

INTRATUNICAL INSTILLATION OF BUPIVACAINE AND METHYLPREDNISOLONE FOR RELIEF OF SCROTAL PAIN AND SWELLING FROM TESE OR MESA

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ABSTRACT

Objective: Scrotal pain and swelling due to surgical sperm retrieval procedures and peritesticular fibrosis, as a problem of late term, create significant morbidity in the postoperative life of patients and affect possible future sperm retrieval procedures.

Methods: Thirty-one patients received NSAIDS postoperatively by IM (intramuscular) route without local anaesthetic agent and/or corticosteroid instillation around the testicles before closure of the tunica vaginalis-control group-. No NSAIDS were given to the remaining 34 patients in whom 2.5 ml of 0.5% bupivacaine combined with 10 mg/ml. methylprednisolone were introduced before closing of the tunica vaginalis. The mean pain scale scores and duration of painless period after surgery between the two groups were evaluated.

Results: The mean pain score difference was not statistically significant just after surgery between the two groups ($p>0.05$), while the differences were significant for 2 and 4 hours after surgery ($p<0.05$ and $p<0.01$). The mean duration of pain free interval (hours) after the procedure was 47.8 ± 16.9 (12-72) hours in the intratunical instilled group patients, and 10

(29%) and 23 (67%) of them were completely free of pain and had no scrotal swelling, respectively. Meanwhile, in the control group, the mean painless period was 9.9 ± 3.6 (4-20) hours, after second NSAID, and 30 of them (97%) had scrotal swelling, postoperatively.

Conclusion: This study confirms that direct intratunical instillation of bupivacaine and methylprednisolone around the testis reduces postoperative pain, scrotal swelling and peritesticular fibrosis. Controlling of post surgical scrotal pain and edema results in more rapid return to daily activities and work.

Key Words: ICSI, Pain, Scrotum, Surgical sperm retrieval, Testis

INTRODUCTION

Testicular sperm extraction (TESE) and microepididymal sperm aspiration (MESA) have become important sperm harvesting procedures during intracytoplasmic sperm injection (ICSI) in azoospermic male patients. These scrotal procedures are usually performed in the outpatient setting, which can be distressing for the patient and also his spouse who could be a

candidate for embryo transfer in 48 to 72 hours. Secondly, in spite of analgesic therapy, severe scrotal pain after this procedure may delay discharging the patient from the ambulatory care unit. Finally, scrotal pain and swelling which depend upon the surgical intervention (more tunical incisions are required for severe hypospermatogenesis) may continue for 5 to 7 days postoperatively affecting the quality of life and creating significant morbidity at home.

The nerve supply to the testis and the tunica albuginea is derived from the sympathetic autonomic plexus via the T10-12 nerve roots, which is difficult to interrupt with regional block (1). In addition, scrotal surgery usually results in moderate to severe scrotal swelling. The edema may take in a couple of weeks to resolve in spite of anti-inflammatory medication. On the other hand, peritesticular fibrosis, usually observed in patients after even minimal scrotal surgery and even with improved quality of suture materials has negative effects for further TESE or MESA procedures. Thus we determined the effect of local instillation of a combination of bupivacaine and methylprednisolone into the tunical vaginal space surrounding one or two testicles in patients undergoing uni- or bi-lateral testicular sperm extraction or epididymal sperm aspiration.

MATERIAL AND METHODS

A total of 65 azoospermic male patients (mean age: 34.87 ± 4.23 years) enrolled in this study who underwent scrotal exploration with uni- or bi-lateral TESE or MESA. Standard general anaesthetic technique was used in all patients.

Thirty-one patients received NSAIDS postoperatively by IM (intramuscular) route without local anaesthetic agent and/or corticosteroid instillation around the testicles before closure of the tunica vaginalis-control group-. No NSAIDS were given to the remaining 34 patients in whom 2.5 ml of 0.5% bupivacaine combined with 10mg/ml. methylprednisolone were introduced before closing of the tunica vaginalis. Non-absorbable suture (5/0 prolene) was used for tunica albuginea and tunica vaginalis repair during the TESE procedure. Absorbable suture material (4/0 chromic catgut) was used for closing the subcutaneous fascia and skin in both group patients.

