ORIGINAL ARTICLE

Özgün Araştırma

Yazışma Adresi
Correspondence Address

Bugra SAHIN
Denizli State Hospital,
Gynecology and Obstetrics Clinic,
Denizli, Türkiye
raaakun@gmail.com

Geliş Tarihi : 26 January 2022
Received
Kabul Tarihi : 15 March 2022
Accepted
E Yayın Tarihi : 01 January 2024
Online published

Bu makalede yapılacak atıf
Cite this article as

Sahin B, Cura Sahin G.
Does the Duration of Postoperative Urinary Catheterization affect the Time to Gas and Faeces Passage in Women Undergoing Caesarean Section?
Akd Med J 2024;10(1): 6-10

Bugra SAHIN
Denizli State Hospital,
Gynecology and Obstetrics Clinic,
Denizli, Türkiye
ORCID ID: 0000-0003-0429-3085

Gizem CURA SAHIN
Denizli State Hospital,
Gynecology and Obstetrics Clinic,
Denizli, Türkiye
ORCID ID: 0000-0001-5696-4683

DOI: 10.53394/akd.1063610

Does the Duration of Postoperative Urinary Catheterization affect the Time to Gas and Faeces Passage in Women Undergoing Caesarean Section?

Sezaryen Sonrası İdrar Sondası Kalma Süresi, Gaz-Gaita Çıkış Süresini Etkiliyor mu?

ABSTRACT

Objective:
While some clinicians remove urine catheters immediately after caesarean section operations, others prefer that they are retained for 12-24 hours. This study aims to investigate the time of removal of urine catheter from patients after caesarean section operation and the potential benefits with respect to gastrointestinal motility during the postoperative period.

Method:
This prospective study included 100 women who had undergone caesarean section in the obstetrics department of Turhal State Hospital between March 2021 and June 2021. The urine catheters of the patients were removed at 4, 8, and 12 hours postoperatively, and the patients were separated into 3 groups accordingly. These 3 groups were compared in aspect of time to gas and faeces passage, need for enema, number of caesarean deliveries, urinary retention, and type of anaesthesia.

Results:
When compared to the women whose urinary catheters were removed 8 and 12 hours after cesarean delivery, the time to gas and faeces passage was significantly shorter in patients whose catheters were removed 4 hours later ($p<0.001$ for both). As the duration of urinary catheterization was prolonged, the need for enema increased significantly ($p=0.033$).

Conclusion:
As the duration of urinary catheterization was prolonged following caesarean delivery, the time to gas and faeces passage and the need for enema were increased significantly. This finding was attributed to the delay in mobilization.

Key Words:
Catheter, Cesarean delivery, Enema, Feces, Urine

ÖZ

Amaç:

Sezaryen ameliyatından sonra idrar sondalarını bazı klinisyenler hemen çıkarırken, bazı klinisyenler ise 12-24 saat arasında tutmak ister. Bu çalışma, sezaryenle doğum yapan hastalarda idrar sondası çekilme süresinin gaz-gaita çıkışı süresini etkileyip etkilemediğini belirlemeyi amaçlamaktadır.

Yöntem:

Bu prospektif çalışmada Mart 2021 ile Haziran 2021 tarihleri arasında Turhal Devlet Hastanesi Kadın Hastalıkları ve Doğum Kliniği'nde sezaryenle doğum yapan 100 kadın alınmıştır. Hastaların idrar sondalarının postoperatif dönemde 4., 8. ve 12. saatlerde çekilmesine göre üç grup oluşturuldu. Bu üç gruptaki hastaların mobilizasyon sonrasındaki saatlerde gaz-gaita çıkışları, lavman gerekliliği, kaçıncı sezaryen ameliyatını geçirdikleri, sonda çekilmesi sonrası üriner retansiyon gelişmesi ve anestezi şekilleri açısından karşılaştırıldı.

Bulgular:

Sonda kalma süreleri 8 ve 12 saat olan hastalar karşılaştırıldıklarında; sonda kalma süresi 4 saat olan hastalarda gaz ve gaita çıkış saatlerinin daha erken olduğu bulundu (her ikisi için $p<0.001$). Sonda kalma süresi artıkça lavman gereksinimi anlamlı olarak fazlaydı ($p=0.033$).

