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# Surgical Incision Site Local Anaesthetic Infiltration and Superior Hypogastric Plexus Block in Total Abdominal Hysterectomy Under General Anaesthesia- A Placebo-Controlled, Randomized Clinical Trial

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## Abstract

**Background:** Total Abdominal hysterectomy is a major gynecological surgery that is associated with severe post-operative pain when operation is done under general anesthesia. Now a days multimodal analgesia methods is commonly used but till there is an insufficient control of pain. This present post operative pain controlled is linked to a different dose, drugs and frequency of administration with their adverse effects. There are always in search for proper analgesic modalities which are cost effective, long duration, technically easy to perform and are associated with less adverse effects. Local anesthetic infiltration into the surgical site commonly and less commonly the intra operative superior hypogastric plexus block used separately used as part of multi-modal analgesia regimens to relieve pain. When this block used separately does not relieve both somatic and visceral component of pain. So, a placebo-controlled, randomized clinical trial was done with combined used of two local block provides acceptable pain relief and determined other analgesic consumption.

**Aim and Objective:** The purpose of this study was to evaluate the effectiveness of combined superior hypogastric plexus block and surgical incision site local anaesthetic infiltration for total abdominal hysterectomy under general anaesthesia.

**Methods:** This is a randomized controlled trial that was carried out in the Department of Anaesthesia, Analgesia and Intensive Care Medicine, BSMMU after obtaining approval from the Institution Review Board (IRB) and informed written consent from each individual. Total 60 women scheduled for TAH were allocated into two equal groups. Group A (n= 30) patients given SHP block (20 ml 0.25% plain bupivacaine) + Surgical incision site infiltration block (20 ml 0.25% plain bupivacaine) and Group B

(n= 30) was given SHP block (20 ml 0.25% plain bupivacaine) + Surgical incision site infiltration block (20 ml of normal saline as placebo). The pain intensity using visual analog scale (VAS), hemodynamic parameters including heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), total dose of opioid administered in the first 24 hours, time to first analgesic requirement, both the patient and surgeon satisfaction were recorded. The statistical analysis was carried out using the Statistical Package for Social Sciences version 26 for Windows (SPSS Inc., Chicago, Illinois, USA). Qualitative Variables were expressed as frequency and percentage. Quantitative variables expressed as mean ± standard deviation. Students t test and Chi Square test (X2-test) was done to compare all the parameters between the groups. P values <0.05 were considered as statistically significant.

**Results:** Socio-demographic profile were similar among the both groups (p>0.05). Patients of Group-B had significantly higher VAS during the recovery ward, 2nd,4th, 6thand 12th hours compared with the Group-A (p<0.05). Haemodynamic parameter like HR, SBP, DBP and MAP differences were found not to be statistically significant in the period of their observation except at 2hr after extubation (more stable on Group-A). Patients with Group-A had significantly late demand of 1st supplement analgesic (696.1±15.8 vs 607±13.5) minutes, less total opioid consumption (18.5mg vs47mg) (p<0.05). The level of patient satisfaction was much higher in Group-A then Group-B. In Group-A 76.6% surgeons very satisfied on overall outcome and 60.0% was in group-B.

**Conclusion:** Combined superior hypogastric plexus block and surgical incision site infiltration block with bupivacaine is associated with better post operative analgesia in term of safe, effective, less other analgesic supplement requirement, good surgeon and patient satisfaction.

**Keywords:** Superior Hypogastric Plexus Block; Postoperative Pain Total Abdominal Hysterectomy; Visual Analogue Score; Opioids Consumption

## Abbreviations

TAH: Total Abdominal Hysterectomy; NSAIDs: Nonsteroidal Anti-Inflammatory Drugs; AH: Abdominal Hysterectomy; SHP: Superior Hypogastric Plexus; BSMMU: Bangabandhu Sheikh Mujib Medical University; IRB: Institutional Review Board; ECG: Electrocardiogram; NIBP: Noninvasive Blood Pressure; PACU: Post-Anaesthetic Care Unit: VAS: Visual Analogue Scale.