The degree of postoperative pain was evaluated in all patients in both groups using a visual analogue pain score, with a recording of the location and description of pain (range from 0 to a maximum of 10). The assessment was performed in the immediate postoperative period as soon as the patient could respond to questioning, and repeated 2 and 4 hours later. The degree and duration of scrotal pain was determined on postoperative controls (postoperative 2nd and 7th days). If there was severe pain after 4th hours, we performed a second dose of NSAID with IM route. Scrotal swelling and wound healing were noted during this period, as well. Informed consent was obtained before procedure from all participants in whom intratunical instillations were performed. Men unwilling or unable to give informed consent were included in the plain pre- and post-operative pain treatment group as control patients. Men were excluded from the study who had taken an experimental drug less than six weeks before undergoing surgery or had a history of orchioepididymitis or had had previous scrotal surgery.

A student's-t test was performed between the two groups for statistical analysis to observe the mean pain scale scores and duration of painless period after surgery.

RESULTS

The mean pain scores in control group patients were 1.87 ± 0.99 , 4.48 ± 0.96 and 5.03 ± 0.79 for immediately after, 2 and 4 hours after surgery, whereas these scores were 1.03 ± 0.67 , 1.18 ± 0.76 and 2.05 ± 0.85 in the intratunical instilled group, respectively (Fig 1). The mean pain score difference was not statistically significant just after surgery between the two groups ($p > 0.05$) while the differences were significant for 2 and 4 hours after surgery ($p < 0.05$ and $p < 0.01$). The mean duration of pain free interval (hours) after the procedure was 47.8 ± 16.9 (12-72) hours in the intratunical instilled group of patients, and 10 (29%) and 23 (67%) patients were completely free of pain and had no scrotal swelling, respectively. Meanwhile, in the control group, all patients required a second dose of NSAID injection due to increased pain score. The mean painless period was 9.9 ± 3.6 (4-20) hours, after

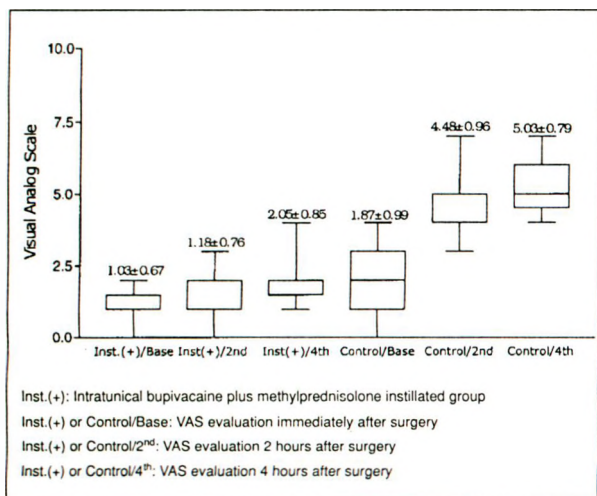


Fig. 1 : The mean values of “Visual Analogue Pain Score” of each group immediately, 2nd and 4th hours after surgery.

second dose, and 30 patients (97%) had scrotal swelling, postoperatively. The postoperative painless period was significantly longer in the intratunical instilled group than controls. (Fig. 2) Neither wound infection nor orchiepididymitis was observed over long term follow-up (1 to 3 months postoperatively) in both groups. There was no wound healing problem in any of the patients, especially in intratunical methylprednisolone instilled patients.

Secondary TESE or MESA procedures were performed in 8 and 10 patients from the control group and intratunical instilled group, respectively. No intratunical, peritesticular or periepididymal fibrosis was observed in the intratunical methylprednisolone instilled group. There was moderate peritesticular and