Sonuç:

Sezaryen sonrası hastada idrar sondasının uzun süre kalan hastalarda gaz-gaita çıkışı gecikmektedir ve lavman gereksinimi artmaktadır. Bu bulgu, cerrahi sonrası erken mobilizasyonun engellenmesinden kaynaklanabilir.

Anahtar Kelimeler:

Kateter, Sezaryen, Lavman, Gaita, İdrar

INTRODUCTION

Caesarean section (CS) is a commonly performed operation in obstetric surgery (1-3). Although CS has advantages in aspect of perinatal morbidity and mortality, there are also short and long-term complications which should not be ignored (4-6). The problems related with urinary system are one of the short term complications (7).

In order to prevent bladder injury and urine retention, urinary catheters are routinely applied in women undergoing cesarean section. However, urinary catheters have some disadvantages including infection, urethral pain, and urine retention in addition to the prolongation in postoperative mobilization and hospitalization (5). The period of urethral catheterization following CS remains uncertain (8). Some clinicians remove the catheter immediately after the operation while others keep the catheter in place for 12-24 hours (8). When the duration of urinary catheterization is prolonged, patient mobilization is delayed (9).

Postoperative mobilization enables a more rapid transition to the previous working level of the intestines and stomach which are affected by anesthesia. Therefore, mobilization of a patient and the application of exercises in the early postoperative period are of great importance for eliminating intestinal distension and accelerating peristaltism (10). Exercise also has a profound effect on evacuation of the stomach. Moreover, early mobilization accelerates the recovery process, and decreases the incidence of deep vein thrombosis and respiratory complications. It also assists in early discharge and a rapid return to daily life (11). This study aims to investigate the time of removal of urine catheter from patients after caesarean section operation and the potential benefits with respect to gastrointestinal motility during the postoperative period.

MATERIALS and METHODS

This prospective study included 100 female women who had undergone caesarean section in the obstetrics department of Turhal State Hospital between March 2021 and June 2021. All reported research involving "human beings" were conducted in accordance with the principles set forth in the Helsinki Declaration 2008. The urine catheters of the patients were removed at 4, 8, and 12 hours postoperatively, and the patients were separated into 3 groups accordingly. The patients included in the study were aged 18-45 years and had no co-morbidities. The patients with urinary tract infection, severe vaginal bleeding and preeclampsia were excluded from the study. Approval for the study was granted by the Ethics Committee of Tokat Gaziosmanpasa University (No:21-KAEK-059). All patients provided written informed consent.

All the operations were performed by the same surgeon. Ten minutes before the induction of general or spinal anaesthesia, 2 gr cefazolin was administered intravenously as prophylaxis for infection for all patients. A no.16 Foley catheter was used for urinary catheterization. As for the standard cesarean delivery, Pfannenstiel incision was made and the uterus was opened with a transverse incision. After the delivery of the fetus, the uterus was sutured in a single layer for closure. The urine catheters of the patients were removed at 4, 8, and 12 hours postoperatively, and the patients were separated into 3 groups accordingly. These 3 groups were compared in aspect of time to gas and faeces passage, need for enema, number of caesarean deliveries, urinary retention, and type of anaesthesia.

Urinary catheter was removed at 4th hour after cesarean delivery if vital findings of the patient were within normal limits and there was prior history of gastrointestinal dysfunction. Urinary catheter was removed at 8th hour after surgery if vital findings were normal and postoperative hemoglobin did not indicate excessive bleeding. Urinary catheter was removed at 12th hour after cesarean section if there was transient hypotension, tachycardia and insufficient urine output. After the removal of urinary catheter, the patient was mobilized. Postoperative infection was managed in all the patients with 1 gr cefazolin once every 12 hours. At the postoperative 8th hour, the patients were allowed to consume fluids.