## Introduction

Total abdominal hysterectomy (TAH) is a major surgical and most frequently performed gynecological operation associated with significant postoperative pain and morbidity [1,2]. There was advancement of minimally invasive procedures for a TAH with less pain but there were several conditions like large uterus or significant adhesions causes severe excruciating agony pain after surgery [3]. Insufficient postoperative analgesia may cause delayed functional recovery. On the other hand, using high doses of nonsteroidal anti-inflammatory drugs (NSAIDs) or opioids may have a major negative impact [4]. Opioids have short term adverse effects like nausea, vomiting, sedation, bowel dysmotility, respiratory depression and psychomimetic effects and long-term adverse effects like addiction and dependency problems [5,6]. Pain after abdominal hysterectomy (AH) has both visceral and somatic origins. The visceral component is from autonomic innervation of the parametrium, the upper vagina and the visceral peritoneum, while the somatic component is from lower thoracic and upper lumbar somatic nerves innervating the muscle, skin, fascia and other subcutaneous soft tissue [7]. So multimodal pain treatment strategy used following surgery. It utilizes many drugs and technique that target various pain pathway. This will reduce the need of opioids and NSAIDs, remove the negative effects of using large doses of a single medicine and result in better pain relief due to the benefits of the additive and/or synergistic effects of using several different therapies [8].

In order to alleviate postoperative discomfort and pain after abdominal operations there was different regional or local block treatments with multimodal analgesic technique. Those are lumber paravertebral blocks, transverse abdominis plane blocks, quadratus lumborum plane blocks and erector spinae plane blocks but successful rate and effectiveness is differed because somatic and visceral component not equally effective [9-11]. Somatic nerve blocks that provide analgesia to the abdominal wall. Sympathetic block remains necessary for visceral analgesia [12,13] These blocks require expertise,

ultrasonogram guided for better performance with time consuming and costly.

Superior hypogastric plexus (SHP) is a retroperitoneal, unpaired structure lies on the promontory of the sacrum, in the cleft between the two common iliac arteries, and is formed by the presacral nerves that descend from the aortic plexus and from the lumbar sympathetic trunks [14,15]. This preaortic plexus formed by two lateral and one median root with sympathetic component and parasympathetic components [16]. So intraoperative SHP block has been shown as a simple, successful and straightforward technique for post-operative pain control in TAH and the control of chronic and oncologic pelvic pain [8,17-19]. It can also be considered a part of multi modal analgesia technique [17,20]. But somatic pain control after operation till questionable with only SHP block. This somatic pain is often controlled by administration of abdominal wall blocks and/or wound infiltrations [8,21]. Therefore, uses combination of intra-operative SHP block and wound site infiltration block for post operative analgesia in patients undergoing total abdominal hysterectomy.

## Aims of Study

Evaluated the superior hypogastric plexus block with surgical incision site local anesthetic infiltration after total abdominal hysterectomy by measure the intensity and quality of pain control, hemodynamic status, time and amount other additional analgesic requirement with patient and surgeon satisfaction.

## Method and Material

It was Prospective randomized control trial of post-operative pain control for a women scheduled for elective total abdominal hysterectomy under general anesthesia. All selected patient was ASA-I and ASA-II, non- cancerous condition, elective surgery and weight in between 50 to 65kg. got admitted to the Department of Obstetrics & Gynecology in Bangabandhu Sheikh Mujib Medical University (BSMMU). Simple random sampling method were used for selection and grouping of the patient. The patients have a hypersensivity to either local anaesthetics or opioid, history of coronary artery disease, any psychiatric, neurological illness, fibromyalgia and patient refusal excluded from study.

Following receiving approval from Institutional Review Board (IRB) of BSMMU and obtaining informed written consent from each individual total 60 patients were enrolled in this study who fulfilled the inclusion and exclusion criteria. Routine preoperative investigations were done for all patients. During the preoperative visit, patient's demographic and clinical data were recorded and visual analog scale (VAS; 0–10, 0=no pain, 10=worst pain) explained to the patients.