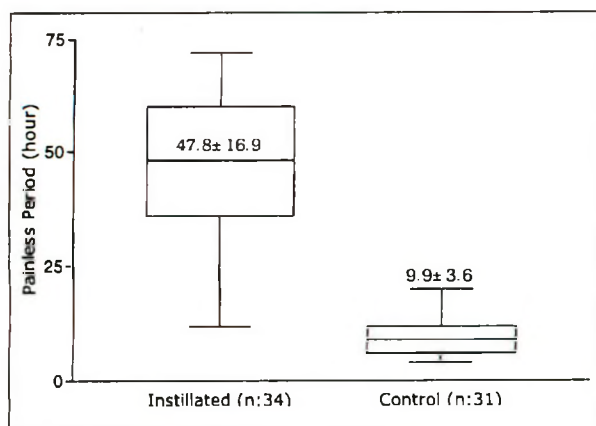


Fig. 2 : The mean pain free interval after intratunical instillation and routine analgesic approach.

periepididymal fibrosis in four patients from the control group and slight peri-inscisional fibrosis in the remaining 4.

DISCUSSION

Recently, new approaches for scrotal pain relief have been under investigation, especially after TESE and MESA, popularized procedures as part of ICSI (2). Because these are out-patient procedures, the pain management becomes more important. Furthermore, pain affecting the male patients might psychologically impact their spouses, candidates for embryo transfer within 48-72 hours. Other important factors are scrotal swelling, and peritesticular and epididymal fibrosis that may develop in the early and late period after scrotal surgery. This fibrosis may lead to chronic scrotal pain and discomfort and affect further TESE and MESA procedures due to a more difficult dissection. It is thought that these side effects of sperm harvesting procedures in azoospermic male patients might be prevented by using intratunical instillation of a combination of local anaesthetic agent and corticosteroid around the testis.

To provide postsurgical pain relief for a variety of surgical procedures, instillation of analgesic agents directly into the operative side is commonly used (3-6). Recently this approach has become popularized in testicular biopsies using intratunical (tunica vaginalis) bupivacaine (7). However, intratunical corticosteroid instillation has not been found in the literature. The literature indicates that using steroid is a safe and effective means of reducing postoperative pain and edema. Studies have shown steroids to delay wound healing, inhibit collagen synthesis and the increase of postoperative infection. But there were no reports of delayed wound or bone healing or increased infection rate in patients in the case where steroid was used preoperatively. In recently published studies, the most common reason for the use of steroids was to decrease edema (8,9). In Citardi's study (10), the effectiveness of intrasinusoidal beclomethasone instillation therapy was mentioned in the treatment of refractory postoperative mucosal edema. A study reported that 47% of the members of The American Society of Maxillofacial Surgeons

utilize short-term, high-dose perioperative corticosteroids to control postoperative inflammation (11). The most common reason for not using steroids perioperatively was perceived a lack of literature supporting their effectiveness (8, 11). Watanuki et al. (12) pointed out that intraoperative administration of large doses of steroids was effective not only in reducing pain but also in relieving postoperative pyrexia in patients who underwent total hip joint or knee joint replacement.

In our series, intratunical instillation of a combination of bupivacaine and methylprednisolone significantly decreases postoperative scrotal pain as opposed to analgesic and anti-inflammatory treatment (4.48 ± 0.96 and 5.03 ± 0.79 vs 1.18 ± 0.76 and 2.05 ± 0.85 for 2 and 4 hours after surgery, respectively; $p < 0.05$). Furthermore, instillation with a combination of local anaesthetic and corticosteroid within the tunical cavity is more effective not only in preventing scrotal swelling but also prolonging postoperative painless period (47.8 ± 16.9 vs. 9.9 ± 3.6 , $p < 0.01$) with no apparent effect upon wound healing and local infection rates.

This study confirms that direct intratunical instillation of bupivacaine and methylprednisolone around the testis reduces postoperative pain, scrotal swelling and peritesticular fibrosis. Controlling of post surgical scrotal pain and edema results in more rapid return to daily activities and work. Intratunical local anaesthetic instillation has been described previously (7), however, we are the first to describe instilling of a combination of local anaesthetic and corticosteroid into the tunica vaginalis around the testis and epididymis. We use a dose of 2.5 ml bupivacaine 0.5% combined with 10mg/ml. methylprednisolone into the peritesticular intra tunica vaginal space. This combination leads to a significant reduction in postoperative pain, scrotal swelling and peritesticular fibrosis associated with testicular or epididymal sperm harvesting procedures.

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