

The control of pain after Keller's procedure—a controlled double blind prospective trial with local anaesthetic and placebo

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Key words: POSTOPERATIVE PAIN; HALLUX VALGUS; ARTHROPLASTY

Summary

In patients undergoing bilateral Keller's arthroplasty the effect of injecting a long acting local anaesthetic into the pseudoarthrosis immediately after skin closure was compared to placebo into the other side in twenty patients. In a controlled double blind prospective trial, local anaesthetic proved to provide significantly better analgesia than the placebo and gave a lasting pain free interval. This procedure was simple, safe, inexpensive and free from complications.

Introduction

The Keller's procedure (1) is a common orthopaedic operation invariably painful postoperatively particularly in the first 24 hours. In an attempt to abolish or reduce pain and discomfort a long acting local anaesthetic was injected into the pseudoarthrosis and compared with the instillation of placebo into the opposite foot. In addition intramuscular Omnipon[®] was prescribed as necessary for pain. This paper evaluates the effectiveness of local anaesthetic in the control of postoperative pain by means of a double blind controlled prospective trial.

Technique and assessment

Following wound closure in two layers (interrupted plain catgut to the subcutaneous layer and subcuticular continuous proline to skin) and before the release of the tourniquet, 5 ml of 0.5% plain bupivacaine (Marcain) were injected into the pseudoarthrosis. A similar volume of solution of normal saline BPC was injected into the opposite pseudoarthrosis. A melolin and wool and crepe dressing was applied and the tourniquet released.

The solutions for injection were drawn up by the scrub nurse under the supervision of the anaesthetist (JD) and handed to the surgeon (KP) for injection into the pseudoarthrosis. Only the anaesthetist knew which side received the local anaesthetic and which side the placebo. During the postoperative day all patients were assessed by the surgeon

at 4, 8, 12 and 24 hours postoperatively. Pain was graded according to severity as None, Mild, Moderate and Severe, as described by Dinley and Dickson (2).

Kirschner wires if used to stabilise the toe postoperatively were used bilaterally. In addition Omnipon[®] was prescribed for pain in a weight related dosage (0.3 mg/kg). All patients were given diazepam as premedication and all received the same type of narcotic free anaesthetic. Ninety-five per cent of patients received Omnipon[®] within 4 hours of the operation for pain in the placebo instilled foot.

Results

The average pain free interval in the bupivacaine group was 11.5 hours (range 4–14 hours). Statistical analysis of the results by the Kolmogorov–Smirnov method concludes that bupivacaine results in less pain at 4 and 8 hours ($P < 0.01$ in both groups). The results at 12 and 24 hours were not significant. There were no side effects or complications and no wound breakdown (Fig. 1).

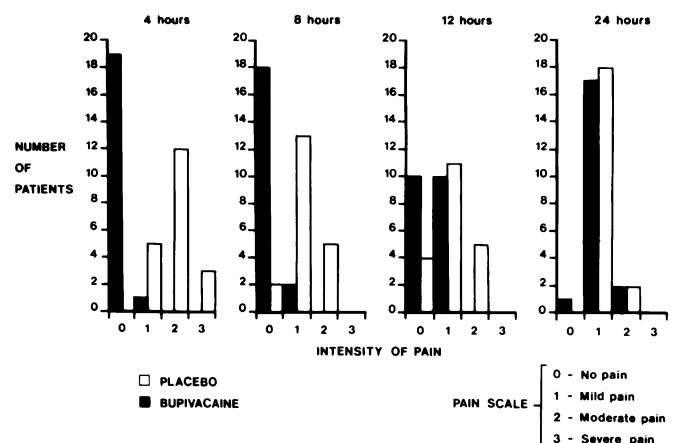


FIG. 1 Intensity of pain in bupivacaine and placebo groups

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Discussion

By restricting the investigation to bilateral cases, the side infiltrated with bupivacaine could be compared with the opposite side infiltrated with placebo which acted as a control. A clear advantage for the injection of Marcain, free from the effects of patient variability and other factors known to affect postoperative pain, was demonstrated. The Omnopon[®] prescribed is considered to contribute the same analgesic effect bilaterally, therefore any background difference between each foot is due to the effect of the local anaesthetic.

The pain free interval on the Marcain infiltrated side lasted an average of 11.5 hours, and is similar to that of 11.2 hours reported by Dinley (2) in unilateral cases without controls or placebo injection.

The procedure is safe, free from complications and inexpensive. Importantly, patients wake up free from pain and the effect is relatively long lasting.

