



Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/16377

DOI URL: <http://dx.doi.org/10.21474/IJAR01/16377>



RESEARCH ARTICLE

TO STUDY THE NECESSITY OF CLAMPING VERSUS NON CLAMPING IN SHORT DURATION URINARY CATHETER REMOVAL IN OPERATED ORTHOPAEDIC PATIENTS

Dr. Rajeev Shukla, Dr. Morin Joy Daya, Dr. Swapnil Vaidya, Dr. Abhishek Keshav and Dr. Aditya Agrawal
Sri Aurobindo Medical Sciences And Post Graduate Institute, Indore (M.P).

Manuscript Info

Manuscript History

Received: 31 December 2022

Final Accepted: 31 January 2023

Published: February 2023

Abstract

Background- Urinary catheterization is a common procedure used in patients undergoing orthopaedic surgeries of lower limb and spine. However no exact mechanism or theory postulated in support of clamping of indwelling catheter before removal. We evaluated the necessity of clamping of short term indwelling urinary catheter before removal.

Material methods- 327 patients were enrolled, undergoing orthopaedic surgeries of lower limb & spine. These patients were divided in category "A" – clamping and category "B" – non clamping group through Randomization & studied prospectively.

Results- This study found that clamping of indwelling catheter prior to removal is not necessary in short term patients. And no significant recatheterization risk found as compared to clamping group.

Conclusion- There is no necessity of clamping the indwelling urinary catheter before removal. In addition there is higher risk of complications with clamping such as prolonged urinary catheter retention, urinary tract infections & allergy.

Copy Right, IJAR, 2023,. All rights reserved.

Introduction:-

Patients undergoing spine & lower limb orthopaedic surgeries may have difficulty in urination because they are confined to bed & post operative pain, due to this, short term urinary catheterization done before surgery and removed as soon as possible post surgery.

Urinary catheterization also helps in accurate assessment of urinary output as bladder contractile response to muscarinic stimulation may be impaired following involuntary obstruction, catheterization prior to surgery also prevents this adverse effect by allowing consistent decompression during prolonged surgery.

Following prolonged surgeries, indwelling catheters are often left in place to reduce the incidence of postoperative urinary retention (POUR), as patients often cannot sense bladder distension after general anaesthesia^[1,2]. Risk factors for POUR include age, male gender, prostatic hypertrophy, type of surgery and duration of anaesthesia^[3,4]. Postoperative urinary retention (PUR) can complicate any surgical procedure and is not limited to patients with preexisting urinary symptoms. Although often regarded by clinicians as a trivial or minor complication, urinary retention can be a significant source of patient anxiety and discomfort^[5]. Although POUR is classically associated with anorectal, inguinal and orthopaedic surgeries. As orthopaedic surgeries are often lengthy, and postoperative pain management often involves epidural and parenteral opioid analgesia, both of which can contribute to POUR^[6].

Corresponding Author:- Dr. Rajeev Shukla

Address:- Sri Aurobindo Medical Sciences And Post Graduate Institute, Indore (M.P).

Bladder training by intermittent clamping before removal is reported to shorten the time duration to return to normal bladder function and reduce the incidence of urinary retention (Roe.1990). However, there is no consensus on its use. Moreover, the effectiveness and safety of bladder training in orthopaedic patients is not yet assessed.

Material and Methods:-

We conducted a prospective randomized controlled trial comparing group A as bladder training group by clamping and another group B a free drainage group.

The study was done in department of orthopaedics in Sri Aurobindo Institute of Medical Sciences.

The study was approved by the institutional ethical review committee and written informed consent was obtained from all the participants.

We included adult patients undergoing surgery of spine & lower extremity including total hip and knee arthroplasty. Exclusion criteria were age under 16 years old, history of recurrent urinary tract infections, previous history of urinary retention, diabetic cystopathy, voiding dysfunction & neurogenic bladder.

Randomization done in bladder training and free drainage group.

Procedure-

Foley's catheterisation done prior to surgery.

Foley's removal done in group B (free drainage) in post operative day 2 and in group A (clamping) Williamson protocol^[7] for clamping was followed, that is 3 hours clamping and 5 minutes drainage for emptying the bladder (Williamson, 1982) about 4 times this protocol is followed before catheter removal.

In clamping group, when the patient felt urge to urinate or 3 hours of clamping has passed, a drainage for 5 minutes was performed.

All surgical procedures were done under spinal and spinal + epidural anaesthesia.

In spinal + epidural anaesthesia patients Foley's catheter removed in post operative day 2 after epidural catheter removal.

Outcomes-

We performed recatheterization in urinary retention patients within 8 hours of catheter removal in both groups. Urinary retention observed by marked distended bladder or patients having discomfort and pain in groin and suprapubic region.

Urine culture sensitivity and differential leucocyte count was done in patients showing suspicious symptoms to rule out any presence of increased bacterial load in urinary bladder predisposing to urinary tract infection.

Result:-

We included 327 patients in the study. 171 patients in bladder training group "A" and 156 patients in the free drainage group "B". All patients fulfilling the inclusion and exclusion criteria, with no patient took withdrawal or lost to follow up.

We observed 5 cases of recatheterization in group "A" (clamping group) 2.6% and 9 cases in group "B" (free drainage group) 5.8%. and the difference between the groups were not statistically significant. (Fischer's exact test, $p=0.316$).

39 patients developed urinary tract infection and associated symptoms in clamping group "A", and 18 patients of Group "B" developed UTI.

All patients who developed urinary retention were subjected to recatheterization and those who developed UTI were treated for the infection and discharged after returning to normal bladder function and subsidence of infection .

