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Postoperative Outcome Comparison Between Pudendal Nerve Block and Caudal Block After Lateral Open Internal Sphincterotomy

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ABSTRACT

Objective: To assess the postoperative outcome between pudendal nerve block and caudal block after open lateral internal sphincterotomy for chronic anal fissure. **Methods:** Our prospective, randomized and double blind investigation included 123 patients, of both sexes, aged 25-56 years, classed I-II by the American society of anesthesiologists and scheduled for elective open internal lateral sphincterotomy for anal fissure at King Hussein hospital, KHMC, Amman, Jordan, during the period from Jan. 2013 to Feb. 2015. Patients were divided into two groups. Group I included 62 patients (GI, n=62) operated under pudendal nerve block with local infiltration anesthesia and group II included 61 patients (GII, n=61) operated under caudal block. Postoperative pain, surgical duration, period of hospital admission, back to regular working activity and 4 weeks evaluation were compared between the two groups. **Results:** Postoperative outcome was more enhanced in group II but not significant than in group I. Patients in G-I experienced moderate pain for a mean of 5.3 days in comparison with 4.3 days in G-II. P>0.05. Three patients (4.9%) in G-II in comparison with 5 patients (8.1%) in G-I had more hospital stay than 24 hours. Patients in G-II went back to normal activity after a mean of 7.5 days in comparison with 8.0 days in G-I. **Conclusion:** Undergoing open lateral internal sphincterotomy with the aid of Pudendal nerve block is an excellent, easy and safe alternative anesthesia to caudal anesthesia.

Key words: block, caudal, pudendal; outcome: postoperative; sphincterotomy.

1. INTRODUCTION

Anal fissure is a frequent perianal disorder. Traditional open surgical technique is correlated with severe postoperative pain. Trials to decrease pain after open internal lateral sphincterotomy have composed of changes in surgical procedures and in perioperative management protocols. Lateral open internal sphincterotomy is the most frequently proceeded method and is considered one of the most potent surgical managements (1). Patients who have been exposed to open internal lateral sphincterotomy, whatever the method used, often have immediate postoperative pain. Lateral internal open sphincterotomy is a surgery done on the internal anal sphincter muscle for the management of chronic anal fissure. The internal anal sphincter is one of two muscles that form the anal sphincter which controls the passage of feces. The technique reduces the resting pressure of the internal anal sphincter, enhancing blood supply to the fissure and permitting rapid recovery. The technique is very excellent, with 96% of fissures recovering at a median of 3 weeks in one study (1). Lateral open internal sphincterotomy is

the usual technique of operation for patients with chronic anal fissures, and is usually used when medical conservative management has proved unsuccessful. It is correlated with a reduced incidence of adverse effects than previous methods such as posterior internal sphincterotomy and anoplasty, in long standing recovery of fissures, with no discrepancy in fecal continence. Pudendal block with local skin and subcutaneous anesthesia is a safe and efficient technique in all ages. The anal stretch and operation are without pain with best patient tolerance in pudendal block with local infiltration. This can be used in patients who don't prefer or not candidate for other forms of anesthesia. (2).

Pudendal nerve comes from S2, S3 and S4 nerve roots. It is the biggest nerve of pudendal plexus. It passes between the sacrotuberos and sacrospinous ligaments to find the perineum. It goes out the pelvis via the greater sciatic foramen, passes the ischial spine medial to the pudendal blood vessels and passes via the lesser sciatic foramen. It passes upward and forwards at the lateral wall of the ischiorectal fossa in Alcock's canal, a sheath of ob-

turator fascia. It branches off the inferior rectal nerve for the external anal sphincter and the perianal skin, perineal nerve for the skin of scrotum or labium major and little twigs to muscles, dorsal nerve of the penis or clitoris, the medial and lateral posterior scrotal or labial nerves and the visceral branches for the rectum and bladder are other branches. Some sites of the perineal and vulval skin are innervated by the ilioinguinal, genitofemoral, posterior femoral cutaneous nerves and by cutaneous branches of S2-S4 (3). The objective of this investigation was to assess the postoperative outcome between the pudendal nerve blockade and caudal blockade after open internal lateral sphincterotomy for chronic anal fissure.