The authors wish to acknowledge the help and advice given by Mr M H M Harrison, FRCS, in the preparation of this paper and, in particular, the opportunity to use his patients.

References

- 1 Keller WL. Further observation on the surgical treatment of hallux valgus and bunion. *N York Med J* 1912;95:696-8.
- 2 Dinley J Dickson R. The control of pain after Keller's operation by the instillation of local anaesthetic before closure. *J Bone Joint Surg [Br]* 1976;58:356-8.

Professor Rutherford Morison — 1853 – 1939

Rutherford Morison learnt his surgery during the dawn of the antiseptic era and when he was a resident in the Royal Infirmary, Edinburgh, Joseph Lister was in charge of the neighbouring ward. Rutherford Morison was the eldest son of a very respected general practitioner in the Durham village of Hutton Henry who unfortunately died of typhoid at the early age of 36. Life was therefore hard for young Rutherford Morison who graduated in medicine from Edinburgh at the age of 21.

Morison returned to County Durham and went into general practice in Hartlepool in 1875 and by 1888 he had built up a large practice and an outstanding reputation.

He then moved to the Royal Victoria Infirmary in Newcastle-upon-Tyne to practice surgery and encountered fierce opposition, but success came his way by his force of character, merit and devotion to his patients and he was soon appointed Professor of Surgery in the University of Durham.

Morison became an international figure not only for his dexterity but because of his interest in research and pathology and as a forceful teacher. It has been truly said of him that his surgical thinking was 20 years ahead of his time.

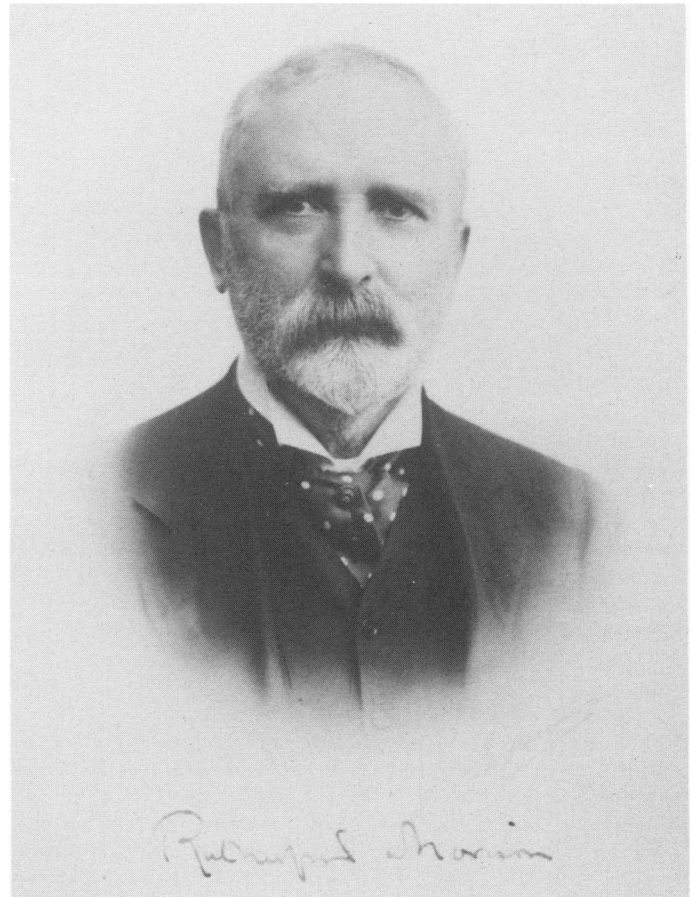
It is as the inventor of 'BIPP' that Morison's name will always be remembered as he strove with his mixture of bismuth, iodine and paraffin to establish the principle of being able to treat a dirty wound and suture it successfully without drainage.

His name lingers in a lower abdominal incision to improve access and in an anatomical pouch in the abdomen of considerable practical significance.

A browse through the early issues of the *British Journal of Surgery* show that before the turn of the century he had tried omentopexy for ascites due to cirrhosis and he was raising free skin flaps for primary cover of injured extremities.

Morison was a great teacher full of fun and audacity and many of his famous quips and aphorisms linger on today. He produced a number of outstanding surgical textbooks, the best known of which is his *Introduction to Surgery* which makes still fascinating reading.

He retired from the staff of the Royal Victoria Infirmary and the Chair of Surgery in the University of Durham in 1914 having gathered around himself outstanding young surgeons for the future such as Grey Turner, Charles Saint and Hamilton Drummond. Morison had a happy retirement farming and fishing in the Scottish borders until his death in 1939.



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