

# Role of local anesthesia in pain relief post hemorrhoidectomy

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## ABSTRACT

The aim of this study is to evaluate post-operative pain relief on patients who had hemorrhoidectomy. 300 patients who had hemorrhoidectomy were divided in to three groups, according to anesthesia type, group 1 (local anesthesia and sedation), while spinal anesthesia was group 2 and general anesthesia was considered to be group 3, pain relief, post-operative complications, total cost, hospital staying, operating time and post-operative period of time to start ambulation were measured and compared among the three groups. The study was performed during 2010 to 2014 in Jordanian Prince Rashid military hospital. The study showed that patients who had local anesthesia infiltration and sedation had significant influence decrease of post-operative total pain scores at 6/12/18/24 h more than 50%, (200/240/300/320) out of 1000 points compared to (420/500/540/580), (700/680/660/660) in the other 2 groups, the total post-operative analgesia doses in the 3 groups were (120, 140, 180) vials. The total hospital staying time for patients in each group were (130, 210, 260) days, while the total anesthesia and surgical and procedure time were (1500, 3000, 3500) min, total cost (25000, 30000, 35000) JD, post-operative lack of early ambulation time was (100/600/300) h, intra-operative doctor-patients interaction were (100/100/0) patients, headache (0, 8, 1) patients, urine retention (0.6.1) patients, nausea and vomiting (0, 1, 5) patients were reduced by 30%, (P-value < 0.05). In conclusion, post-operative pain, analgesia, total cost, hospital staying and operation time, intra-operative doctor-patients interaction, nausea and vomiting have been significantly reduced by local anesthesia infiltration compared to non-infiltrated groups while spinal anesthesia had a higher rate in post-operative urine retention, headache and hypotension compared to local anesthesia with sedation and general anesthesia.

**Keywords:** Pain, local anesthesia, analgesia, complications, hemorrhoidectomy.

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## INTRODUCTION

Hemorrhoids are congested veins around the anorectal area and is estimated that more three quarters of people will have hemorrhoids in their lives. Hemorrhoids are most common among adults ages 4<sup>th</sup> to 6<sup>th</sup> decade. Hemorrhoids are also common in gestation (Baker, 2006; Chong and Bartolo, 2008), while one out of ten patients may require surgery (Hemorrhoids, 2011).

General and spinal anesthesia provides excellent surgical conditions for surgeons. On the other hand, patients may need to stay more in hospital, longer post-operative time to start ambulation and higher costs compared to local anesthesia. Moreover, spinal anesthesia is more liable to have urine retention,

headache, nausea and vomiting than the other groups (Nourian and Jebel, 2006).

Local anesthesia has become a popular practice in many open surgical procedures to use of local anesthetics for postoperative pain relief (Luck and Hewett, 2000).

The purpose of this randomized prospective clinical study was to evaluate postoperative pain, analgesia, cost, hospital stay and complications such as: headache, urine retention, hypotension, respiratory symptoms, urticaria, nausea and vomiting, in hemorrhoid surgery by using local infiltration and sedation and to compare it with spinal and general anesthesia.

## MATERIALS AND METHODS

Between January 2010 and March 2014, 300 patients who had hemorrhoidectomy in Jordanian Prince Rashid Military Hospital (which is located in Irbid in the northern part in Jordan and covers more than one million people) were included in the study.

All participants gave their informed consent for inclusion in the study (those patients who were given local anesthesia and sedation were informed about the procedure in details before they gave their informed consent). The trial was approved by the local ethics committee and was performed in line with the Declaration of Jordanian Royal Medical Services.

The patients were allocated, according to the simple randomization sequence, to one of three groups using a computer-generated numbers table and they were divided in three groups according to type of anesthesia usage; group 1 was those patients who had local anesthesia, (10 cc {5 mg/1 cc} bupivacaine hydrochloride 0.5% with 1:200,000 adrenaline and 10cc {20 mg/1 cc} lignocaine hydrochloride 2%) were injected around the anal skin, and inter-sphincter plane and sedation (1 mcg/kg fentanyl and 2 mg dormecium) were given intravenously. On the other hand, spinal anesthesia (bupivacaine hydrochloride 4 to 10 mg 0.75% which is injected through 25 gauge bevel spinal needle is being inserted between L3 and L4 of lumber spines), in group 2 and general anesthesia in group 3. All patients in this group were anesthetized by using intravenous infusion of fentanyl 1.5 µg/kg and propofol 1 to 2 mg/kg followed by endotracheal intubation facilitated with atracurium 0.5 mg/kg in induction stage and maintained by using sevoflurane 1 to 3% end-tidal concentration, nitrous oxide 70% and oxygen 30%.