2. METHODS

Our prospective, randomized and double blind investigation enrolled 123 patients, of both sexes, aged 25-56 years, classed I-II by the American society of anesthesiologists and scheduled for elective open internal lateral sphincterotomy for chronic anal fissure at King Hussein hospital, KHMC, Amman, Jordan, during the period from Jan. 2013 to Feb. 2015, after obtaining written informed consent from all participants and approval from the royal Jordanian ethical and research board review committee. Our study was conducted according to the principles of the declaration of Helsinki. Patients were divided into two groups. Group I included 62 patients (GI, n=62) operated under pudendal nerve block with local infiltration anesthesia and group II included 61 patients (GII, n=61) operated under routine standard caudal block. Postoperative pain, surgical duration, period of hospital admission, back to regular working activity and 3 months evaluation were evaluated between the two groups. Patients with simultaneous anal disorders such as hemorrhoids, incontinence and perianal fistula or with previous anal surgery were ruled out from the study.

Patients in G-I (n=121) were placed in lithotomy position. Using right index finger for the right pudendal nerve and left index finger for the left pudendal nerve. Ten milliliter of 2% lignocaine was administered around the two pudendal nerves. Skin and subcutaneous tissue infiltration with the same anesthetic was performed. Patients were left for 4-5 min so that anesthetic started its onset. Pudendal nerve block is done transperineally in the lithotomy position. Administration of 5-10 ml of local anesthetic is done percutaneously posterior to the ischial spine at the joint of sacrospinous ligament. Ischial spine can be palpated transrectally or transvaginally (4). Pudendal nerve block is usually united with perineal infiltration of local anesthetic using a spinal needle . After inserting the needle (transvaginally or transperineally) below the ischial spine bilaterally, the needle is moved ahead another 1-1.5 cm via sacrospinous ligament and 5-10 ml of 2% lignocaine is administered. Sacrospinous ligament can be palpated and its joint with the spine is considered the landmark and the finger is considered the guide (5). The needle is advanced lateral to the finger via the ligament for 1 cm until a loss of resistance is felt. The tip now is in the area of the pudendal nerve. As pudendal blood vessels are nearly correlated, after aspiration, 5-10 ml of local anesthetic solution is administered. The block is repeated on

the other side, inside vagina or anal canal. Anal manual dilatation was done in all patients to decrease anal canal pressure and stretch tight fibromuscular fibers (6). After anal dilatation, the lateral open internal sphincterotomy was carried out and the surgical duration was registered. Caudal block was done in group II patients in the lateral position with the administration of 0.5ml/kg of 2% lignocaine. Intramuscular sodium diclofenac 75mg was given during postoperative hospital admission.

The postoperative period was divided into an immediate period of 24h and a later review at 4 weeks. Verbal analogue pain scale from 0-10 was used to assess postoperative pain, where 0 stands for no pain, 1-3 stands for mild pain, 4-6 stands for moderate pain, 7-9 stands for severe pain and 10 stands for the worst severe pain . Postoperatively, patients were discharged from hospital when free from severe pain . Time to resumption of normal working activity was registered. . Chi-square test was used for statistical analysis, where P-value less than 0.05 was considered significant

3. RESULTS

From total amount of patients in our sample 71 patients were males and 52 patients were females (Table 1). Primary evaluation included duration since the initial complaint. There were significant differences of duration of first complaint of less than 2 years (64.5% and 63.9%, in groups I and II, respectively) and of duration of first complaint between 2 and 4 years (24.2% and 21.3%, in GI and II, respectively) or of duration of first complaint of more than 4 years (11.3% and 14.8%, in GI and GII, respectively). We found that the postoperative outcome was much better when our surgery and block were used as much early as possible. Mean surgical duration was 10.7+/-3 min in G-I and 11.4+/-5 min in G-II. All patients with moderate postoperative pain were given analgesia in the postoperative intervals.

	GI	GII
n	62	61
Anesthesia	Pudendal nerve block	Caudal block
Age(yr)	25-50	30-56
Sex M	35	36
F	27	25
ASA I	42	39
II	20	22
Duration since 1 st complaint		
<2 year	40(64.5%)	39(63.9%)
2-4 years	15(24.2%)	13(21.3%)
>4 years	7(11.3%)	9(14.8%)
Surgical duration(mean+/-SD)	10.7+/-3	11.4+/-5

Table 1. Demographics data

Patients in G-I experienced moderate pain for a median of 5.3 days in comparison with 4.3 days in G-II (P>0.05). No patient in both groups experienced severe pain. Patients were discharged when they no more needed postoperative pain relief drugs. Postoperative stay was longer in G-I patients as compared to G-II. Three patients (4.9%) in G-II in comparison with 5 (8.1%) in G-I stayed

more than 24 hours ($P < 0.05$). Table 1. Patients in G-II went back to normal activity after a mean of 7.5 days in comparison with 8.0 days in G-I. Table 2.

