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ORIGINAL ARTICLE

ACUPUNCTURE ANAESTHESIA IN INGUINAL HERNIA REPAIR

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Background: The present study was undertaken to evaluate the efficacy of acupuncture anaesthesia in inguinal hernia repair.
Methods: Twelve patients with non-recurrent inguinal hernia had Lichtenstein mesh repair under acupuncture anaesthesia. Selected acupuncture loci were stimulated with fine needles connected to low frequency current. Supplementary local anaesthetic was given when required.
Results: Four (33%) patients reported satisfactory analgesic effect throughout the operation without need for additional medication, eight (67%) patients experienced mild discomfort during the operation requiring 1–4 mL of 1% lignocaine injection. Blood pressure and heart rate were stable during the procedure. All patients were able to sit up and resume their diet immediately postoperatively. All but one patient were discharged on day one after the procedure, with no early or late complications reported. Most patients were satisfied with the analgesic effect of acupuncture anaesthesia.
Conclusions: Acupuncture anaesthesia is a feasible anaesthetic option. It reduces the amount of local anaesthetic required, and thus the associated potential complications. It is effective in pain relief and inhibiting gastrointestinal upset. Postoperative recovery was rapid and complication free.

Key words: acupuncture anaesthesia, inguinal hernia.

INTRODUCTION

Acupuncture is an important component of traditional Chinese medicine. It is estimated to have been used in China for more than 3500 years. It works by stimulating special points (acupoints) on the body, usually by insertion of fine needles.

In Western countries, acupuncture is widely practiced as a therapeutic intervention, and also for pain relief as an adjunct therapy to pain management.[1,2] The World Health Organization has listed more than 40 conditions that can be successfully treated with acupuncture.[3] Theoretically acupuncture can decrease the traction pain of the gastrointestinal tract and spermatic cord upon stimulation of certain acupoints over the body.

Acupuncture has been studied and used as an anaesthetic technique in selected surgical procedures in China since 1958. The technique elevates the pain threshold sufficiently to allow surgery to be carried out on conscious subjects. It has been successfully applied in thyroid surgery,[4] abdominal surgery (e.g. appendicectomy[5] and caesarean section[6,7]), thoracotomy, intracranial operations, orthopaedic procedures and dental operations.[7] The technique is used routinely in China for procedures, such as, operations on the head and neck, in neurosurgery and for removal of thyroid adenoma. Two studies in China, comparing the analgesic effect of acupuncture and epidural anaesthesia for herniorrhaphy, demonstrated satisfactory pain relief under acupuncture anaesthesia.[8,9] In 1973, Kao *et al*. also reported two herniorrhaphy operations successfully carried out with acupuncture anaesthesia.[10] This has led to the present study on the evaluation of acupuncture anaesthesia for hernia repair.

METHODS

From February to June 2001, 12 patients aged 22–85 years with unilateral, non-recurrent inguinal hernia underwent herniorrhaphy under acupuncture anaesthesia. Acupuncture procedures were manipulated by the same surgeon who was trained in traditional Chinese medicine and acupuncture. The operations were carried out by experienced surgeons using the Lichtenstein method with Prolene mesh, preserving the ilioinguinal nerve.

Patients were premedicated with 25 mg intravenous pethidine and 5 mg diazepam 5 min before induction of acupuncture anaesthesia.

The acupuncture loci used were Zusanli (ST 36), Sanyinjiao (SP 6), Wushu (GB 27), Weidao (GB 28), Qixue (KI 13) and Siman (KI l4) on the same side as the hernia (Table 1, Fig. 1). One centimetre long fine acupuncture needles were used at these acupoints. Another two 3 cm long paraincisional needles were used along the planned incision site. The needles were electrically stimulated with 4 Hz current using a model G6805-II stimulator (Hua Yi Electronic Instruments Factory, Shanghai, China). The intensity of stimulation was adjusted to each patient's tolerance, and electrowaves were alternated between continuous and intermittent every 5 min. The induction time of anaesthesia was 15 min. Analgesia in the groin region was confirmed by means of pin-prick. The groin region acupuncture needles were then removed and the operation started. Stimulation over the remaining two needles on SP 6 and ST 36 continued until the end of the procedure.

At any time during the procedure, local injection of a small amount of 1% lignocaine was given on demand to those patients who complained of pain or traction discomfort.

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Table 1. Localization of acupoints used for inguinal hernia repair

WHO nomenclature	Traditional name	Anatomical landmarks
SP 6	Sanyinjiao	Three finger breadths above medial malleolus
ST 36	Zusanli	Three finger breadths below the lateral lower border of patella
GB 27	Wushu	0.5 cm medial to anterior superior iliac spine
GB 28	Weidao	0.5 cm medial and inferior to GB 27
KI 13	Qixue	0.5 cm lateral to midline and three finger breadths below umbilicus
KI 14	Siman	One finger breadth superior to KI 13

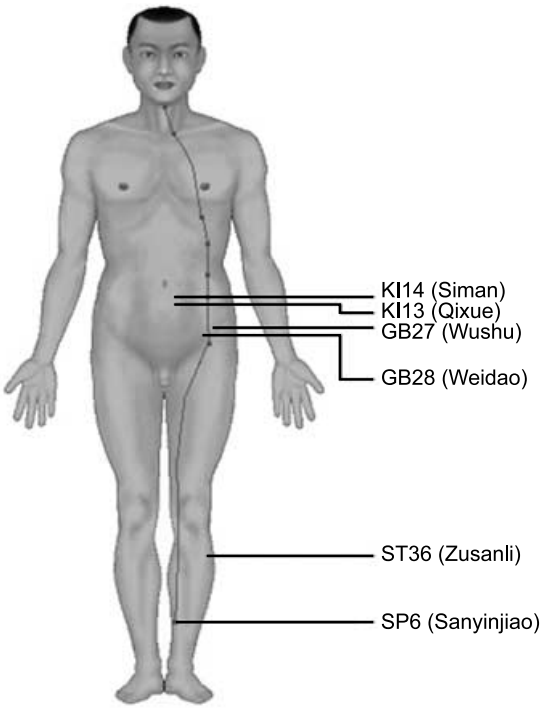

Fig. 1. Demonstration of acupoints used for anaesthesia in inguinal hernia repair.

