

Original Article

RANDOMIZED CLINICAL TRIAL COMPARING LOCAL ANESTHESIA WITH SPINAL ANESTHESIA FOR INTESTINAL STOMA REVERSAL

Habib Ahmed, Mansoor Ahmad Qureshi and Muhammad Tariq Siddique

Objective: To compare the outcome of local anesthesia versus spinal anesthesia in intestinal stoma reversal.

Material and Methods: It was randomized clinical trial with 64 patients, undergoing reversal of ileostomies and colostomies. Procedure was performed either under local anesthesia plus sedation (n=32) or spinal anesthesia (n=32). The duration of the operation, conversion or supplementation of the anesthetic technique, time spent in the post-anesthesia recovery room, postoperative complications and length of hospital stay were analyzed.

Results: Duration of operation and time spent in post operative recovery room was less in patients operated under local anesthesia. Conversion to general anesthesia was only needed in spinal anesthesia group. Post operative complications were less in local anesthesia group. Mean length of hospital stay was almost equal in both groups.

Conclusion: Intestinal stoma reversal under local anesthesia and sedation is safe and more effective than same procedure under spinal anesthesia.

Key words:

Key words: Intestinal stoma reversal, local anesthesia, spinal anesthesia.

Introduction

Only rare cases of ostomy surgery can be found before the 1700s. Throughout the 18th century, accepted management of abdominal wounds with intestinal perforation was to close the open abdominal wound and hope for the best. This was, not surprisingly, associated with extremely high mortality rates.¹ The earliest stomas were actually fistulas that developed spontaneously following penetrating abdominal wounds or incarcerated hernias.² On observing the high survival rates in case of spontaneous fistula development, surgeons started constructing planned stomas.^{3,4} Surgeons in the mid to late 19th century used diverting colostomy to manage bowel obstruction. During the early 20th century, proximal stoma was used to protect a distal anastomosis and to reduce postoperative complications. Stoma management was further advanced in the 1920s with the development of a rubber appliance that could be belted and glued into place.^{3,5} The next major advance came in the mid-1950s, when Dr Bryan Brooke pioneered surgical maturation of the stoma, which provided a protruding stoma while eliminating the complications related to spontaneous maturation.⁵⁻⁷

The temporary stoma creation and reversal is associated with certain complications,⁸ but advantages clearly outweigh the disadvantages. Age of patient, urgency of surgery, diagnosis and mode

of presentation of the patient are the factors affecting the morbidity and mortality.⁹

Reversal of stoma is traditionally performed under general or spinal anesthesia. Recent studies show that local anesthesia offers a safe and effective alternative to general or spinal anesthesia for reversal of stoma.¹⁰⁻¹²

Purpose of this study was to compare the outcome local anesthesia versus spinal anesthesia in intestinal stoma reversal.

Material and Methods

It was a randomized control trial carried at a surgical special unit of Services Hospital Lahore, from March, 2007 to February, 2009. Sixty four patients aged 18 years and above, undergoing reversal of ileostomies and colostomies were included. Informed consent taken. Following patients were excluded from the study;

- Patients with hypersensitivity to local anesthetics.
- Patients with psychiatric disorders.
- Obese patients (BMI >30 kg/m).²
- Patients with para-stomal hernias.
- Patients with ileostomy/colostomy with mucous fistula, separated by ≥ 10 cm.
- Patients with coagulopathy
- Patients with spinal injuries.

Distal loopogram was done in all patients to exclude

any obstruction in distal segment. Mechanical bowel preparation was done. All patients were kept nothing per oral from midnight before surgery. Pre operative antibiotics (inj. ceftriaxone 1gm and metronidazole 500 mg) were given and two doses were given post operatively. Patients were randomized equally in group A and B. In group A, patients received midazolam intravenously (0.03 mg/kg), 10 minutes before the operation, and stoma reversal was done under local anesthesia (2% lidocaine and 0.5% bupivacain). The surgery was monitored by an anesthesiologist. In group B, the procedure was done under spinal anesthesia. The operative technique was standardized. The entire mucosal-cutaneous junction was taken down and the adhesions between the bowel and the anterior abdominal wall were freed with sharp dissection. Continuity was then restored by vicryl suture in two layers. After return of the bowel into the abdominal cavity, the abdominal wall defect, the subcutaneous tissue and skin were closed. The duration of the operation, conversion or supplementation of the anesthetic technique, time spent in the post-anesthesia recovery room, postoperative complications and length of hospital stay were analyzed.

Results

The postoperative follow-up lasted for 30 days. Patient's comparative data is shown in table below.