Study subjects were divided randomly into two groups by manual lottery system where patient was allowed to draw lottery token. Thirty patients were in each group as follows:

- **Group-A:** Patients given SHP block (20 ml 0.25% plain bupivacaine) + Surgical incision site infiltration block (20 ml 0.25% plain bupivacaine)
- **Group-B:** Patients given SHP block (20 ml 0.25% plain bupivacaine) + Surgical incision site infiltration block with 20 ml of normal saline as placebo.

The group allocation was concealed in sealed, opaque envelopes, which were not opened until operation. During the operation, the envelope was opened by a nurse outside the operating theater. The nurse prepares blind syringe with the study drug, which was then transferred to a sterile bowl in the operating room and injected. Bupivacaine and saline are both colorless and not possible to identify by visual appearance or smell. The envelope was sealed again and not opened until the study concluded. The patients, anesthesiologists were blinded to group assignment. This part of study was double blind procedure.

All patients were kept fasting for 8 hours before surgery. The patients were explained about general anesthesia and procedure of intraoperative SHP block during the preanesthetic visit in detail. All patients received pantoprazole 40mg IV premedication.

On arrival to the operating theatre an intravenous access was established and standard monitoring in terms of electrocardiogram (ECG), noninvasive blood pressure (NIBP) and pulse oximeter for SpO2 applied to all participants.

General anesthesia induced with intravenous fentanyl 2 µg/kg followed by intravenous propofol 2 mg/kg (until loss of eyelash reflex). Tracheal intubation was done by using intravenous suxamethonium 2mg/kg. Isoflurane inhalational anaesthesia in oxygen/nitrous oxide mixture were used for maintenance and the patients were mechanically ventilated. ECG, NIBP, SpO2 were continuously monitored and recorded throughout surgery.

In group A, the SHP block was performed after the removal of the uterus and the closure of vaginal cuff. Caudal to the aortic bifurcation, the promontorium was palpated and the level of L5-S1 found. Then, the posterior peritoneum on the surface of the promontorium was held and gently lifted using tissue forceps without teeth to form a tent. The needle was inserted on the top of the tent and advanced about 1 cm inside, taking care not to touch the bony tissue and 0.25% bupivacaine (20 mL) injected in this area. The area into which the bupivacaine injected were compressed using a sterile

sponge for 30 seconds to spread the bupivacaine extensively over the area. In addition, the wound and surgical incision site was infiltrated with 20 ml of 0.25% bupivacaine.

In group B, SHP block with 20 ml of 0.25% bupivacaine and surgical incision site was infiltrated with 20 ml of normal saline. Patients were observed for any complication. No patient was received bupivacaine dose more than 2mg/kg.

All the patients received 0.5 mg/kg ketorolac IV and 0.1mg/kg ondansetron IV 30 minutes before completion of surgery. At the end of surgery, residual neuromuscular block was antagonized with the mixture of neostigmine 0.05 mg/kg IV and atropine 0.02mg/kg IV. Tracheal extubation were performed when the patient is fully awake. All patients were kept under observation in the post-anaesthetic care unit (PACU) for 6 hours before being moved to the ward.

During post operative period heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure were documented. Pain scores were evaluated using the visual analogue scale on patient's arrival to the recovery ward and then at 2, 4, 6, 12, 24 hours postoperatively.

A rescue dose of analgesic (morphine iv 0.1-.2mg/kg) iv was given to all patients with VAS score equal to or above four and total dose of opioid administered in the first 24 hours postoperatively was recorded. If VAS was three or less but patient demanded analgesic the diclofenac sodium suppository or inj. paracetamol (1gm) was given. Both the patient and surgeon satisfaction were recorded on a Likert scale.

All data recorded in data collection sheet and compared. Our primary outcome was the time to pain intensity scores using VAS, first Analgesic request, 24h rescue opioid administrations. All collected questionnaire checked very carefully to identify the error in the data. Data processing work was consisted of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data.

Data was processed and analyzed with the help of computer program SPSS and Microsoft excel. Quantitative data expressed as mean and standard deviation and qualitative data as frequency and percentage. Comparison was done by tabulation and graphical presentation in the form of tables, pie chart, graphs, bar diagrams, histogram & charts etc.