Discussion:-

We compared the bladder training group with the free drainage group in patients undergoing orthopaedic surgery of lower limb and spine . our study showed that there is no role of clamping the urinary catheter before removal . we observed the normal bladder bladder function in patients of free drainage group. We also observed the rate of recatheterization in patients with POUR showing no significant difference between both groups . and found that the incidence of urinary tract infections were more in patients of group “A” (clamping group).

Our results showed similarity with other studies conducted in surgical patients .

(Nyman et al,2010)^[8] studied re catheterisation rate in patients with hip fracture surgery . Bergman et al , 1987^[9], fanfani et al., 2015^[10], oberst et al.,1981^[11],GeorgeMarkopoulos et al ,2019^[12] , sun et al., 2004^[13] showed similar findings .

The recatheterisation done in about 8.4% of patients in our study . studies done in knee and hip arthroplasty reported higher urinary retention incidence (david et al ., 2015^[14] , Fernandez et al ., 2014^[15] , Tischler et al., 2016^[16]).

The known risk factors of POUR are age > 50 years, duration of surgery > 2 hours , diabetes mellitus, anticholinergic medications , constipation and continuation of opiod analgesics .

The incidence of POUR in the current study was found to be more with male patients , we excluded the previously diagnosed patients suffering from benign prostatic hypertrophy but some undiagnosed BPH might be included .

However, Urinary catheter removal also promotes early mobilization, which is crucial to postoperative recovery following surgery.

Conclusion:-

This review indicated that bladder training by clamping prior to removal of urinary catheters is not necessary in short-term catheter patients. In addition, clamping carries the risk of complications such as prolonging urinary catheter retention and urinary tract injury and infection . We explored the issues of clamping indwelling urethral catheters prior to removal based on limited evidence. From on our review, no significant difference was found between the clamping and unclamping groups in the outcomes of recatheterization,

Reference:-

1. Pavlin DJ, Pavlin EG, Fitzgibbon DR, Koerschgen ME, et al. Management of bladder function after outpatient surgery. *Anesthesiology*. 1999;91:42–50. [PubMed] [Google Scholar]
2. Lamonerie L, Marret E, Deleuze A, Lember N, et al. Prevalence of postoperative bladder distension and urinary retention detected by ultrasound measurement. *Br J Anaesth*. 2004;92:544–546. [PubMed] [Google Scholar]
3. Baldini G, Bagry H, Aprikian A, Carli F. Postoperative urinary retention: anesthetic and perioperative considerations. *Anesthesiology*. 2009;110:1139–1157. [PubMed] [Google Scholar]
4. Mulroy MF, Salinas FV, Larkin KL, Polissar NL. Ambulatory surgery patients may be discharged before voiding after short-acting spinal and epidural anesthesia. *Anesthesiology*. 2002;97:315–319. [PubMed] [Google Scholar]
5. Darrah DM, Griebing TL, Silverstein JH. Postoperative urinary retention. *Anesthesiol Clin*. 2009;27:465–84. [PubMed] [Google Scholar]
6. Koch CA, Grinberg GG, Farley DR. Incidence and risk factors for urinary retention after endoscopic hernia repair. *Am J Surg*. 2006;191:381–385. [PubMed] [Google Scholar]
7. Williamson ML. Reducing post-catheterization bladder dysfunction by reconditioning. *Nurs Res*. 1982 Jan-Feb;31(1):28-30. PMID: 6922457.
8. M. Nyman, J. Johansson, M.A. Gustafsson . **Randomized controlled trial on the effect of clamping the indwelling urinary catheter in patients with hip fracture**. *J Clin Nurs*, 19 (2010), pp. 405-413.
9. Bergman A, Matthews L, Ballard CA (1987) Bladder training after surgery for stress urinary incontinence: is it necessary? *Obstet Gynecol* 70:902–912

10. Fanfani F, Costantini B, Mascilini F, Vizzielli G, Gallotta V, Vigliotta M, Piccione E, Scambia G, Fagotti A. Early postoperative bladder training in patients submitted to radical hysterectomy: is it still necessary? A randomized trial. *Archives of Gynecology and Obstetrics*. 2015 Apr;291(4):883-8.
11. Oberst MT, Graham D, Geller NL, Stearns Jr MW, Tiernan E. Catheter management programs and postoperative urinary dysfunction. *Research in Nursing & Health*. 1981 Mar;4(1):175-81.
12. GeorgeMarkopoulos et al .Bladder training prior to urinary catheter removal in total joint arthroplasty. A randomized controlled trial *International Journal of Nursing Studies* .Volume 89, January 2019, Pages 14-17
13. Sun, MJ., Chang, SY., Lin, KC. et al. Is an indwelling catheter necessary for bladder drainage after modified Burch colposuspension?. *Int Urogynecol J* 15, 203–207 (2004). <https://doi.org/10.1007/s00192-004-1139-7>
14. David M, Arthur E, Dhuck R, Hemmings E, Dunlop D. High rates of postoperative urinary retention following primary total hip replacement performed under combined general and spinal anaesthesia with intrathecal opiate. *Journal of Orthopaedics*. 2015 Dec 1;12:S157-60.
15. Fernandez MA, Karthikeyan S, Wyse M, Foguet P. The incidence of postoperative urinary retention in patients undergoing elective hip and knee arthroplasty. *The Annals of The Royal College of Surgeons of England*. 2014 Sep;96(6):462-5.
16. Tischler EH, Restrepo C, Oh J, Matthews CN, Chen AF, Parvizi J. Urinary retention is rare after total joint arthroplasty when using opioid-free regional anesthesia. *The Journal of arthroplasty*. 2016 Feb 1;31(2):480-3.