	GI	GII	P
VAPS*(no)			
0	0	0	
1-3	44	50	>0.05
4-6	18	11	
7-9	0	0	
10	0	0	
Moderate pain duration (median)	5.3	4.3	>0.05
Postoperative stay more than 24 h (%)	5(8.1%)	3(4.9%)	<0.05
Postoperative return to regular activity (mean +/- SD)	8.0 +/- 1	7.5 +/- 2	>0.05

Table 2. Postoperative outcome. *visual analog pain scale

4. DISCUSSION

An anal fissure is a linear tear or superficial ulcer of the anal canal, prolonging from below the dentate line to the anal margin. It commonly occurs in the midline posteriorly or often anteriorly in females, especially after a pregnancy. Although the exact cause is unknown, it is always induced by constipation and insult of the anal canal from tough feces. Hypertonia of the internal anal sphincter with a correlated high anal resting pressure is frequent.

Pudendal nerve block has been performed for many years and is considered the safest, cheapest and easiest to use with few preventable hazards. Hazards are unintentional sciatic nerve block, intravascular administration, retroperitoneal hematoma and retrosoas or subgluteal abscess (7). This method is indicated for some obstetric situations (3). For patients with anal fissure who don't desire or not candidates for other forms of anesthesia, pudendal block may be used with good outcome and patient acceptance. Lateral open internal sphincterotomy is a minor surgery which can be performed under either local or general anesthesia; a study in 1981 demonstrated that general anesthesia is acceptable because of increased frequency of fissure recurrence in patients managed under local anesthesia (8). This technique is usually done as an outpatient method. It can be done with either "open" or "closed" methods (9): The open method involves making an incision across the intersphincteric groove, separating the internal sphincter from the anal mucosa by blunt dissection, and dividing the internal sphincter using scissors. The closed technique or subcutaneous technique involves making a small incision at the intersphincteric groove, inserting a scalpel with the blade parallel to the internal sphincter and advancing it along the intersphincteric groove, and then rotating the scalpel towards the internal sphincter and dividing it. In both methods, the lower one third to one half of the internal sphincter is divided, to reduce the resting pressure without destroying the action of the sphincter. The closed technique causes a smaller wound, but both methods are comparably effective (10).

Clinically there were no significant differences between the two groups, although the postoperative outcome was better in the caudal block patients. The entire previous outcome demonstrated that pudendal block, if optimally

used has adequate outcome in terms of patient acceptability, postoperative outcome and cost effectiveness. Combining pudendal nerve block with subarachnoid blockade or general anesthesia mainly with fentanyl added to mixture of PNB in perianal surgical procedures provides an excellent postoperative pain control (11). Our outcome is good regarding postoperative pain, surgical duration, duration of hospital stay and postoperative return to normal working activity. Bilateral pudendal nerves block guided by nerve stimulator produces adequate pain relief with reduced requirements for opiates, without local or systemic hazards and without urinary retention. Controlled investigations might be able to demonstrate whether this should be the first pain relief choice for hemorrhoidectomies. Perineal anesthesia lasting 20.21 hours shall induce further studies with stimulator-oriented pudendal block (12). The technique is relatively recent for use in anal and preanal disorders. Surgeons may find it difficult to optimally use this for anesthesia.

So in the first cases, anesthesia may be incomplete or patient may unaccepted it. Excellent outcome of the block can be obtained when skin infiltration is done before pudendal nerve block. The addition of Pudendal nerve block to general anesthesia in hemorrhoidectomy operation provides excellent analgesia in the night of surgery and in the first postoperative day with less hospital admission. The addition of pudendal nerve block to general anesthesia does not increase the frequency of postoperative urinary retention (13).

5. CONCLUSION

Pudendal block with local is a safe, cheap and effective technique in all age groups. The anal stretch and operation are painless with best patient tolerance in pudendal block. This can be administered in patients who don't desire or not candidate for other forms of anesthesia.

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