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Original Article

Post-Caesarean Rehabilitation: Evaluation Of Practices

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ABSTRACT

Background: Early Rehabilitation, "Fast-Track Surgery," or Enhanced Recovery After Surgery (ERAS) protocols have shown significant benefits in various surgical procedures, including caesarean sections. These protocols aim to expedite recovery, reduce hospital stays, and minimize complications through a multidisciplinary approach. Despite their proven effectiveness, the implementation of such protocols in post-caesarean recovery remains uneven and warrants further investigation.

Objective: This study aims to evaluate the current practices of early post-caesarean rehabilitation, focusing on pain management, early nutritional intake, mobilization, and mother-child bonding to identify gaps and opportunities for improvement.

Methods: A prospective observational multicenter study was conducted between January and April 2021 at the Maternity and Neonatology Center of Tunis and the Principal Military Hospital of Tunis. The study involved 170 parturients undergoing caesarean section under spinal anesthesia, excluding those with contraindications. Data were collected using a standardized form, covering demographic details, medical history, surgical and anesthesia details, and post-operative recovery metrics, including pain assessment (VAS scores), timing of first oral intake, mobilization, and mother-child bonding. Statistical analysis was performed using SPSS version 25.

Results: The average age of parturients was 30 ± 5 years. A majority (73%) of caesarean sections were planned, with surgery durations mostly within one to two hours. Post-operative pain management revealed that 73% of parturients reported a VAS ≤ 2 at the 3rd hour, but 77% experienced a VAS ≥ 4 by the 6th hour. Early oral intake was initiated by 66% of parturients before the 6th hour for liquids and before the 12th hour for light meals. The urinary catheter was removed before the 12th postoperative hour in 56% of cases. Early mobilization was achieved by 67% of parturients before the 12th hour, and 82% were breastfeeding naturally, with 79.7% satisfaction with care.

Conclusion: The study highlights the partial implementation of ERAS protocols in post-caesarean recovery, pinpointing areas for improvement, particularly in pain management, early oral intake, and mobilization. A standardized approach to early post-caesarean rehabilitation could significantly enhance maternal and neonatal outcomes, reduce complications, and improve patient satisfaction.

Keywords: Early Rehabilitation, ERAS, Caesarean Section, Post-operative Recovery, Pain Management, Early Oral Intake, Mobilization, Mother-Child Bonding, Obstetric Care, Patient-Centered Care.

INTRODUCTION

The concept of rapid recovery post-surgery, known also as Early Rehabilitation, "Fast-Track Surgery," or Enhanced Recovery After Surgery (ERAS), was pioneered by Professor Henrik Kehlet and his colleagues in Denmark in 1995 (1,2). Originally devised for colonic surgeries, this multidisciplinary approach has expanded its application across a variety of surgical procedures with the aim of hastening the postoperative restoration of patients' physical and mental capacities (3). The essence of these measures lies in their ability to significantly reduce the length of hospital stays and mitigate the risks associated with prolonged bed rest, such as thromboembolic events and paralytic ileus. In the context of Caesarean sections, early rehabilitation is particularly pivotal due to its potential to rapidly reestablish the physiological state of the parturient, thereby facilitating a nurturing mother-child bond (4).

With the recognition of its benefits, numerous maternity hospitals have adopted early rehabilitation protocols, achieving notable advancements in parturient comfort despite the challenges inherent in altering established practices and strategies (5). However, in Tunisia, a country witnessing a steady rise in Caesarean section rates since 1999, peaking at 44% in 2023 with even higher

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occurrences in university and regional maternity hospitals, there lacks a cohesive national program dedicated to post-Caesarean early rehabilitation (6). This gap underscores the critical need for this study, which is aimed at assessing the current practices surrounding early post-Caesarean rehabilitation. Through this evaluation, the study seeks not only to highlight the existing practices but also to identify areas for improvement, with the ultimate goal of enhancing patient care and outcomes in the postoperative period following Caesarean sections.

MATERIAL AND METHODS

This study was designed as a prospective observational multicenter investigation, focusing on parturients undergoing caesarean section at the Maternity and Neonatology Center of Tunis (MNCT) in partnership with the Principal Military Hospital of Tunis (PMHT). Data collection spanned from January 1, 2021, to April 30, 2021, and employed a standardized form that had undergone both internal and external validation processes. The purpose of utilizing such a form was to diligently monitor and document the implementation of post-cesarean rehabilitation measures, including the timelines for their execution. Prior to commencement, the research protocol received the approval of the local ethics committee, adhering to the principles of the Declaration of Helsinki. Informed consent was also obtained from all participants, ensuring their voluntary participation and understanding of the study's aims and procedures.