## Results

In this study sixty patients were included according to the inclusion and exclusion criteria. They were randomly divided into two groups, Group-A and Group-B with 30 patients in each group.

| | Group A (n=30) | Group B (n=30) | P value |
|---|---|---|---|
| Age in years (Mean ± S.D.) | 53.2±11.5 | 53.5±11.5 | 0.918$^{ns*}$ |
| Height in cm (Mean ± S.D.) | 156.1±8.4 | 155.9±8.2 | 0.926$^{ns*}$ |
| Weight in kg (Mean ± S.D.) | 58.7±2.6 | 58.3±2.5 | 0.545$^{ns*}$ |
| BMI (kg/m2) | 24.2±1.3 | 23.9±1.3 | 0.375$^{ns*}$ |
| **ASA status** | | | |
| ASA I | 19(63.3%) | 18(60.0%) | 0.790$^{ns**}$ |
| ASA II | 11(36.6%) | 12(40.0%) | |

**Table 1:** Demographic characteristics of the patients (n=60)
Variables.
ns= not significant
*P value reached from unpaired t-test.
**P value reached from chi square test.

The patient's ASA status, ages, height, weight, body mass indexes are presented in Table-I. There was no statistically significant difference (p>0.05) between the groups in demographic attributes.

| Time points | Group A (n=30) | Group B (n=30) | P value |
|---|---|---|---|
| | mean±SD | mean±SD | |
| Baseline | 86.7±7.4 | 86.9±7.3 | 0.958$^{ns}$ |
| 2 hr after | 90.7±8.2 | 98.5±11.3 | **0.001$^{s}$** |
| 6 hr after | 87.7±8.2 | 92.5±9.8 | 0.074$^{ns}$ |
| 12 hr after | 94.2±7.8 | 96.9±7.4 | 0.206$^{ns}$ |
| 24 hr after | 82.7±8.4 | 82.9±8.1 | 0.871$^{ns}$ |

**Table 2:** Evaluation of heart rate in the respondents (n=60)
Heart rate (beat/min).
s= significant, ns= not significant
P value reached from unpaired t-test.

Table 2 shows the heart rate amongst the study subjects, at baseline, 6hr, 12 hr, 24 hr there were no significant difference of heart rate alteration detected in between groups except at 2 hr after, difference was statistically significant (p<0.05) between two groups.

| Time points | Systolic BP (mmHg) | | P value |
|---|---|---|---|
| | Group A (n=30) mean±SD | Group B (n=30) mean±SD | |
| Baseline | 108.3±5.8 | 109.6±6.3 | 1.246$^{ns}$ |
| 2 hr after | 102.3±4.8 | 113.6±11.2 | 0.001$^{s}$ |
| 6 hr after | 107.4±6.2 | 109.5±6.8 | 0.083$^{ns}$ |
| 12 hr after | 108.2±5.1 | 109.6±5.6 | 0.467$^{ns}$ |
| 24 hr after | 106.3±5.8 | 105.6±6.3 | 1.008$^{ns}$ |

**Table 3:** Evaluation of systolic blood pressure (SBP) in the respondents (n=60)
s= significant, ns= not significant
P value reached from chi square test.

Table 3 shows systolic blood pressure during follow up it was observed that at baseline, mean systolic blood pressure was found 108.3±5.8 mmHg in group A and 109.6±6.3 mmHg in group B (p>0.05). 2 hr after surgery blood pressure was more stabilize in group-A than group-B; mean systolic blood pressure was 102.3±4.8 mmHg and 113.6±11.2 mmHg in group A and group B respectively (p<0.05). The difference was statistically significant. But following that systolicblood pressure was maintained almost similar in both groups of patients which was statistically non-significant (p>0.05).

| Time points | Diastolic BP (mmHg) | | P value |
|---|---|---|---|
| | Group A (n=30) | Group B (n=30) | |
| | mean±SD | mean±SD | |
| Baseline | 60.7±7.4 | 58.6±6.5 | 0.856$^{ns}$ |
| 2 hr after | 64.5±8.2 | 65.4±5.6 | 1.023$^{ns}$ |
| 6 hr after | 62.1±6.5 | 64.3±5.9 | 0.895$^{ns}$ |
| 12 hr after | 61.5±7.3 | 63.5±7.1 | 0.901$^{ns}$ |
| 24 hr after | 58.7±6.4 | 58.9±6.5 | 1.000$^{ns}$ |