Outcome measures included:

(1) Highest pain score obtained during surgery, using a 10 cm visual-analogue scale of 0 (no pain) to 10 (unbearable pain).

(2) Blood pressure and pulse rate monitored throughout the operation.

(3) Postoperative analgesic requirement recorded, including the time of first dose, and total analgesic requirement.

(4) Specific early postoperative complications recorded, including urinary retention, scrotal haematoma, and wound complications.

(5) Length of hospital stay.

(6) All patients were reviewed in our out-patient clinic 8 weeks after the operation, they were asked to evaluate the anaesthetic technique as good, satisfactory, sufficient or bad. The incidence of any complications was also noted.

Table 2. Overall assessment of the anaesthetic technique used as judged by patients

Anaesthetic technique	No. responses
Good	9
Satisfactory	3
Sufficient	0
Bad	0

Informed consent was obtained from the patients and the study protocol was approved by the ethics committee of the United Christian Hospital, Hong Kong.

RESULTS

All patients were male with a mean age of 60 years (SD, 16 years). Seven hernias (58%) were left sided, and eight (67%) were indirect. The mean operative time was 46 min (SD, 13 min). All the subjects were alert and cooperative. No patient complained of pain during induction of acupuncture anaesthesia and at the time of incision. Four patients (33%) did not experience any pain or discomfort throughout the entire procedure, no additional medication was required. Eight patients (67%) experienced a variable degree of pain and traction discomfort during dissection of the hernia sac and fixation of Prolene mesh. This was alleviated after local injection of 1% lignocaine, the mean volume of lignocaine given was 1.4 mL (SD, 1.4 mL; i.e. 14 mg). The median highest pain score obtained during the operation was 2.25 (interquartile range, 1.63–2.50). No patient complained of abdominal discomfort or gastrointestinal symptoms during surgery. Blood pressure and heart rate were stable throughout the operation. All patients were able to sit up and resume their normal dietary habits immediately after the procedure, with no reported complications.

All patients started to feel pain at 4–6 h after operation (mean, 4.8 h; SD, 0.8 h), when the first dose of oral analgesic was given (dextropropoxyphene napsylate 32 mg tablet). The postoperative courses were uneventful, and 11 patients (92%) were discharged on day one. The mean total analgesic requirement was 224 mg (SD, 65.4 mg).

All patients were interviewed 8 weeks after the operation and the majority of patients were satisfied with the analgesic effect of acupuncture anaesthesia. The overall assessment of the anaesthetic technique by the patients is shown in Table 2. No delayed complication or recurrence was reported at 8 weeks.

DISCUSSION

Inguinal hernia is a common surgical problem and often occurs in the elderly. When determining the choice of anaesthetic technique in elective inguinal herniorrhaphy, a comparative study demonstrated that the satisfaction ratings were equal among local, general and spinal anaesthesia.[11] The highest complication rates occurred in the spinal anaesthesia group, while local anaesthesia had the lowest complication rate in those aged > 65 years and those with concomitant illnesses.[11] This is why Lichtenstein mesh repair under local anaesthesia is well established and accepted worldwide, especially among elderly patients.

In some centres, hernia repair is a day procedure, however, there are certain disadvantages of carrying out herniorrhaphy under local anaesthesia including:

(1) Undue irritation to the patients with poor muscle relaxation.

(2) Pain and traction discomfort during dissection of the hernia sac from the spermatic cord.

(3) Abdominal discomfort and gastrointestinal symptoms during dissection and reduction of the hernia contents, especially in a large chronic hernia sac with viscera inside.

(4) A theoretical risk of overdose, allergic reaction, and toxicity of the local anaesthetic agent.

(5) The risk of transient femoral nerve palsy complicating preoperative ilioinguinal nerve blockade.[12]

Acupuncture anaesthesia is a feasible anaesthetic technique, it can achieve a satisfactory analgesic effect without any side-effect. Additional drugs were required in the present series, but the amounts used were very small compared to our usual requirement of 100–150 mg lignocaine when hernia repair was carried out under local anaesthesia. It also effectively inhibited abdominal discomfort and gastrointestinal symptoms during the procedure. No complications were reported intraoperatively or postoperatively. Early mobilization and normal bladder function were achieved. Acupuncture anaesthesia was well accepted in our series, with a high overall satisfaction score. However, acupuncture anaesthesia is a technically demanding procedure that requires a trained doctor with knowledge in traditional Chinese medicine and acupuncture techniques. The present study has shown that it is possible to carry out hernia repair under acupuncture anaesthesia. However, it is important that patients are aware of, and accept, the fact that analgesia may not be complete throughout the entire procedure. Also the surgeon must be prepared to give supplementary local anaesthetic when required.

CONCLUSIONS

Acupuncture anaesthesia is a feasible anaesthetic option. It reduces the amount of local anaesthetic required, and thus the associated potential complications. Although technically demanding, acupuncture anaesthesia is effective in pain relief and control of gastrointestinal symptoms during the inguinal hernia repair with no side-effects or complications reported.

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