Statistical Analysis

Collected data were analyzed by Statistical Package for Social Sciences version 20.0 (SPSS IBM, Armonk, NY, USA). Descriptive statistics were reported as mean± standard deviation values for numerical variables and number (n) and percentage (%) for categorical variables. One-way ANOVA and chi-square

test were used for the statistical comparisons. A p value less than 0.05 was accepted as statistically significant.

RESULTS

Urinary catheter was removed after 4 hours in 24 patients, 8 hours in 34 patients, and 12 hours in 42 patients. Operative characteristics of the patients are shown in Table I. The patients in the 12-hour group were significantly older than the patients in the 4-hour group and the patients in the 8-hour group (27.14 ± 3.95 years vs 25.33 ± 5.88 years vs 25.82 ± 4.13 years, p=0.222).

Table I: Operative characteristics of the patients.

	Catheter removal after 4 hours (n=24)	Catheter removal after 8 hours (n=34)	Catheter removal after 12 hours (n=42)	p
Age (years)	25.33 (±5.88)	25.82 (±4.13)	27.14(±3.95)	0.222
Time to gas output (hours)	12 (±4.71)	16.47 (±5.55)	18.48(±5.07)	**0.001***
Time to feces output (hours)	27 (±7.29)	30.35 (±7.37)	40.57(±8.77)	**0.001***
Requirement for enema	20.8%	17.6%	42.9%	**0.033***
Number of caesarean deliveries	1.67 (±0.81)	1.76 (±0.74)	2.14(±0.84)	p:0.064
Urinary retention	20.8%	14.7%	19%	0.814
Spinal anesthesia	58.3%	73.5%	47.6%	0.074

Figure 1 and Figure 2 display that there were no statistically significant differences between the groups with respect to the number of caesarean deliveries (p=0.064), urinary retention (p=0.814) and spinal anesthesia (p=0.074). The mean time to gas output after the operation was 12 ± 4.71 hours in the 4-hour group, 16.47 ± 5.55 hours in the 8-hour group, and 18.48 ± 5.07 hours in the 12-hour group. The mean time to feces output was 27 ± 7.29 hours in the 4-hour group, 30.35 ± 7.37 hours in the 8-hour group, and 40.57 ± 8.77 hours in the 12-hour group. The percentage of patients requiring enema was 20.8% in the 4-hour group, 17.6% in the 8-hour group, and 42.9% in the 12-hour group. As the duration of urinary catheterization shortened, the time to gas and feces passage shortened and the need for enema decreased significantly (p=0.001, p=0.001 and p=0.033 respectively).

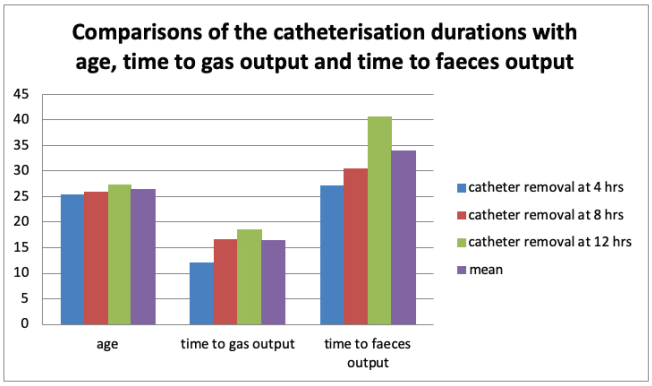

Figure 1: Duration of catheteterization with respect to age, time to gas and feces output.

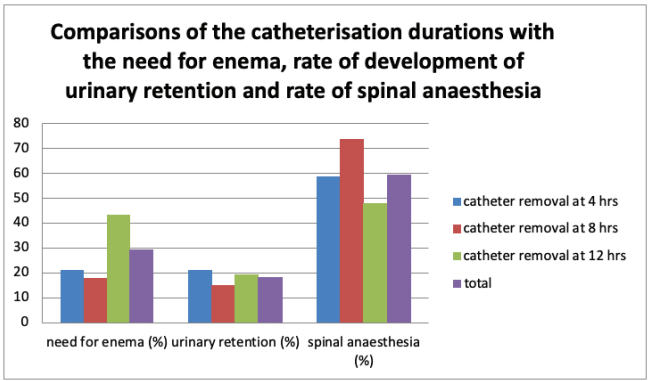

Figure 2: Duration of catheteterization with respect to need for enema, urinary retention and spinal anaesthesia.