Table-1: Patients comparative data.

| Sample Variables | Local Anesthesia (n=32) | Spinal anesthesia (n=32) |
|----------------------|-------------------------|--------------------------|
| Mean Age (years) | 35 | 20 |
| Gender (M:F) | 18:14 | 17:15 |
| Type of stoma | | |
| Ileostomy | 22 | 21 |
| Transverse colostomy | 02 | 03 |
| Sigmoid Colostomy | 06 | 08 |

Table-2: Operative and Post operative variables.

| | Local Anesthesia (n=32) | Spinal anesthesia (n=32) |
|-------------------------------|-------------------------|--------------------------|
| Mean duration of operation | 92 min | 124 min |
| Time spent in recovery | 34 min | 92 min |
| Anesthesia conversion to G.A. | Nil | 2 (6.25%) |

| | | |
|------------------------------|------------|-------------|
| Post operative complications | 6 (18.75%) | 10 (31.25%) |
| Mean hospital stay | 4.33 days | 4.53 Days |

Table-3: Comparison of post operative complications.

| Complications | Local Anesthesia (n=32) | Spinal anesthesia (n=32) |
|--------------------------|-------------------------|--------------------------|
| Spinal headache | Nil | 3 (9.38%) |
| Urine retention | Nil | 2 (6.25%) |
| Illness | 01 | 2 (6.25%) |
| Wound infection | 03 | 2 (6.25%) |
| Abdominal wall haematoma | 01 | Nil |
| Entero-cutaneous fistula | 01 | Nil |
| Intestinal obstruction | Nil | 01 (3.12%) |
| Total | 06 (18.75%) | 10 (31.25%) |

Discussion

The mean duration of operation in group A was 92 min, versus 124 min in group B. More time in spinal anesthesia group was mainly due to IV preloading, giving spinal prick under strict aseptic measures and waiting for the onset of anesthesia effect. In addition local infiltration of fluid in local anesthesia helps in tissue dissection. Vaz et al have shown mean operative time 105 min and 146 min in local and spinal anesthesia groups respectively¹⁰, while in another study mean operative time with local anesthesia was 133 min¹³. Wong et al.¹⁴ have concluded that if operations lasts more than 120 minutes, the morbidity will increase. We have calculated the mean time spent by patients in the recovery room as 34 min versus 92 min in group A and B. The said time was 36.8 min versus 145 min in study by Vaz et al.¹⁰

We noted that all patients in group A tolerated the anesthesia well, while in group B, two patients (6.25%) had to be converted to general anesthesia. Cantele et al¹¹ noted in series of 14 patients operated under local anesthesia, that tolerance was excellent in 9 patients, good in 3 and average in 2. In another study by Vaz et al, conversion to general anesthesia was needed in 3/25 (12%) patients being operated under spinal anesthesia, while no conversion was needed in patients being operated under local anesthesia plus sedation.¹⁰ Abreu et al have shown similar results.¹⁵

Post operative complications were in 6 patients (18.75%) in group A, versus 10 (31.25%) in group B. This major difference was mainly due to complications of anesthesia technique itself, while there was no complication of local anesthesia.

Complications due to surgery were almost equal in both groups. Reported complications of temporary stoma reversal range from 20% to 48%.¹⁶⁻¹⁹ This huge variation is due to different definitions of complications and different levels of surgical expertise. In comparative study by Vaz et al, post operative complication were 12% in local anesthesia versus 32% in spinal anesthesia.¹⁰

In our study full oral diet was started within 48 hours in 87.5% patients in group A, and in 81.25% patients in group B. Mean hospital stay was 4.33 (3 to 19) versus 4.52 (3 to 21) days in group A and B respectively. Not a significant difference. Other studies show that re-establishment of peristalsis, institution of oral diet and hospital stay is shorter in patients operated under local anesthesia.^{10,15} Peacock et al have concluded that it is feasible to perform ileostomy reversal as day case/23 hours hospital stay.²⁰ Haagmans et al¹² have shown, in a study of loop ileostomy reversal under local anesthesia, patients were able to resume full oral diet immediate post operatively, and mean discharge from hospital was on 2nd post operative day. Cantele et al¹¹ noted

that after colostomy closure under local anesthesia, patients were discharged after mean period of 9 days. We didn't evaluate the comparison of pain severity scores. Study by Abreu et al show that there is no difference in intra operative pain between two groups, but post operative pain is less in patients operated under local anesthesia.¹⁵ We also didn't analyze the cost effectiveness of two methods. Study by Waz et al show that stoma reversal under local anesthesia is cost saving.¹⁰ In our study there was no mortality in both groups. Most of authors noted that there is no mortality in stoma reversal under local or spinal anesthesia.^{10,13} Chow et al in a systematic review of 48 studies, including 6107 patients, noted mortality rate of 0.4% in loop ileostomy reversal.¹⁷

Conclusion

Intestinal stoma reversal under local anesthesia and sedation is safe and more effective than same procedure under spinal anesthesia.

