BLOOD LOSS REDUCED DURING HIP ARTHROPLASTY  
BY LUMBAR PLEXUS BLOCK 

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We measured the blood loss during and after hip replacement in two groups of women, each consisting of 10 patients. In one group the lumbar plexus was infiltrated with bupivacaine, in the other it was not. The group in whom the plexus was blocked had significantly less blood loss.

Blood loss during total hip replacement may be reduced by spinal anaesthesia (Sculco and Ranawat 1975), by hypotension (Nelson and Bowen 1986) and by lumbar epidural anaesthesia (Modig and Karlstrom 1987). The purpose of this study was to see if this reduction was also possible with the simpler procedure of a lumbar plexus block.

PATIENTS AND METHODS

In a prospective study we assessed the effect of a lumbar plexus block on blood loss in 20 women undergoing cemented primary total hip replacement. The indication for operation in all cases was osteoarthritis. All patients had normotensive general anaesthesia and 10 were randomly allocated to have a lumbar plexus block as well.

We employed the technique of Chayen, Nathan and Chayen (1976). With the patient in the lateral position a 15 cm, 20-gauge spinal needle attached to a 20 ml syringe containing air is inserted perpendicular to the skin 3 cm distal and 5 cm lateral to the spinous process of L4. On encountering the transverse process of L5, the needle is pointed slightly proximally and advanced through quadratus lumborum until there is a lack of resistance on lightly tapping the plunger. The needle tip is then within the iliac compartment; aspiration confirms that it is not within a vessel. Then, 20 ml of air is injected to dilate the space followed by 0.42 ml/kg of 0.375% bupivacaine. The procedure takes between three and five minutes to perform.

Perioperative blood loss was measured by weighing swabs and measuring the blood collected in the suction bottle. Postoperative blood loss was measured when the suction drains were removed after 24 hours. Both components of the hip prosthesis were cemented in all patients.

The results were analysed using Student’s t-test.

RESULTS

There was no significant difference between the mean ages and weights of the two groups. The average time from induction of anaesthesia to skin closure, including the time taken to perform the block, was 11 minutes shorter in the blocked group, but this was not statistically significant.

The mean blood loss in the two groups is shown in Table I.

DISCUSSION

Lumbar plexus block was used as an analgesic technique and was found to reduce operative blood loss, so that routine blood transfusion was not required. We found this block simple to administer; its effectiveness compares favourably with that of other techniques (Table II).

<p>| Table I. Mean blood loss (ml ± s.d.) |</p>
<table>
<thead>
<tr>
<th>Block</th>
<th>No block</th>
</tr>
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<tbody>
<tr>
<td>Perioperative</td>
<td>310 (±81)</td>
</tr>
<tr>
<td>Postoperative</td>
<td>402 (±185)</td>
</tr>
<tr>
<td>Total</td>
<td>712 (±199)</td>
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</tbody>
</table>

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**Table II.** Reduction in blood loss obtained by various anaesthetic techniques compared with normotensive anaesthesia (per cent)

<table>
<thead>
<tr>
<th>Technique</th>
<th>Reduction Peroperative</th>
<th>Reduction Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal anaesthesia (Sculco and Ranawat 1975)</td>
<td>46</td>
<td>39</td>
</tr>
<tr>
<td>Hypotension (Nelson and Bowen 1986)</td>
<td>43</td>
<td>29</td>
</tr>
<tr>
<td>Epidural anaesthesia (Modig and Karlstrom 1987)</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Lumbar plexus block (Twyman, Kirwan and Fennelly 1990)</td>
<td>49</td>
<td>34</td>
</tr>
</tbody>
</table>

The technique requires no more monitoring equipment than is needed for normotensive anaesthesia. In particular, neither arterial lines nor bladder catheterisation are required, both of which have been advocated for hypotensive anaesthesia. There were no complications associated with the technique in our study.

The reduction in blood loss observed during epidural anaesthesia is due to sympathetic blockade, which produces a reduction in vascular tone and in intraluminal pressure, both on the arterial and venous sides of the circulation (Modig and Karlstrom 1987). In our patients we regularly noted that the temperature of the foot on the blocked side was 1.5°C warmer than on the other side, suggesting that a similar mechanism is responsible for the decrease in blood loss in our cases.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

**REFERENCES**


