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Research Article

**ANALGESIC EFFICACY OF BUPIVACAINE ALONE AND IN
COMBINATION WITH TRAMADOL**¹Dr Sahrish Saleem Abbas, ²Dr Bushra Ghaffar, ³Dr Wajeelha Naveed¹Fatima Memorial Hospital Lahore²Multan Medical and Dental College, Multan³Mayo Hospital Lahore**Article Received:** June 2020**Accepted:** July 2020**Published:** August 2020**Abstract:**

Objective: The aim of this research work was to assess the analgesic effectiveness as well as tolerability of bupivacaine in combination with tramadol and its comparison with the bupivacaine alone.

Methodology: This randomized research work was carried out on 200 pediatric patients who were experiencing inguinal hernia repair under GA (General Anesthesia) at Fatima memorial hospital Lahore. We assessed the post-surgical pain at one, two, three, six, twelve and 24 hours and we also evaluated the analgesic needs for ibuprofen and paracetamol of the patients.

Results: Total 190 patients got admission for 24 hours for assessment, 4 patients got discharge because their parents refused to get admission. Median intraoperative VAS (Visual Analog Scale) score was 10 in Group-1, obtaining the combined two drugs versus 12 in the patients Group-2 obtaining only bupivacaine (P= 0.020). We found no disparity in scores of pain and requirement of analgesia 12 hours after surgical intervention. Distribution of intraoperative scores of Visual Analog Scale stated that a huge amount of the patients was present with Visual Analog Scale scores higher than 30 after surgery in the patients taking the combined drugs as compared to the bupivacaine alone.

Conclusion: The combine utilization of bupivacaine and tramadol infiltration with the ilioinguinal blockades is highly effective as compared to the group of bupivacaine alone and it has the ability to produce fast block's onset and it also stays for much long duration. The results of this research work recommend this method for the repair of groin hernia to decrease the post-surgical pain.

Keywords: Anesthesia, Intraoperative, Hernia, Groin, Visual Analog Scale, Bupivacaine, Tramadol, Intervention, Infiltration.

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INTRODUCTION:

The repair of inguinal groin hernia is possible under GA, local infiltration anesthesia or regional anesthesia. Current proof helps the utilization of the local infiltration anesthesia as it has much short recovery intra-hospital, less morbidity of urinary system and overall expenses [1, 2]. Regardless of the described benefits, local infiltration anesthesia is rarely utilized alone [3-5] in the patients of small age group because most of the pediatric patients are not cooperative [6-10]. One of the descriptions of the not common usage of the local infiltration anesthesia may be intra-operative discomfort and pain of the patients [9]. Although there is recommendation of step-wise local infiltration anesthesia with no additional ilioinguinal blockade [8], most of the research works used this method along with sedation with moderate to high benzodiazepines doses, needing availability of an anesthetist.

For the improvement of intraoperative analgesia, a combination of ilioinguinal blockade with local infiltration anesthesia can be rational, but no data of various randomized research work is available for its support among pediatrics. So, the main rationale of this research work was to interrogate the intraoperative analgesia to repair the inguinal hernia under supervised step wise infiltration anesthesia. The utilization of the combination bupivacaine with tramadol with ilioinguinal blockades is highly effective as compared to the group of bupivacaine alone and it has the ability to produce the fast block's onset and it also stays for much long duration. Tramadol has been obtainable in United Kingdom since 1994; although it is recommended to be used in pediatrics having twelve year of age.

METHODOLOGY:

Total 200 pediatric patients experiencing repair of inguinal hernia under general anesthesia with supervised step wise local infiltration anesthesia were randomized to additional ilioinguinal block. This research work was carried out at Fatima memorial hospital Lahore in the period of six months. The age of the patients was from 1 to 8 years. We separated the patients into two groups, Group-1: TB (tramadol in combination with bupivacaine) = one hundred patients and Group-2: B (bupivacaine) = one hundred patients. The doze for the patients of TB group was 2.0 mg/kg of tramadol in combination with 2.0 mg/kg of Bupivacaine and for the patients of B Group (bupivacaine is 2.0 mg/kg). The range of the weight of body was from 10 to 30 kg. Local infiltration anesthesia for the

repair of inguinal hernia is highly cost effective, but decrease in its spread use is the outcome of fear from the pain after surgery.