The cohort of interest included parturients classified with an ASA score of 2 who were scheduled for caesarean delivery under spinal anesthesia. Individuals presenting with acute or chronic pathologies, a high risk of bleeding, or contraindications to spinal anesthesia were excluded from the study. Additional exclusion criteria encompassed parturients who experienced complications related to spinal anesthesia necessitating a switch to general anesthesia. Throughout the perioperative period, a standardized local protocol was followed, which specified the dosages for spinal anesthesia as well as postoperative prescriptions, including analgesia, antibiotic prophylaxis, and thromboprophylaxis.

Data were thoroughly collected from the moment of admission to the operating room until 24 hours postoperatively, using a pre-established survey that covered a comprehensive range of topics. These topics included demographic information, medical and surgical histories, details of the current pregnancy and surgery, and various aspects of the postoperative period, such as pain assessment using the Visual Analogue Scale (VAS) at four distinct time points (H3, H6, H12, H24), patient satisfaction, timing of first oral intake, removal of urinary catheter, closure of peripheral venous lines, first awakening, occurrence of postoperative nausea and vomiting (PONV), resumption of gastrointestinal transit, newborn health status, initial mother-newborn contact, nature of the mother-infant bond, and challenges encountered in newborn care and breastfeeding.

Given the constraint of having a limited number of investigators available for data collection, the study methodology included provisions for the nursing staff to assist in gathering information during periods when an investigator was not present. These auxiliary data collectors communicated their findings to the research team via telephone. The statistical analysis of the collected data was conducted using SPSS software, version 25. Continuous variables were presented as means ± standard deviation and analyzed using Student's t-test, while categorical variables were expressed as percentages and examined through Chi-square and Fisher's exact tests. The threshold for statistical significance was set at $p < 0.05$.

RESULTS

In this study, a total of 175 parturients underwent caesarean section, with 170 being included in the final analysis. Exclusions were due to the need for general anesthesia, either initially planned or as a conversion from spinal anesthesia, affecting 5 cases. The participants were distributed between the Maternity and Neonatology Center of Tunis (MNCT) and the Principal Military Hospital of Tunis (PMHT), with 120 and 50 parturients at each facility, respectively. The mean age of the parturients was 30 ± 5 years, with the largest age group (38.9%, n=66) being between 31 and 35 years. A significant portion of the cohort, 74.4%, reported no pathologies during pregnancy and did not receive any treatment, indicating a generally healthy population. Multiparity was common, with 40% (n=68) of the participants having had previous births.

Scheduling of caesarean sections was prevalent, with 73% (n=124) of the procedures being planned. The duration of these surgeries varied, but the majority (39.4%; n=67) were completed within one and a half hours. Post-operative pain assessments using the Visual Analogue Scale (VAS) highlighted a dynamic pain management challenge: while 73% of parturients (n=125) reported a VAS score of ≤2 at the 3rd postoperative hour, 77% (n=132) experienced a VAS score of ≥4 by the 6th hour. This trend was somewhat reversed by the 24th hour, by which time 85% of parturients (n=145) reported a VAS score of ≤2.

In terms of post-operative recovery milestones, 66% of parturients had their first liquid intake before the 6th postoperative hour, and a similar proportion (66%, n=113) had their first light meal before the 12th hour. The management of the urinary catheter and peripheral venous lines was also notable, with removals generally occurring before the 12th postoperative hour for 56% (n=96) and

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47% (n=80) of patients, respectively. This facilitated an early rise from bed for 67% of the participants (n=115) within the same timeframe.

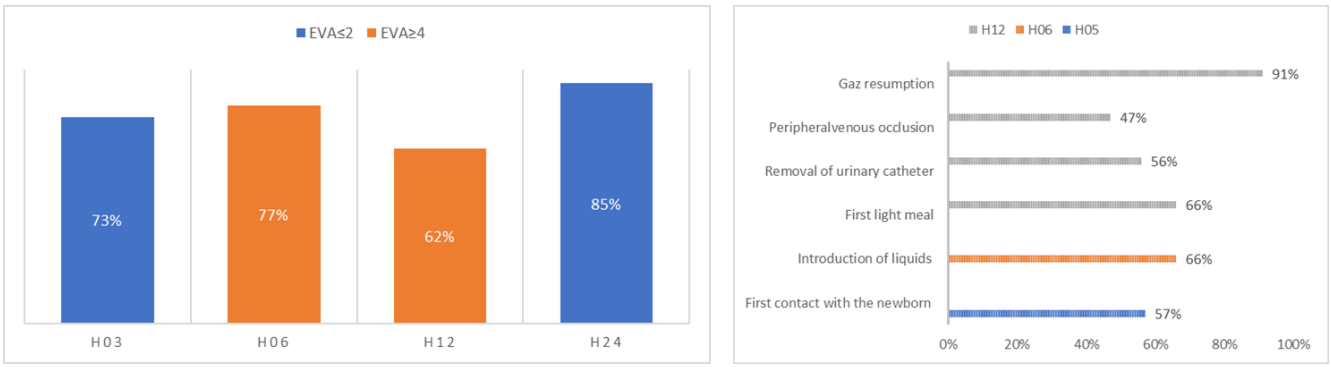

Figure 1 Pain assessment at 3rd, 6th, 12th, and 24th hour postoperatively; Post cesarean recovery milestones schedules

