

Surveying the effect of incisional injection of Marcaine on postoperative pain in unilateral inguinal hernia repair at Amir Alam hospital

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Abstract

Purpose: The aim of this study was to evaluate the effect of incisional Marcaine injection after hernia repair and comparing postoperative pain in cases with the controls. **Methods:** The study was carried out in the form of limited clinical trial in patients admitted to Amir Alam hospital for inguinal hernia surgery during the period from 23rd July 2003 to 23rd July 2004. After the surgery, cases received 1mg/kg subcutaneous injection of Marcaine 0.25% at incision site and the controls received the same amount of distilled water. Postoperative pain intensity was measured by the onset and frequency of Pethidine PCA injection. **Findings:** A total of 67 patients (32 cases and 35 controls) were evaluated. The mean age of patients was 42.3±17.2. The mean duration of surgery was 48.8±23.8 minutes in cases and 44.5±26.6 minutes in controls. The mean frequency of administration of Pethidine was 2 times in cases and 1.71 times in controls. The mean elapsed time between the end of surgery and the first injection of Pethidine was 3.07±2.24 hours in cases and 3.1±3.7 hours in controls and in general there is no significant difference between cases and controls in any of the above. **Results:** Subcutaneous injection of Marcaine did not result in a lower postoperative pain and a reduced need for opioids. It seems that the difference is due to the injection site of Marcaine (subcutaneous versus sub facial). **Keywords:** inguinal hernia, postoperative pain, Marcaine, subcutaneous injection.

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inguinal hernia occurs when tissue or part of the intestine pushes through a weak spot in the abdominal wall in the groin area, causing a bulge in the groin or scrotum. If the patients notice that any discoloration in the area of the hernia occurs they need to follow up to the Emergency room immediately. Inguinal hernia repair under general anesthesia by regional or local anesthetics is common. A one-inch incision is made in the groin to approach the hernia. The sac is carefully separated from the spermatic cord vessels and vas deferens and then tied off where it originated from the abdominal cavity. Postoperative pain in these patients is mostly moderate to severe which can leads to delays in discharge.

INTRODUCTION

An inguinal hernia is a common condition, and is the most common surgical operation in childhood. An

Table 1: Frequency of PCA Pethidine administration

| P-Value | Controls 35 members Distilled water | Cases 32 members Marcaine | variable |
|---------------------------|-------------------------------------|---------------------------|--|
| No statically significant | 37±20.3 | 39.1±16.6 | Age (year) |
| Duration of surgery | | | |
| No statically significant | 9 26 44.5±26.6 | 6 26 48.8±23.8 | More than 1 hour Less than 1 hour The mean duration of surgery |

| Frequency of Pethidine administration | | | |
|---------------------------------------|---------|-----------|--|
| | 4 | 3 | 0 |
| | 10 | 7 | 1 |
| No statically significant | 14 | 13 | 2 |
| | 6 | 5 | 3 |
| | 1 | 4 | 4 |
| No statically significant | 1.7 | 2 | Mean frequency of injections |
| No statically significant | 3.1±3.7 | 3.07±2.24 | The mean interval between the end of surgery and the first injection (hours) |