**Table 4:** Shows that diastolic blood pressure was not significant (p>0.05) between two groups.
s= significant, ns= not significant
P value reached from chi square test

| Time points | Mean arterial pressure (mmHg) | | P value |
|---|---|---|---|
| | Group A (n=30) | Group B (n=30) | |
| | mean±SD | mean±SD | |
| Baseline | 77.1±5.3 | 76.6±5.4 | 0.704$^{ns}$ |
| 2 hr after | 75.9±5.2 | 81.4±6.6 | 0.032$^{s}$ |
| 6 hr after | 76.5±5.5 | 76.8±5.6 | 0.913$^{ns}$ |
| 12 hr after | 76.9±6.1 | 77.2±5.8 | 0.381$^{ns}$ |
| 24 hr after | 77.2±5.8 | 76.8±5.3 | 1.365$^{ns}$ |

**Table 5:** Evaluation of mean blood pressure (MBP) in the respondents (n=60).
s= significant, ns= not significant
P value reached from chi square test.

Table 5 shows mean blood pressure during follow up it was observed that at baseline, mean arterial pressure was found 77.1±5.3 mmHg in group A and 76.6±5.4 mmHg in group B. Difference was statistically non-significant (p>0.05). 2 hr after surgery blood pressure was more stabilize in group-A than group-B; mean arterial pressure was 75.9±5.2 mmHg and 81.4±6.6 mmHg in group A and group B respectively.

The difference was statistically significant. But following that mean arterial pressure was maintained almost similar in both groups of patients and difference was statistically non-significant (p>0.05) between two groups.

| **VAS score** at | Group A (n=30) | Group B (n=30) | P value |
|---|---|---|---|
| 0 hr After surgery | 2.08±0.2 | 2.23±0.3 | **0.026**$^{s}$ |
| 2 hr After surgery | 2.32±0.4 | 2.87±0.6 | **0.001**$^{s}$ |
| 4 hr after surgery | 2.79±0.4 | 3.11±0.4 | **0.003**$^{s}$ |
| 6 hr after surgery | 3.18±0.5 | 3.65±0.5 | **0.006**$^{s}$ |
| 12 hr after surgery | 3.42±0.8 | 4.05±0.8 | **0.003**$^{s}$ |
| 24 hr after surgery | 3.05±0.5 | 3.28±0.4 | 0.053$^{ns}$ |

**Table 6:** Assessment of pain sensation using Visual Analogue Scale (VAS) (n=60).
Values are expressed as mean ± SD. Statistical analysis is done by unpaired student t-test. p value <0.05 is considered as significant.
s= significant,
ns= not significant

Table 6 shows that postoperative pain sensation using Visual Analogue Score (VAS). Patients in the group-B had higher VAS, during the second hours (P = 0.001), compared with the group-A. Mean VAS score was 2.32±0.4 and 2.87±0.6 in group A and group B respectively.

The difference was statistically significant. Following that postoperative pain gradually increases and more pain sensation experienced in group B patients. At 6th hours' time mean score was 3.18±0.5 and 3.65±0.5 in group A & group B respectively. At the 24th hour, almost similar pain score.

| Rescue analgesic | Group A (n=30) | Group B (n=30) | P value |
|---|---|---|---|
| Number of cases required opioid analgesics | 3(10.0%) | 8(26.7%) | 0.095$^{ns}$** |
| Total amount of opioid in 24 hrs (mg) | 18.5 | 47 | - |
| Time of 1st demand of analgesic (min) | 696.1±15.8 | 607.5±13.5 | < 0.001$^{s}$* |

**Table 7:** Trends of use of rescue analgesic amongst the study population (n=60).
Values are expressed as mean ± SD.
*P value reached from unpaired t-test.
p value <0.05 is considered as significant. s= significant, ns= not significant