Digestive recovery was marked by the absence of postoperative nausea and vomiting (PONV) in 91% of cases (n=156), and a return of gas-like transit before the 12th postoperative hour. The establishment of the mother-child bond was successful in most cases, with 83% of newborns reported to be in good health, facilitating initial contact within the first 5 hours postpartum for 57% of the pairs. However, 53% of parturients reported difficulties in caring for their newborns, primarily due to pain and fatigue (18%), mobility issues related to catheter and venous access (42%), or hunger and thirst (22%).

DISCUSSION

The findings of this study illuminate the partial realization of comprehensive postoperative rehabilitation following caesarean section. Despite the implementation of certain components, the overarching framework for early rehabilitation remains underintegrated. A critical aspect of post-caesarean recovery, effective pain management, significantly influences early mother-infant bonding by impacting the mother's ability to care for the neonate, mobility, and the initiation of breastfeeding. The utilization of the Visual Analogue Scale (VAS) in our study highlighted fluctuating pain levels, with a notable increase in pain perception at the 6th and 12th postoperative hours before a substantial decrease by the 24th hour, suggesting that oral analgesic administration becomes viable and effective at this juncture (7,8).

The study also reinforced the significance of prompt reinitiation of oral intake post-surgery. Early resumption of drinking and eating, previously shown to not adversely affect transit and potentially shorten hospital stays, was observed with a significant portion of participants initiating oral hydration and light meals within the early postoperative hours (9,10). Such practices not only alleviate hunger and thirst but also contribute to the restoration of gastrointestinal function, underscoring the efficiency of early feeding programs in enhancing maternal satisfaction without adverse effects (11).

The early removal of the urinary catheter and peripheral venous line was identified as a cornerstone for advancing autonomy within the rehabilitation process. Despite a significant proportion of parturients having their urinary catheter removed before the 12th postoperative hour, the study suggests a need for protocol refinement to prevent the negative impacts of prolonged catheterization (12). Similarly, while our findings did not demonstrate an early removal of the venous line within the initial 24 hours, they indicated a trend towards maintaining a functional occluded catheter, emphasizing the importance of such practices in facilitating early rehabilitation (13,14).

Mobility post-caesarean section, pivotal for preventing thromboembolic venous disease and minimizing hospital stay durations, revealed that a majority of parturients initiated mobilization before the 12th postoperative hour. This early mobilization underscores the necessity of effective analgesia prior to attempting bed lift, aligning with prior studies highlighting the benefits of early movement (15). The challenges of pain, mobility restrictions, and physiological needs such as hunger and thirst underscore the complexity of establishing early mother-infant contact, a critical period for bonding and initiating breastfeeding. Our study found a high rate of natural breastfeeding and maternal satisfaction, highlighting the significance of addressing physical and psychological barriers to facilitate these early interactions (16,17,18).

This investigation acknowledges limitations, including the reliance on self-reported pain assessments and the potential variability in care standards between institutions. Furthermore, the study's strengths lie in its prospective, multicenter design and the comprehensive evaluation of postoperative rehabilitation components. Recommendations for future research include the

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development of standardized protocols that incorporate efficient pain management, early oral intake, and mobilization strategies to enhance post-caesarean rehabilitation across diverse healthcare settings.

The importance of a structured early rehabilitation program following caesarean section cannot be overstated. Such a program promises not only clinical and health system benefits, including reduced lengths of stay, complications, and hospital costs, but also enhances maternal and neonatal outcomes (19-21). Establishing national guidelines for early post-caesarean rehabilitation is imperative to standardize care and improve the quality of maternal healthcare.

CONCLUSION

This study underscores the critical need for a comprehensive and integrated approach to early post-caesarean rehabilitation, highlighting its potential to significantly improve maternal and neonatal health outcomes, enhance patient satisfaction, and reduce healthcare costs. By adopting standardized protocols that emphasize efficient pain management, early nutritional resumption, and prompt mobilization, healthcare systems can expedite recovery, minimize complications, and foster a positive mother-child bond, ultimately leading to more effective, patient-centered care in obstetric practice.

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