Yet, most of surgeons and patients prefer general anesthesia to local anesthesia and in these cases, it is recommended to prepare for prevention and treatment of postoperative pain. In Caliesen and collaborators' study, patients who undergo inguinal hernia repair had moderate to severe pain in the first day and the pain continued until the 6th day in 23% of patients and up to 4th week in 11% of patients. The pain level during rest for these patients in 1st and 6th day and 4th week was 25%, 11% and 5% respectively. In patients suffering from pain after hernia repair surgery, opioids and NSAIDS are used. Opioids are a type of narcotic pain medications. They can have serious side effects like sedation, dizziness, nausea, vomiting, physical dependence, tolerance, and respiratory depression, itching, urinary retention, ileus and constipation. These complications in turn lead to delays in discharge and decline in performance and quality of life while using local anesthesia can results in reducing nausea, vomiting and other side effects of opioids by lowering drug dosage. Pethidine is a powerful drug used to relieve pain and produce sleepiness. It belongs to opioid (narcotic) analgesics. Pethidine can be used simply to relieve pain or it can be used before painful operations to reduce the pain that you feel. It can also be used during childbirth to ease the pain of contractions. Pethidine works by changing the pain messages that are sent to the brain. Noting mentioned issues, it seems that incisional injection of local anesthesia at the end of surgery leads to reduced postoperative pain and also decreased intern opioids administration reduce side effects, morbidity and mortality rate. Unfortunately, in Iran plenary descriptive or accidental studies about postoperative pain of inguinal hernia repair has not been done. Therefore, the aim of this study is to investigate Marcaine's effects on Pethidine injection compared with controls. Marcaine is a trade name for bupivacaine hydrochloride, a long-acting local anesthetic agent which is indicated for the production of local or regional anesthesia or analgesia for surgery, dental and oral surgery procedures, diagnostic and therapeutic procedures, and for obstetrical procedures.

FINDINGS

A total of 67 patients were evaluated. The patients were aged between 17 to 75 years and the mean age is

42.3±17.2 years. All the patients were men and there is no statically difference in demographic characteristics of groups. The mean duration of hernia repair surgery is 48.8±23.8 minutes in cases and 44.5±26.6 minutes in controls and also there is no significant statically difference in groups. Frequency of PCA Pethidine administration is mentioned in table-1. As you consider, the mean frequency of drug is 2 times in cases and 1.7 times in controls and also there is no significant statically difference in groups. The mean elapsed time between the end of surgery and first injection of Pethidine was 3.07±2.44 hours in cases and 3.1±3.7 in controls and also there is no significant difference in groups. Totally, no patient showed signs of Marcaine intoxication.

DISCUSSION

Postoperative pain of inguinal hernia repair is common. Maximal pain is on the first day which decreases over the time and in 11% of patients continued up to four weeks (the pain is mostly moderate to severe). Given the importance of pain on quality of life and the impossibility of using Narcotics in patients who are candidates for discharge from hospital and also considering the importance of the pain onset prevention in reducing postoperative pain, local anesthesia seems to be a suitable method. Based on the results in the study, subcutaneous injection of Marcaine at the surgical incision site has no effect in reducing postoperative pain and elapsed time from end of surgery to intern Pethidine administration. It is consistent with another study, conducted in 1998 by Saff and collaborators. However, in deirking and collaborators' study, Marcaine injection at the incision site caused a reduction in pain during rest, activities and cough compared with the controls and also the need for painkillers in the first 6 hours after surgery was reduced. It was also confirmed in Tverkstry and collaborators' study and Teasdil and collaborators'. One of the probable reasons for the lack of effect of subcutaneous Marcaine in reducing postoperative pain is the injection site of local anesthetics. It seems that the site of local anesthetics is an important factor in its effectiveness. In Pondgard and collaborators' study, sub facial injection of Marcaine has been more effective in not requiring painkillers and decreasing pain during rest, activities and cough

compared with subcutaneous injection. This is due to the anatomy of nervous, such that the main trunk of ilioinguinal, iliohypogastric, genitofemoral and lateral femoral cutaneous nerves pass under the fascia and the nerves can be suppressed by Marcaine. Researches have recommended the local anesthetics administration of sub facial and muscular bag. Since in the present study, Marcaine was injected subcutaneously, it can explain the lack of difference in pain relief between cases and controls. Another issue is that, according to Caliesen and collaborators' findings, the pain was higher in younger patients than older ones and it seems that more pain in younger patients is due to the further physical activities and their higher expectations. However, in the study, the degree of pain is not registered by age group but based on the demographic characteristics, the patients were matched by the mean age and age range. It seems that in the present study, the difference in age group have not a role in the perception of pain by patients.

CONCLUSION

Considering the issues mentioned above, designing a study to identify differences in pain force between subcutaneous and sub facial injection and also other factors affecting the pain of hernia repair incision is recommended.

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