DISCUSSION

Postoperative ileus occurs due to the temporary impairment in gastrointestinal motility. This complication emerges because of the intraoperative and postoperative actions such as medication for pain control and using isotonic solutions excessively (12,13). Although postoperative ileus is usually resolved 3-5 days after the operation, problems such as increased abdominal pain and cramps, and abdominal distension can be observed.

In order to avoid postoperative ileus, physicians recommend early mobilization . It has been reported that the patients should be mobilized as soon as possible in 4-8 hours following caesarean section. Early mobilization is effective in the prevention of abdominal distension, deep vein thrombosis and atelectasis. It also has benefits such as regaining intestinal tonus and initiating intestinal movements. Although there is no specific period defined for patient mobilization in literature, the general tendency is to mobilize patients in the shortest time possible. The early removal of urinary catheters is required for comfortable mobilization of patients (14).

Postoperative mobilization enables a more rapid transition to the previous working level of the intestines and stomach which are affected by anesthesia. Therefore, mobilization of a patient and the application of exercises in the early postoperative period are of great importance. The patient standing up and performing active and passive movements in bed are known to be effective in eliminating intestinal distension and stimulating peristalsis (10). Exercise has a significant effect on evacuation of the stomach. Walking at the rate of 3.2 km/hr increases stomach evacuation by 39%, and when the walking rate is doubled, the increase in stomach evacuation increases at the same rate (14,15). On the other hand, immobility can lead to constipation by suppressing colon movements. Therefore, the patient should be kept active in bed with active-passive exercises, especially leg exercises, and should be mobilized in the early postoperative period (14,15).

Previous studies have reported that as the number of caesarean deliveries increased, there was an increase in intra-abdominal adhesions and therefore the duration of surgery was prolonged and mobilization was delayed. It has been claimed that with an increase in the number of operations there is an increase in intra-abdominal adhesions because the anatomy is disturbed in every operation performed. As the number of cesarean deliver-

ies increased, it would become harder to maintain intraoperative hemostasis (16-18). The prolongation in surgery time and excessive measures taken to perform surgery would take a longer time to gas-feces output.

In this study, no statistically significant difference was observed between the different times for catheter removal with respect to the number of cesarean deliveries, urinary retention, and type of anesthesia. In addition, the time to gas and feces passage shortened and the need for enema decreased significantly as the duration of urinary catheterization shortened. The power of the present study is limited by relatively small cohort size and lack of randomization and longitudinal data.

CONCLUSION

This study demonstrates that the time to gas-feces output is shortened and the need for enema is decreased significantly with early removal of the urinary catheter. Since an in-dwelling catheter prevents early mobilization, the time to gas-feces output is prolonged and the need for enema is increased in patients with later removal of the urinary catheter. The patients with early and late removal of urinary catheters are found to be statistically similar with respect to the number of caesarean deliveries, urinary retention, and type of anesthesia.

Ethics Committee Approval:
All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study protocol was approved by the Ethics Committee of Tokat Gaziosmanpasa University (No:21-KAEK-059). All patients provided informed consent.

Informed Consent:
It was obtained.

Peer-review:
Externally peer-reviewed. Author Contributions: Concept – B.Ş. and G.C.Ş.; Design - B.Ş. and G.C.Ş.; Supervision - B.Ş. and G.C.Ş.; Resources – B.Ş. and G.C.Ş.; Materials – B.Ş. and G.C.Ş.; Data Collection and/or Processing - B.Ş. and G.C.Ş.; Analysis and/or Interpretation - B.Ş. and G.C.Ş.; Literature Search - B.Ş. and G.C.Ş.; Writing - B.Ş. and G.C.Ş.; Manuscript - B.Ş. and G.C.Ş.; Critical Review - B.Ş. and G.C.Ş.