*Department of Surgical Special
SIMS/ Services Hospital, Lahore
www.esculapio.pk*

References

1. Dorothy B. Doughty. History of ostomy surgery. J Wound Ostomy Continence Nurs. 2008; 35(1):34-38.
2. Rajput A, Samad A, Khanzada TW. Temporary loop ileostomy: prospective study of indications and complications. Rawal Med J. 2007;32:159-162.
3. Cataldo P. Intestinal stomas: 200 years of digging. Dis Colo Rectum. 1999;42:137-142.
4. Anderson F. History of enterostomal therapy. In: Broadwell D, Jackson B, eds. Principles of Ostomy Care. St. Louis: Mosby; 1982.
5. McGarity W. The evolution of continence following total colectomy. Am Surg 1992; 58(1):1-16.
6. Weakley F. A historical perspective of stomal construction. J Wound Ostomy Continence Nurs. 1994;21:59-75.
7. Brooke B. The management of an ileostomy including its complications. Lancet. 1952; 2:102-104.
8. Adnan Aziz, Irfan Sheikh, Masood Jawaid, Shams Nadeem Alam, Manzar Saleem. Indications and Complications of Loop Ileostomy. Journal of surgery Pakistan (international) 14 (3) July-Sep. 2009(128-30)
9. Syed Asad Ali, Munir Memon, Prakash Ahuja et al. A prospective audit of post operative complications of construction of loop ileostomy. Medical Chennel, 2010, 16(1)Jan-March suppl.175-178
10. Vaz FA, Abreu RA, Soárez PC. Cost-effectiveness analysis on spinal anesthesia versus local anesthesia plus sedation for loop colostomy closure. Arq Gastroenterol. 2010 Apr-Jun; 47(2):159-64.
11. Cantele H, Méndez A, Leyba J. Colostomy closure using local anesthesia. Surg Today. 2001; 31(8):678-80.
12. Haagmans MJ, Brinkert W, Bleichrodt RP, van Goor H, Bremers AJ. Short-term outcome of loop ileostomy closure under local anesthesia: results of a feasibility study. Dis Colon Rectum. 2004 Nov; 47(11):1930-3.
13. Abreu RA, Speranzini MB, Fernandes LC, Matos D. Feasibility analysis of loop colostomy closure in patients under local anesthesia. Acta Cir Bras. 2006 Sep-Oct; 21(5):275-8.
14. Wong RW, Rappaport WD, Witzke DB, Putnam CW, Hunter GC. Factors influencing the safety colostomy closure in the elderly. J Surg Research. 1994;57:289-92.
15. Abreu RA, Vaz FA, Laurino R, Speranzini MB, Fernandes LC, Matos D. Randomized clinical trials comparing spinal anesthesia with local anesthesia with sedation for loop colostomy closure. Arq Gastroentrol 2010 July-Sep; 47(3):270-74
16. Syed Asad Ali, Abdul Ghani Soomro, Abdul Sattar Memon and Noshad A. Shaikh. Postoperative Complications of Reversal of Loop Ileostomy. JLUMHS Jan-Apr 2009; Vol: 08 No.01 (23-25).

17. Chow A, Tilney HS, Paraskeva P et al. The morbidity surrounding reversal of defunctioning ileostomies: a systematic review of 48 studies including 6,107 cases. *Int J Colorectal Dis.* 2009 Jun;24(6):711-23.
18. Phang PT, Hain JM, Perez-Ramirez JJ, Madoff RD, Gemlo BT. Techniques and complications of ileostomy takedown. *Am J Surg.* 1999 Jun;177(6):463-6.
19. J.n. Shah, N. Subedi, S. Maharjan: Stoma Reversal, A Hospital-Based Study of 32 Cases. *The Internet Journal of Surgery.* 2009 Volume 22 Number 1. DOI: 10.5580/19e8.
20. Peacock O, Law CI, Collins PW, Speake WJ, Lund JN, Tierney GM. Closure of loop ileostomy: potentially a daycase procedure? *Tech Coloproctol.* 2011 Dec; 15(4):431-7.