation

METHODS
Retrospective audit of all patients undergoing TKR in a two year period (1/07/2013 to 30/06/2015) at Lyell McEwin Hospital (LMH) via case note review. Recorded data included demographics, type of anaesthetic/nerve block, early mobilisation (defined as a minimum of sitting out of bed on day 1), primary reason/s for limitation if failed early mobilisation, day on which patient mobilised if not day 1.

The audit was approved by the Royal Adelaide Hospital Human Research Ethics Committee (Reference Number Q20151003).

Statistical analysis: Categorical and binary measures were summarised as proportions with stratification by early mobilisation and assessed using Pearson’s chi-squared test. Age was summarised using means with standard deviations and assessed using the Wilcoxon (Mann-Whitney) test. The effect of type of nerve block on early mobilisation was assessed in the subgroup of patients who had received a nerve block.

RESULTS

<table>
<thead>
<tr>
<th>Cases with peripheral nerve block</th>
<th>Cases without peripheral nerve block</th>
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</thead>
<tbody>
<tr>
<td>Type of block</td>
<td>Total Early mobilisation (n)</td>
</tr>
<tr>
<td>FNB</td>
<td>89</td>
</tr>
<tr>
<td>Adductor Canal block</td>
<td>30</td>
</tr>
<tr>
<td>FNB and Sciatic Fascia iliaca</td>
<td>8</td>
</tr>
<tr>
<td>Sciatic</td>
<td>2</td>
</tr>
<tr>
<td>FNB, sciatic and fascia iliaca</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
</tr>
</tbody>
</table>

Early mobilisation was achieved in 116 patients. This did not vary according to age (p=0.675), gender (p=0.270) or side of surgery (p=0.651).

There was no significant difference (p = 0.998) between the rate of early mobilisation in patients receiving peripheral nerve blocks (91 out 131) (69.5%) and patients who did not receive peripheral nerve blocks (25 out of 36) (69.4%).

Peripheral nerve blocks were used in 131 cases. These patients did not differ from the remaining patients with respect to age (p=0.749), gender (p=0.168) or side of surgery (p=0.837).

There was no significant difference (p = 0.621) between the rate of early mobilisation in patients receiving femoral nerve blocks (FNB) alone (61 out 89) (68.5%) and patients who received adductor canal blocks (22 out of 30) (73.3%).

Of the 51 patients who did not achieve mobilisation on postoperative day 1, the mean time at which mobilisation was achieved was 2.25 days. Primary reasons for failure of early mobilisation are shown on the pie chart (more than one reason recorded for some patients).

DISCUSSION
The overall rate of early mobilisation (around 70%) is similar to that found by previous audit conducted at the same hospital.

The most frequent reasons for lack of early mobilisation were dizziness, nausea and pain. We hypothesise that early mobilisation could be improved through early identification of issues, and targeted use of antiemetics and analgesics where required.

While studies have shown that adductor canal block results in less quadriiceps weakness after surgery we propose that the difference is not functionally significant as our results show no significant difference between the effect of FNB and adductor canal block on early mobilisation.

Pain was a primary factor in preventing early mobilisation for 10 patients. Ideally we would like to conduct further analysis to establish whether there was a significantly smaller amount of analgesia received by patients whose mobilisation was limited by pain.

While there were only two cases involving local infiltration analgesia (LIA) in our audit, LIA has gained recent popularity and has shown early promise as a method of analgesia following TKR. Its benefits include relative simplicity compared with other regional anaesthesia techniques and its proponents suggest that LIA may allow earlier ambulation than with FNB. With the increasing use of LIA, more data will be available allowing comparison with regional analgesia, enabling us to establish which technique produces superior outcomes.

CONCLUSION
• No effect of age, gender, side of surgery or use of peripheral nerve block as a predictor of early mobilisation
• FNB and adductor canal nerve blocks had similar effect on early mobilisation

REFERENCES