All patients had mean age 45 years and range 15 to 75 years, they have grade 3 or 4 hemorrhoid and there were no history of bupivacaine or lignocaine allergy.

Post-operative anal pain severity was evaluated by score in a range 0 to 10 and recorded at 6, 12, 18 and 24 h post-operative time in all patients who were included in the study.

All patients received analgesics according to a standard postoperative protocol with Diclofenac Sodium 1 mg/kg intramuscular injection or Pethidine 1 mg/kg intramuscular injection was administered on request in the ward.

The dose and time of administration of Diclofenac Sodium and Pethidine were recorded within the first 24 hours post-operatively.

Hospital staying time, cost, urine retention, headache, hypotension, respiratory symptoms (cough, dyspnea and chest wheezes), urticaria, nausea and vomiting were evaluated in the study.

Data transferred to Statistical Package of Social Science (SPSS version 10); comparing means and cross-tabulation between three groups for subjected variables in this study to evaluate the benefits of the use of local infiltration during such a surgical procedure, considering P-value < 0.05 statistically significant.

## RESULTS

Although 307 patients were included in the study, seven patients were excluded due to suspicion of lidocaine allergy in 2 patients and no compliance of the procedure in 5 patients.

The age of patients were ranged between 15 and 75 years with mean 45 years, while the patients gender was 204 males and 96 females (m/f ratio 68:32) all were distributed equally in the three groups according to anesthesia type that used (Table 1) and all patients were included in the study had piles grade 3 and 4 (202 were

grade three and 98 grade 4). Furthermore, there were (58/56/57) smoker and (1/1/1) alcoholic in the 3 groups, respectively.

Total post-operative anal pain score was recorded at (6, 12, 18, 24) h. So, it was reduced by 50% (200/240/300/320) in group 1 compared to (420/500/540/580) in group 2 and (700/680/660/660) in group 3, respectively (P-value < 0.001) (Table 2).

Our study showed that there were no significant differences regarding post-operative pain among smoker versus non-smoker and alcoholic versus non-alcoholic patients.

Drugs consumption (Pethidine or Diclofenac sodium injections) in the postoperative period was significantly reduced by one third of the total injections, they were 120 in group 1 compared to 140 group 2, and 180 in group 3, respectively (P-value < 0.001) (Table 2).

The total hospital staying time was reduced by more than 30% it was 210 and 260 days in group 2 and 3 compared to 130 days in group 1, respectively (P-value < 0.001) (Table 2).

Furthermore, the total time of anesthesia and surgical procedure were decline by more than 50% in group 1 compared to the other groups, 1500, 3000 and 3500 min, respectively (P-value < 0.05) (Table 2).

The total cost was decreased by 30% of patients in group 1 (25000 JD), while it was 30000 and 35000 JD in groups 2 and 3, respectively (P-value < 0.001) (Table 2).

Those patients who had urine retention, headache and hypotension were much higher in group 2 (6/8/3) compared to groups 1 and 3, (0/0/1) and (1/1/1) respectively. On the other hand, there were more respiratory symptoms, urticaria, nausea and vomiting in group 3 (4/2/5) compared to (0/1/0) (1/1/1) in groups 1 and 2, respectively (Table 3).

Early ambulation achieved earlier in group 1 compared to the other groups so the total time of lack of ambulation was (100/600/300) h and there was an immediate doctor-patients interaction in groups 1 and 2 compared to group 3 which was not applicable till the patient awoke; (100/100/0) patients respectively (P-value < 0.05) (Table 3).

The P-value was significantly reduced in group 1 compared to groups 2 and 3 for urinary retention (0.011), headache (0.001), nausea and vomiting (0.028), while it was not the case for respiratory symptoms, urticarial and hypotension who had p-value (0.071) (0.776) and (0.443), respectively.

