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Original Investigation

Is day-case caesarean section feasible? Evaluating an ultrashort-stay post-operative protocol at the University of Medical Sciences Teaching Hospital, Ondo state, south-western Nigeria

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ABSTRACT

Background: Caesarean section (CS) is the most common major obstetric procedure. Research towards improving its safety and cost-effectiveness is imperative. This study aimed to evaluate an ultrashort-stay post-caesarean section management protocol (USPCP) on eligible patients at a teaching hospital in Ondo state.

Methodology: This is a prospective study conducted over a nine-month period involving 28 consecutive patients who underwent routine CS and were subjected to USPCP. Data obtained included obstetric characteristics inputted into an Excel spreadsheet for analysis. The USPCP was implemented for each patient from the immediate post-op to achieve a visual analogue pain score of ≤ 3, normal dietary intake, full ambulation and breastfeeding capabilities within 12 to 24 hours. Thereafter, wound inspections were conducted on an outpatient basis by the 6th day post-op.

Results: Patients that underwent elective CS accounted for 82% of total number. The mean gestational age (in weeks), surgery duration (minutes), blood loss (ml) and postop stay (hours) were 37.8, 38.7, 610.7 and 32.5, respectively. All but one patient had satisfactory wound healing while another was lost to follow-up.

Conclusion: The USPCP led to the successful management and discharge of patients within an average time of less than 36 hours. Day case caesarean sections are feasible.

INTRODUCTION

Caesarean section (CS) is a lifesaving procedure for mothers and babies, yet optimizing its outcomes remains critical, particularly in resource-limited settings like Nigeria. It is the commonest major obstetric procedure that entails a baby being born through surgical incisions into the mother's abdomen and uterine wall. Caesarean sections are oftentimes crucial for maternal and neonatal survival, but carry risks such as haemorrhage and infections. Therefore, the risks associated with performing a CS must be outweighed by that of allowing the pregnancy to terminate by other means.

The World Health Organisation (WHO) recommended a CS rate of 10 – 15% among the general population.[1] Nevertheless, the same organisation emphasises that CS should be provided to women in need rather than

striving to achieve a specific rate. However, facility-based figures are harder to standardise and usually have higher, much wider ranges depending on varied factors such as the co-morbidity profile of patients and surgeons' discretions.[2]

Various studies have focused on how to improve morbidities associated with CS. For instance, Afolabi et al., in a Cochrane systematic review, concluded that when compared to women who underwent general anaesthesia, those who had regional techniques developed significantly lower differences between pre- and post-operative haematocrit as well as lower estimated blood losses.[3] Bearing in mind that CS is a dominant contributor to the development of maternal peripartum infections, WHO recommended the routine administration of a single dose of first-generation cephalosporin or penicillin prior to skin incision in preference to other classes of antibiotics.[4] As regards surgical technique, advocates of the Misgav Ladach method attested to less use of post-operative antibiotics and analgesics as well as shorter operating time and quicker recovery of the mother, compared to others.[5] On the timing of post-operative feeding, local and international studies concluded that commencing oral intake early following an uncomplicated CS was more advantageous and beneficial than delaying.[6,7] Similarly, a Dutch–based systematic review revealed that though there was inconclusive evidence on whether early removal of indwelling urethral catheter post-CS reduced the risk of urinary tract infection, the former resulted in earlier ambulation and shorter hospital stay.[8]

When findings on meta-analyses, systematic reviews, randomised and non-randomised controlled studies, as well as case series are consolidated, the Enhanced Recovery After Surgery (ERAS) guideline for postoperative care in caesarean delivery serves as a tool for management.[9] Clinicians are then provided with comparative data to educate and positively change the variances identified in clinical processes as well as procedures that will increase the quality of care, patient safety and health outcomes. For instance, ERAS strongly recommended early feeding, administration of multimodal analgesia and, to a lesser extent, immediate removal of indwelling urethral catheters.

It is generally acknowledged that there are direct associations between post-operative maternal morbidity, length of stay on admission and cost of care. Taking fledgling clinical evidence into cognisance, a local randomised controlled trial (RCT) comparing short-stay (i.e., 48 – 72 hours) post-caesarean protocol with the more traditional one (i.e., five days) revealed the former as safe and more cost-beneficial.[10] In Nigeria in particular, where healthcare resources are stretched, reducing hospital stay durations could improve patient turnover, reduce costs, and enhance access to care. Despite global efforts to enhance CS protocols, evidence on the feasibility and safety of ultrashort-stay post-operative care in low-resource environments is limited. This study aimed to evaluate the feasibility, safety, and outcomes of a locally developed ultrashort-stay post-caesarean section management protocol (USPCP) for patients in a Nigerian teaching hospital. Findings from this study could inform scalable interventions to improve CS care and patient outcomes in similar healthcare systems globally.