In this study post operative pain was treated according to operational definition. If pain not alleviated and pain score ≥ 4, rescue medication was given as Inj. Morphine sulfate (0.1mg- 0.2mg/kg) i/v for pain management. Need for rescue opioid analgesic was more in group-B, 8(26.7%) than group-A, 3(10.0%). The amount of opioid required in 24 hrs (mg) was higher in Group B (47mg) than group-A (18.5mg). There was 60% reduction in total opioid consumption. Post operatively 1st demand of analgesia was earlier in Group-B. The differences were statistically significant (p=< 0.0001).

| Impre-ssion | Satisfaction grade (Likert Scale) | Group A (n = 30) No. (%) | Group B (n = 30) No. (%) | P value |
|---|---|---|---|---|
| Very satisfied | 5 | 7 (23.3) | 2 (6.7) | |
| Satisfied | 4 | 18 (60.0) | 15 (50.0) | |
| Neutral | 3 | 2 (6.7) | 5 (16.6) | |
| Dissatisfied | 2 | 3 (10.0) | 8 (26.7) | |
| Very dissatisfied | 1 | 0 | 0 | |
| mean±SD | | 4.23±1.5 | 3.71±0.8 | 0.002$^{s}$ |

**Table 8:** Patients satisfaction Following treatment (n=60).
Values are expressed in absolute number, percentage (%) over column. P value reached from unpaired t-test.
**P values were significant as P<0.05.

In this study 5 (five) point Likert Scale was used to assess both the patient's satisfaction. Total patients expressed their satisfaction of scale 4 (60%) and 5(23.3%) in group A compare with Scale 4 (50%0 ,5(6.7%) in the group B after treatment. The difference was statistically significant (p<0.05) between groups but Group-A patients were more satisfied and neutral dissatisfaction level is more in group B.

It was due to less Pain score, less frequent drug requirement and long duration analgesic action in Group A.

| Impression (n=60) | Satisfaction grade (Likert Scale) | Group A (n = 30) No. (%) | Group B (n = 30) No. (%) | P value |
|---|---|---|---|---|
| Very satisfied | 5 | 23 (76.6) | 18 (60.0) | |
| Satisfied | 4 | 7 (23.3) | 12 (40.0) | |
| Neutral | 3 | 0 | 0 | |
| Dissatisfied | 2 | 0 | 0 | |
| Very dissatisfied | 1 | 0 | 0 | |
| mean±SD | | 4.76±0.43 | 4.6±0.49 | 0.167$^{ns}$ |

**Table 9:** Surgeon satisfaction Following treatment (n=60).
Values are expressed in absolute number, percentage (%) over column. P value reached from unpaired t-test.
**P values were significant as P<0.05.

Table 9 shows the surgeon satisfaction following treatment. In case of group-A, 23 (76.6%) surgeons very satisfied on overall outcome and in group-B it was 18 (60.0%) of surgeon.

From avobe result their expression was that superior hypogastric plexus block provide good modulation of pain relief in multimodal analgesic requirement. The difference was statistically non-significant (p>0.05) between groups.