## DISCUSSION

Hemorrhoidectomy can be performed safely as day-case under general anesthesia; however, complications may result from general anesthesia especially in advanced age while caudal or spinal anesthesia has been used as an alternative to general anesthesia for hemorrhoid surgery, but all of them require a trained anesthetist and

**Table 1.** Type of anesthesia and age and gender.

Parameter	Group 1	Group 2	Group 3
Age range (year)	15-75	15-75	15-75
Std. deviation/mean	15.64957/45.20	18.24851/44.89	18.49056/44.91
Gender M/F	70/30	72/28	62/38
Smokers/non-smokers (patients)	58/42	56/44	57/43
Alcoholic/non-alcoholic (patients)	1/99	1/99	1/99
Hemorrhoid grade III/IV	67/33	68/32	67/33

**Table 2.** Type of anesthesia and analgesia injections, total pain scores, cost and hospital stay.

Parameter	Group 1	Group 2	Group 3	P value
Total analgesia vials	120	140	180	<0.001
Std. deviation/Mean	0.40202/1.2000	0.49237/1.4000	0.40202/1.8000	
Total pain scores 6/12/18/24 hours	200/240/300/320	420/500/540/580	700/680/660/660	<0.001
Total Hospital stay (days)	130	210	260	<0.001
Total anesthesia and operative time (minutes)	1500	3000	3500	<0.05
Total cost (JD)	25000	30000	35000	<0.001

**Table 3.** Type of anesthesia and surgery complications.

Parameter	Group 1	Group 2	Group 3	P value
Urine retention	0/100	6/100	1/100	0.011
Total post-operative lack of ambulation time (hours)	100	600	300	<0.05
Intra operative doctor-patients interaction (number of patients)	100/100	100/100	0/100	<0.05
Respiratory discomfort	0/100	1/100	4/100	0.071
Headache	0/100	8/100	1/100	0.001
Hypotension	1/100	3/100	1/100	0.443
Urticaria	1/100	1/100	2/100	0.776
Nausea and vomiting	0/100	1/100	5/100	0.028

have numerous complications (Kushwaha et al., 2008).

Furthermore, spinal headaches may occur in up to 40% of those who undergo a spinal tap ([http://ihs-classification.org/en/02\\_klassifikation/03\\_teil2/07.02.01\\_nonvascular.html](http://ihs-classification.org/en/02_klassifikation/03_teil2/07.02.01_nonvascular.html)). It is found that the rate is more in young age patients, female, needle size (Wadud et al., 2006) and this may lead to restrict daily activities and more hospital stay.

Lignocaine provides potent initial pain relief, and adrenaline reduces bleeding in the operative field due to vasoconstriction. Lignocaine with adrenaline provides enough time for not only hemorrhoidectomy but also transportation to home (Potchavit, 2009).

This study correlated with other studies by combination of local anesthesia perianal blockade and sedation, in anorectal surgery which allows less requirement of intravenous fluid administration that result in less incidence of urinary retention (Lohsiriwat and Lohsiriwat, 2007). On the other hand spinal or caudal anesthesia

were reported to have postoperative urinary retention varies widely, from <1% to >50% (Sarasin et al., 2006).

Spinal anesthesia may cause hypotension and correction of the condition by excessive intravenous fluid infusion may lead to over extension of urinary bladder. This inhibits detrusor function, and normal reflex is not restored even after emptying urinary bladder with a catheter (Keita et al., 2005).

A prospective and randomized study that analyzed 93 patients submitted to anorectal surgeries observed significantly reduced overall costs and hospitalization period, with higher patient satisfaction, assigned to combined Propofol and local anesthesia compared to general and spinal anesthesia groups (Hemorrhoids, 2011), and similar results were noticed in our study.

Early ambulation and doctor patients' interaction during the procedure were noticed in group 1 of this study and they were mentioned in other studies (Mutihir et al., 2007).

## Conclusion

Hemorrhoidectomy by local anesthesia and sedation is an alternative mode of anesthesia that surgeons can safely carry out by their own. It was associated with a shorter hospital stay and operating time, lower pain scores and less post-operative analgesic doses. It has better doctor- patients' interaction during the procedure and earlier post-operative ambulation.

It has lower post-operative complications (respiratory symptoms, nausea and vomiting) than general anesthesia which supports the routine use of local anesthesia for hemorrhoidectomy.

Local perianal nerve block for hemorrhoidectomy is feasible and safe, cost effective, and superior to spinal block due to a lower incidence of post-operative urinary retention, headache and hypotension.

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