METHODS

This is a prospective study utilising a convenience sampling method conducted in the Department of Obstetrics and Gynaecology (O&G), University of Medical Sciences Teaching Hospital (UNIMEDTH), Ondo City, Nigeria, over a pre-determined nine-month period from 1st November 2020 to 5th August 2021. It involved 28 consecutive eligible and consenting patients who underwent routine and uncomplicated caesarean deliveries under spinal anaesthesia and were subjected to USPCP.

Each participant's socio-demographic (i.e., age, parity and level of education) as well as obstetrics (i.e., booking status, gestational age, type of CS, blood loss, the status of wound, durations of surgery and admission) information were obtained by trained intern doctors and inputted into individual study proforma. At the end of the collection, the data were entered into an Excel spreadsheet, and continuous variables were analysed for mean and standard deviation. The exclusion criteria

included general anaesthesia, co-existing morbidities requiring anticipated prolonged stay on admission (e.g., prolonged rupture of membranes, gestational diabetes, severe hypertensive disorder of pregnancy, etc.), postpartum haemorrhage causing haemodynamic instability and sub-umbilical longitudinal midline skin incision.

Prior to the commencement of the study, the nurses in the postnatal ward underwent training on the implementation of the USPCP as well as the interpretation of the visual analogue pain scoring system. For reinforcement, both processes were illustrated in standardised inpatient sheets attached to each case folder and the nurses were expected to chart and tick off each component.

The USPCP was initiated immediately post-op with the continuation of an intravenous (IV) fluid regimen and parenteral administration of sequential multimodal analgesics to maintain a visual analogue pain score (VAPS) of ≤ 3. The analgesics were statum doses of IV pentazocine 30mg, intramuscular (IM) paracetamol 600mg, and IM diclofenac 75mg. Following an initial restriction in the supine position, the patients were sat up in bed at the sixth-hour post-op along with routine removal of urethral catheters, facilitation of mother-baby bonding and commencement of oral intake (starting with sips of water and progressing to beverages, semi-solids and normal diet within 12 hours post-op).

From 8th- to 12th-hour post-op, the IV fluid regimen was discontinued, the patient fully ambulated and was commenced on five-day course of oral antibiotics (amoxicillin-clavulanate 625mg twice daily) and analgesics (paracetamol 1gm thrice daily and diclofenac 50mg twice daily) as well as four-weeks of routine haematinics (ferrous gluconate 300mg twice daily, folic acid 5mg daily and vitamin C 100mg daily). Thereafter, they were discharged home with wound dressing in situ when on a normal diet, tolerating oral medications, VAPS ≤ 3, micturating freely and breastfeeding successfully. They were given stern instructions to return to the hospital should there be any complaints. Routine removal of dressings for wound exposure and inspections were conducted on an outpatient basis by the 6th day post-op. All information was then entered to complete the study proforma.

Ethical approval for the conduct of the study was sought and obtained from the University of Medical Sciences Ethics & Research Committee (UNIMEDTHC/021/110). This is in line with all studies of this nature.

RESULTS

The majority of patients were from ages 21 to 35 years, para 1 or 2, with secondary or tertiary levels of education at 78%, 68% and 79%, respectively. These are detailed in Table 1. Booked patients who had elective CS accounted for 82% of the total number.

The mean gestational age (in weeks), duration of surgery (minutes) and estimated blood loss (ml) were 37.8 ± 2.04, 38.7 ± 10.60 and 610.7±291.66, respectively. The co-morbidities recorded were a case of late preterm prelabour rupture of membranes and two cases each of mild gestational hypertension and multiple pregnancies.

Interestingly, the mean length of postop stay (in hours) was 32.5 ± 11.46, with a range of 20.6 to 54.7 hours. Twenty-six (93%) patients had satisfactory wound healing, while only one had a superficial surgical site infection (that healed within five days), and the last was lost to follow-up. The details are illustrated in Table 2. All patients (except the latter) seen at the post-natal clinic expressed satisfaction with the ultra-short regimen.

DISCUSSION

In this study, the socio-demographic distribution of patients was unremarkable and might have reflected that of the general parturient population as the former were conveniently and consecutively selected in line with the inclusion criteria. The co-morbidities associated with five of the patients recruited were deemed clinically insignificant to alter post-op stay.

The choice of spinal anaesthesia for this series was in keeping with the Cochrane systematic review of 22 articles that revealed the former was associated with fewer morbidities compared to general anaesthesia.[3] Each patient had a single prophylactic dose of intravenous ceftriaxone 1gm – 2gm within 30 minutes of knife-on-skin followed by a five-day course of oral amoxicillin-clavulanate 625mg

twice daily. This regimen is a modification of the WHO recommendation that excludes follow-up oral antibiotics.[4] However, the USPCP antibiotic regimen was preferred due to the risk of sepsis associated with peculiarities of patients' home environments that were beyond the control of researchers.