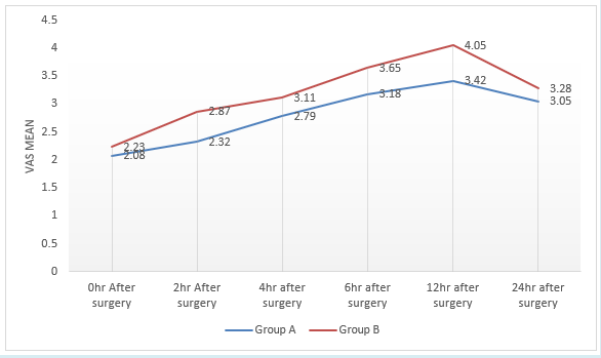


**Figure 1:** Assessment of pain sensation using Visual Analogue Scale (VAS).

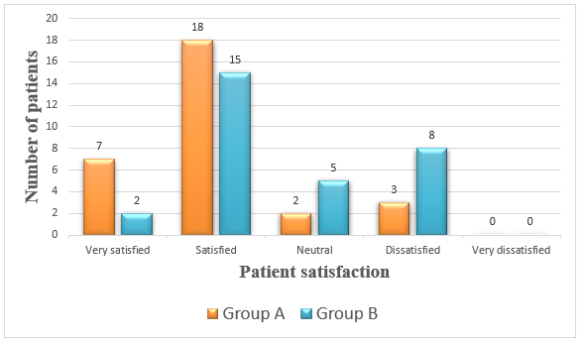


**Figure 2:** Patients satisfaction Following treatment (n=60).

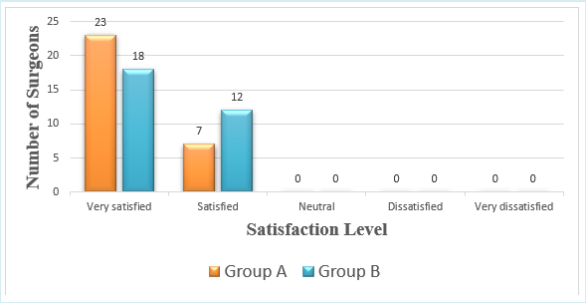


**Figure 3:** Surgeon satisfaction Following treatment (n=60).

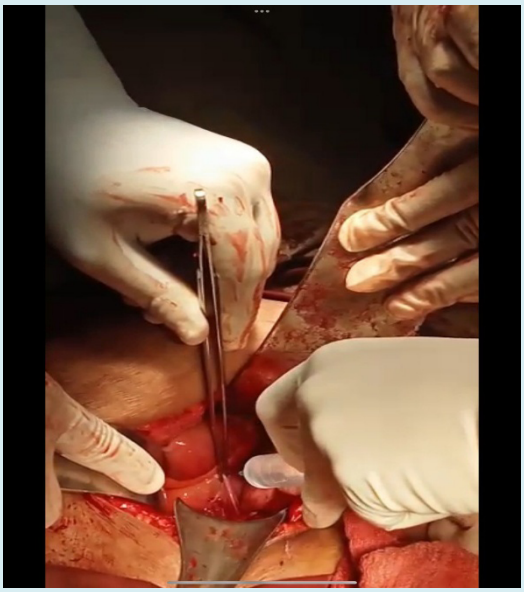

**Figure 4:** The technique of superior hypogastric plexus (SHP) block.

## Discussion

Post-operative analgesia is important after surgery not only to avoid cardio-respiratory complications and prolonged hospital stay but also for humanitarian reason. Substantial pain and discomfort are anticipated after hysterectomy; hence, an effective analgesic regimen is required to ensure optimal and safe analgesia [22].

To the best of our knowledge, this is the first trial conducted in Bangladesh utilized SHP block to control of postoperative pain in women underwent total abdominal hysterectomy. When observed the demographic characteristics of the patient like age, BMI, ASA, there was no statistical significance was found as P>0.05 in both groups (A and B). In similar study8documented that there was no statistical difference in demographic data as P> 0.05. Findings are consistent with results of the other studies. Swidan and abdelzaam also found no significant differences between patient groups demographic attributes [23].

In this study patients of Group-B had higher VAS, during the second hours, compared with the Group-A. Mean VAS score was 2.32±0.4 and 2.87±0.6 in Group A and Group B respectively. Following that postoperative pain gradually increases and more pain sensation experienced in Group B patients. At 6th hours' time mean score was 3.18±0.5 and 3.65±0.5 in Group A and Group B respectively. At the 24th hour, almost similar pain score. The VAS score for pain showed significant difference between Group-A and Group-B at 0 h (p= 0.026), 2 h (p= 0.001), 4 h (p = 0.003), 6 h (p = 0.006) and 12 h (p= 0.003) but not at 24 h (p =0.053). Overall finding suggested that, SHP block and surgical incision site infiltration block with bupivacaine have significant outcome of postoperative pain control as VAS was significantly low. Although the overall pain intensity was low in both groups.

Aytuluk et al., Swidan and abdelzaam, Rapp, Eriksson and Smith also showed the efficacy of SHP in the control of post-operative pain in women underwent TAH.8,18,23 In the study of Rapp, Eriksson and Smith ropivacaine have used instead of bupivacaine in their study.18 VAS was significantly low in these studies.