Conflict of Interest:
The authors have no conflict of interest to declare.

Financial Disclosure:
The authors declared that this study has received no financial support.

REFERENCES

1. Mistry K, Fingar KR, Elixhauser A. Variation in the Rate of Cesarean Section Across U.S. Hospitals. 2013: Statistical Brief 211. Rockville (MD): Healthcare Costand Utilization Project (HCUP) Statistical Briefs; 2006.

2. Vogel JP, Betran AP, Vindevoghel N. Use of the Robson classification to assess caesarean section trends in 21 countries: a secondary analysis of two WHO multicountry surveys. Lancet Glob Health 2015; 3(5):260–70.

3. Ye J, Betran AP, Guerrero Vela MG. Searching for the optimal rate of medically necessary cesarean delivery. Birth 2014; 41(3):237–44.

4. Lumbiganon P, Laopaiboon M, Gulmezoglu AM. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007–2008. Lancet 2010; 375(9713):490–9.

5. Villar J, Carroli G, Zavaleta N. Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ 2007; 335(7628):1025.

6. Souza JP, Gulmezoglu A, Lumbiganon P. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004–2008 WHO Global Survey on Maternal and Perinatal Health. BMC Med 2010; 8:71.

7. Fuchs F, Benhamou D. Post-partum management after cesarean delivery. Guidelines for clinical practice. J Gynecol Obstet Biol Reprod 2015; 44(10):1111–7.

8. El-Mazny A, El-Sharkawy M, Hassan A. A prospective randomized clinical trial comparing immediate versus delayed removal of urinary catheter following elective cesarean section. Eur J Obstet Gynecol Reprod Biol 2014; 181:111–4.

9. Huang J , Cao C , Nelson G, Wilson RD.A Review of Enhanced Recovery After Surgery Principles Used for Scheduled Caesarean Delivery. J Obstet Gynaecol Can 2019; 41(12):1775-88.

10. Venara A, Neunlist M, Slim K, Barbieux J, Colas PA, Hamy A, Meurette G. Postoperative ileus: Pathophysiology, incidence, and prevention. J Visc Surg 2016; 153(6):439-46.

11. Stakenborg N , Gomez-Pinilla PJ , Boeckxstaens GE. Postoperative Ileus: Pathophysiology, Current Therapeutic Approaches. Handb Exp Pharmacol 2017; 239:39-57.

12. Bragg D , El-Sharkawy AM , Psaltis E , Maxwell-Armstrong CA , Lobo DN Postoperative ileus: Recent developments in pathophysiology and management. Clin Nutr 2015;34(3):367-76.

13. Leier, H. Does gum chewing help prevent impaired gastric motility in the postoperative period? Journal of the American Academy of Nurse Practitioners.2007;19:133–6.

14. Basbug A, Yuksel A, Kaya A. Early versus delayed removal of indwelling catheters in patients after elective cesarean section: a prospective randomized trial. J Matern Fetal Neonatal Med 2020;33(1):68-72.

15. Kerimoglu OS,Yilmaz AS, Pekin A, İncesu F, Dogan NU, İlhan TT, Çelik C. Effect of drainage on postoperative pain after laparoscopic ovarian cystectomy. J Obstet Gynaecol. 2015;35(3):287-9.

16. Akcay S, Aslan D, Aydos TR, Erden OA, Gokçe YK, Gulekon A, Hızel K, Kunt MM, Kutsal A, Oguz D, Ordu-Gokkaya NK, Sungur C. Birinci Basamak İçin Temel Geriatri. Ankara, Algı Tanıtımı 2012;1:46-52.

17. Cikman MS, Sakin O, Angin AD, Gokkaya, Pirimoglu ZM, Gun I. Effects of Drain After Total Laparoscopic Hysterectomy. Zeynep Kamil Tip Bülteni.2019;50(3):135-7.

18. Craciunas L, Stirbu L, Tsampras N. The use of a peritoneal gas drain following gynecological laparoscopy: a systematic review. Eur J Obstet Gynecol Reprod Biol. 2014;179:224-8.