Table 1: Socio-demographic characteristics of patients

Variable	*Frequency N = 28*	*Percent (%)*
Age (years)		
21 - 25	6	21.4
26 - 30	10	35.7
31 - 35	6	21.4
36 - 40	5	17.9
Above 40	1	3.6
Mean = 30.64 ± 5.53		
Parity		
0	5	17.9
1	13	46.4
2	6	21.4
3	3	10.7
4	1	3.6
Level of Education		
Primary	6	21.4
Secondary	11	39.3
Tertiary	11	39.3

Table 2: Obstetrics characteristics of patients

Variable	*Frequency N = 28*	*Percent (%)*
Booking status		
Booked	23	82.1
Unbooked	3	10.7
Booked elsewhere	2	7.2
Gestational age (weeks)		
34 - 36	6	21.4
37 - 39	17	60.7
40 - 42	5	17.9
Mean – 37.82 ± 2.04		
Co-morbid conditions		
Present	5	17.9
Absent	23	82.1
Type of CS		
Elective	23	82.1
Emergency	5	17.9
Previous CS		
0	8	28.6
1	14	50.0
2	6	21.4
Surgery duration (minutes)		
21 – 30	7	25.0
31 – 40	10	35.7
41 – 50	7	25.0
Above 50	4	14.3
Mean duration = 38.75 ± 10.60		
Estimated blood loss (ml)		
201 - 400	9	32.1
401 - 600	7	25.0
601 - 800	7	25.0
801 – 1,100	4	14.3
> 1,100	1	3.6
Mean = 610.71± 291.66		
Admission duration (hours)		
15.0 – 24.9	8	28.6
25.0 – 34.9	11	39.3
35.0 – 44.9	3	10.7
45.0 – 54.9	6	21.4
Mean = 32.54 ± 11.46		
Wound status on 6th Day Post-op		
Good	26	92.8
Superficial SSI	1	3.6
Lost to follow up	1	3.6

A modified Misgav Ladach surgical technique instituted for all the patients was based on the recommendation of Holmgren et al.[5] The basic philosophy of the technique is to work in harmony with the body's anatomy thereby restricting the use of sharp instruments in preference to manual manipulation, where

applicable. To further minimise inter-surgeon's bias, all the patients in this series were operated on by the lead author.

The multimodal analgesic regimen in this study's USPCP involved the use of sequential centrally acting (i.e., pentazocine) and non-steroidal anti-inflammatory (i.e., diclofenac) drugs as well as paracetamol, as advocated by ERAS.[9] This regimen went a long way in keeping patients' post-operative pain scores at a tolerable level throughout their stay on the wards and after discharge. Arif et al. conducted a randomised controlled trial on uncomplicated post-caesarean section patients, comparing early feeding (two hours) to delayed (12 hours).[7] The findings revealed that the former was associated with a shorter duration of hospital stay and better patient satisfaction with no difference in untoward sequelae. This recommendation of early post-CS feeding within two hours was corroborated by the ERAS guidelines.[9] On the other hand, Ezechi et al. similarly compared six hours to 24 hours, with the former also being more advantageous.[6] The USPCP adopted the six-hour mark to commence oral intake to minimise the risk of unexpected complications like reactionary haemorrhage occurring, which might necessitate the patient being wheeled back into the theatre for possible re-exploration.

Nollen et al., in their systematic review on the impact of early postoperative indwelling urinary catheter removal, revealed strong evidence that earlier removal did not lead to higher re-catheterisation rates or micturition difficulties.[8] However, that same review was inconclusive on whether earlier removal was associated with fewer incidences of urinary tract infections when compared to delayed ones. Nevertheless, the ERAS guideline strongly recommended immediate urethral catheter removal post-CS to facilitate early ambulation and shorter length of hospital stay.[9] For the USPCP, urethral catheters were retained till six hours post-op without complications for the same reasons adduced for commencing oral intake at the same time.

This series' near-total satisfactory wound healing testified to the safety and favourability of UNIMEDTH's USPCP, comparable to the previously published short-stay protocol.[10] The ERAS and WHO recommendations, based on available evidence, back the results of this preliminary study with the potential for further efficiency, cost-effectiveness and even shorter duration.

The limitations of this study include an inability to address the possible long-term impact of the USPCP beyond the 6th-day post-op. In addition, no comparisons were made with other, more traditional protocols that would have produced a more robust study. Furthermore, the variables analysed for this study were not exhaustive; patients' body mass indices, socioeconomic statuses, etc., were excluded.

CONCLUSION

The USPCP involved the successful management and discharge of patients in this series within an average time of less than 36 hours without compromising on wound infection rate. This preliminary study could facilitate the development of even more efficient protocols that would allow patients to be managed and discharged within 24 hours.

It is recommended that randomised controlled trials comparing the USPCP with traditional protocols be conducted to validate the safety and cost-effectiveness of the former prior to possible adoption and institutionalisation. Day-case caesarean sections might be feasible after all.

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