Coming to the vitals of the patients in our study, baseline heart rate, blood pressure was measured before induction and it was not statistically significant may be due to patients were either normotensive or well controlled hypertension in both groups. Between groups, differences in heart rate, systolic blood pressure and mean arterial pressure were found not to be statistically significant at any of the period of their observation except at 2hr after extubation. Difference in diastolic blood pressure of above two groups was not found to be statistically significant at any of the periods of observation (p>0.05).

Mean time to first analgesic requirement of the study patients in this study was observed postoperatively. Mean

time of rescue analgesic requirement was earlier in Group B (607min) than Group A (696min). The difference was statistically significant between two groups (p<0.001).

In one study [8] showed the mean ± SD rescue analgesic time was significantly longer for the SHP block group compared with the control group: 627 ± 352.9 min vs. 203.8 ± 173.1 min, respectively. Difference in time of first analgesic requirement between the above two groups was found to be statistically significant. Aytuluk showed that during laparoscopic SHP block first analgesic request in the PACU was significantly longer in the SHP block Group (med 720min) than N0-SHP block Group, which was statistically significant but they had not used wound site local anaesthetic infiltration to block the somatic component of pain [17].

The present study demonstrates that SHP block (20ml) and wound site anesthetic infiltration (20ml) with bupivacaine 0.25% is effective in achieving better analgesic outcomes. Inj. Morphine sulfate was used for postoperative rescue analgesia. If VAS was ≥4, rescue medication was given as intravenous Inj. Morphine sulfate (0.1-0.2mg/kg). If VAS was ≤3 or patient demanded analgesic for pain then diclofenac sodium suppository or intravenous paracetamol 1gm was given as a rescue analgesic. Need for rescue medication was more in Group-B, 8(26.7%) than Group-A, 3(10.0%). The amount of opioid needed in 24 hrs (mg) was higher in Group B (47mg) than Group-A (18.5mg). There was 60% reduction in opioid consumption. The difference was statistically significant (p=< 0.0001). Two meta-analyses had analyzed six studies, have shown that the overall postsurgical opioid consumption was significantly decreased in the SHP block group in contrasted with the control group [24,25].

In this study 5point Likert Scale was used to assess both the patient and surgeon satisfaction. However, satisfaction with pain management is correlated with pain scores. The patient should be reassessed to see whether he or she is satisfied with the management.26 Patient's satisfaction and subjective success of the operation are crucially influenced by the efficacy of analgesia both in the immediate as well as long term period following the operation. Most of the patient expressed their satisfaction between scale 4 and 5 after treatment in this study. The patient's satisfaction score was 4.23±1.5 in Group-A and 3.71±0.8 in Group-B in this study and which was directly correlated with the post operative pain relief score. It was due to less Pain score, less frequent drug requirement and long duration analgesic action in Group A. Surgeon satisfaction following treatment revealed that in case of Group-A, 23 (76.6%) surgeons very satisfied on overall outcome and in Group-B it was 18 (60.0%) (Figure 1-3). From above result their expression was that superior hypogastric plexus block (Figure 4) provides good modulation of pain relief in multimodal analgesic requirement. The difference was statistically non-significant (p>0.05) between groups. So, surgical incision site infiltration block with SHP block using plain bupivacaine is associated with better technique in the means of patient's satisfaction (p=0.002).

Moreover, we did not come across any significant sequel such as intravenous injection, abdominal organ injury, motor block or hypotension. While SHP contains nerve fibers supplying to the bladder, so there is chance of urinary incontinence or neurogenic bladder may also occur, but we did not observe any of these complications.

Above discussion highlighted that superior hypogastric plexus block and surgical incision site local anaesthetic infiltration performed in patients scheduled for total abdominal hysterectomy under general anesthesia results in better pain control, less postoperative opioid consumption in the first 24 hours after surgery, a better haemodynamic profile and both patient and surgeon satisfaction.

## Conclusion

This study is concluded that superior hypogastric plexus block combined with surgical incision site local anaesthetic infiltration in total abdominal hysterectomy is found to better post operative analgesia in term of reduction of pain or postoperative opioid consumption with patient and surgeon satisfaction.

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