We performed all the surgeries in the same hospitals in two different operation theatres and by 2 different surgeons. Inclusion criteria of the patients was inguinal hernia repair and having age from 1 to 8 years. All the patients present with bilateral hernias, infections of upper respiratory tract, or recurring hernia and having body weight greater than 30 kilograms were not included in this research work. Pre-medication for the patients was carried out by providing 3.0 mg/kg ketamine 1.0% one hour before surgical intervention mixed with juice orally. At the end of the operation, an ilioinguinal blockade with infiltration of 1.0 ml/kg for the patients of Group-1 and also 1.0 ml/kg for the patients of Group-2, 0.50% by injection 3.0-4.0 cm medially of ancestor superior iliac spine, we provided the infiltration anesthesia for the patients of both groups intra, subcutaneously and sub-facially and in deep layers at last moments of surgery [8]. Just after the surgery, we evaluated the pain experience on the Visual Analog Scale at one, two, three, six, and twelve and 24 hours, we also recorded the consumption of analgesics. We obtained the written consent from the patients after describing them the purpose of this research work. We presented the collected data in averages and standard deviations for continuous numerical variables and we presented data in median values for ordinal variables. P value of less than 0.050 was considered as significant.

RESULTS:

Among 200 patients, 2 patients got exclusion due to cut of electrical power after the end of local infiltration and there was loss of assessment scheme for 4 patients. 190 patient got admission for complete 24 hours and they completed the study, four patients got discharge because their parents refused to get admission. The characteristics of the patients, sedation and data about anesthesia is present in Table-1. This table displays the characteristics of the patients, data of sedation, anesthesia and analgesic utilization 0-12 post-surgical intervention in the patients undergoing inguinal herniorrhaphy along with the ilioinguinal block ($P > 0.050$ between both groups). Data is present in averages and standard deviations. We found no statistical difference in the age, sedation usage and proportion of both drugs or single for infiltration anesthesia between the patients of both groups. There was very low use of the midazolam after surgery for sedation (1-2 mg) and its use was restricted to only 8 patients in 2nd group.

Table-I: Patients Characteristics, Anesthesia and Sedation Data

Characteristics	Group I (TB group) n = 100	Group 2 (B) n = 90	P - value
Age			
Tramal with bupivacaine infiltration anesthesia (mg)	1-8 y	1-8 y	0.59
Intra-operatively (Tramal)	20-75	20-75	0.68
Total bupivacaine alone	20-50	20-50	0.59
Ketamine (0-1 h) - mg/kg orally	146	144	0.66
Ibuprofen (mg) supp. 1-12 h	10	40	0.48
Ibuprofen (mg) supp. 12-24 h	60	90	0.38
Paracetamol mg sup. (1-12)	20	60	0.48

Median intraoperative scores of Visual Analog Scale was ten in the patients of Group-1, taking the combined two drugs versus twelve in the patients of Group-2, taking the bupivacaine alone ($P= 0.020$). There was not any significant difference in scores of pain or requirements of analgesia at twelve hours after surgical intervention. Distribution of intraoperative scores of Visual Analog Scale displayed a higher amount of the patients having scores of Visual Analog Scale higher than 30 after surgery in the patients obtaining the combined drugs versus patients obtaining single drug ($P<0.050$).

DISCUSSION:

The findings of this research work stated the intraoperative ilioinguinal blockade in combination with the procedure of local infiltration anesthesia [8] in Group-1, it also improves post-surgical analgesia in the repair of inguinal hernia. There may be vital implications of these findings as it is well-established fact that local infiltration anesthesia is the highly cost-effective technique of anesthesia for the repair of inguinal hernia [1, 2]. Regardless of the firm proof support the utilization of the local anesthesia, gathered information from the clinical practice [3-5] displays that this method is not much widely utilized, most possibly due to risk of infection after surgery and sometime surgical preferences, bleeding and usage of the monitored anesthesia care with some additional doses of short acting opioids and propofol [9, 10]. Though local infiltration anesthesia with blockades may support in significant reduction of cost, clearly there is need of further research works for the support of the large series conducted in past [11] and this current research work.

There are no surprising outcomes of this research work as different authors of past have stated that ilioinguinal blockade has the ability to provide the better post-surgical relief of pain after the repair of inguinal hernia in adults and children [12-14] as compared to the patients of Group-B. But in these research studies there could not be the assessment of the intraoperative pain as the treatment of the patients was performed with the help of monitored anesthesia with the utilization of the high amount of opioid and propofol [15]. Improved intraoperative

relief of pain related with an additional ilioinguinal blockade had no impact on later scores of pains (12 & 24 hours) or use of analgesia. These results are much consistent with the findings of randomized research works on pre-emptive analgesia, describing the before/ intra-operative intervention may not have the analgesic effects for long duration in the post-surgical period in comparison with the post-incisional management.

CONCLUSION:

The findings of this research work concluded that utilization of the intraoperative ilioinguinal block is well-recognized procedure of local infiltration anesthesia for the repair of inguinal hernia with the utilization of the two drugs as it gives relieve from pain after surgery and it is main reason of its recommendation. This particular procedure may help a high spread utilization of the local anesthesia for the repair of the inguinal hernia, intraoperatively under GA with the use of combination.

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