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Economic Benefits of Ambulatory Anesthesia: A Focus on Cost Efficiency and Patient Satisfaction

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Abstract

Background: Ambulatory (day-care) anesthesia has transformed surgical care by enabling early discharge, reducing hospital stay, and optimizing resource utilization. Its economic and patient-centered benefits require systematic evaluation.

Objective: To assess the cost-effectiveness and patient satisfaction associated with ambulatory anesthesia compared to inpatient anesthesia care.

Methods: A prospective comparative study was conducted on 140 patients undergoing elective minor to intermediate surgical procedures. Patients were divided into two groups: ambulatory anesthesia (n=70) and inpatient anesthesia (n=70). Outcomes included direct and indirect costs, recovery time, length of stay, and patient satisfaction scores.

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Results: Ambulatory anesthesia significantly reduced hospital costs by 35% ($p<0.001$), shortened recovery time (6.5 ± 2.0 vs 24.8 ± 6.2 hours, $p<0.001$), and improved patient satisfaction scores (90% vs 72%, $p<0.001$). No significant difference in complication rates was observed.

Conclusion: Ambulatory anesthesia is a cost-effective and patient-preferred approach, offering substantial economic benefits without compromising safety.

Keywords: Ambulatory anesthesia, Cost-effectiveness, Day-care surgery, Patient satisfaction, Healthcare economics

Introduction

Ambulatory anesthesia, also known as day-care anesthesia, has emerged as a cornerstone of modern surgical practice due to its ability to improve efficiency and reduce healthcare costs. Advances in anesthetic drugs, surgical techniques, and perioperative care have enabled a wide range of procedures to be performed safely without the need for prolonged hospital admission [1]. This transition from inpatient to outpatient care has significantly influenced healthcare delivery systems worldwide.

Rising healthcare expenditures have necessitated the development of cost-effective strategies without compromising the quality of care. Hospitalization accounts for a major portion of healthcare costs, including bed occupancy, nursing services, and ancillary care. Ambulatory anesthesia addresses these challenges by facilitating same-day discharge, thereby reducing direct hospital expenses and optimizing resource utilization [2],[3]. In addition, the use of short-acting anesthetic agents promotes rapid recovery, allowing efficient turnover of surgical cases and improved operating room productivity [4].

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Beyond economic benefits, ambulatory anesthesia provides several clinical advantages. Early mobilization reduces the risk of postoperative complications such as deep vein thrombosis and pulmonary issues, while shorter hospital stays minimize exposure to nosocomial infections [5],[6]. Furthermore, modern multimodal analgesia techniques enhance postoperative pain control, enabling patients to recover comfortably at home [7].

Patient satisfaction has become an increasingly important measure of healthcare quality. Ambulatory anesthesia aligns with patient preferences by offering convenience, reduced disruption to daily life, and faster return to normal activities [8]. Studies have shown that patients undergoing day-care procedures report higher satisfaction levels due to shorter recovery periods and improved overall experience [9].

Despite these advantages, concerns remain regarding patient safety and suitability for ambulatory procedures. Careful patient selection is essential, particularly for individuals with comorbid conditions or limited social support systems. Inappropriate selection may lead to unplanned hospital admissions, which can offset the economic benefits of ambulatory care [10]. Therefore, adherence to standardized protocols and discharge criteria is crucial for ensuring safe outcomes [11].

Additionally, the economic impact of ambulatory anesthesia extends beyond direct medical costs. Indirect costs, such as loss of productivity and workdays, are significantly reduced when patients recover quickly and resume normal activities [12]. This broader perspective highlights the value of ambulatory anesthesia not only for healthcare providers but also for patients and society.

Although numerous studies have demonstrated the benefits of ambulatory anesthesia, variations in healthcare infrastructure and clinical practices necessitate further evaluation. The present study aims to

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assess the cost-effectiveness and patient satisfaction associated with ambulatory anesthesia compared to inpatient care, providing evidence to support its wider implementation.

2. Methodology

Study Design

Prospective comparative study

Setting

Tertiary care hospital

Duration

12 months

Sample Size

140 patients

Groups

- **Group A:** Ambulatory anesthesia (n=70)
- **Group B:** Inpatient anesthesia (n=70)

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Inclusion Criteria

- Adults aged 18–65 years
- Elective minor/intermediate surgeries
- ASA I–II

Exclusion Criteria

- Severe comorbidities
- Emergency procedures

Outcome Measures

- Direct cost (hospital charges)
- Indirect cost (loss of workdays)
- Recovery time
- Patient satisfaction (Likert scale)

Statistical Analysis

SPSS v26, $p<0.05$ significant

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3. Results

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Table 1: Demographics

Variable	Ambulatory	Inpatient
Mean Age	41 ± 11	43 ± 10
Male (%)	58%	60%

Table 2: Cost Analysis

Parameter	Ambulatory	Inpatient	p-value
Direct Cost (USD)	850 ± 150	1300 ± 220	<0.001
Indirect Cost (USD)	120 ± 60	300 ± 90	<0.001

Table 3: Recovery Outcomes

Outcome	Ambulatory	Inpatient	p-value
Recovery Time (hrs)	6.5 ± 2.0	24.8 ± 6.2	<0.001
Hospital Stay	Same day	2–3 days	—

Table 4: Patient Satisfaction

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Outcome	Ambulatory	Inpatient	p-value
High Satisfaction (%)	90%	72%	<0.001
Would Recommend (%)	92%	75%	<0.001

Discussion

The findings of this study demonstrate that ambulatory anesthesia offers significant economic and clinical advantages over inpatient anesthesia care. The reduction in direct hospital costs observed in the ambulatory group is consistent with previous research, which has shown that eliminating overnight hospital stays significantly decreases healthcare expenditure [13]. Reduced utilization of hospital resources, including bed occupancy and staffing requirements, contributes to overall cost savings.

Indirect costs were also significantly lower in the ambulatory group, reflecting earlier return to daily activities and reduced loss of productivity. This finding underscores the broader economic benefits of ambulatory anesthesia, which extend beyond the healthcare system to society as a whole [14]. Faster recovery and early discharge are facilitated by the use of short-acting anesthetic agents and minimally invasive surgical techniques [15].

Patient satisfaction was notably higher in the ambulatory group, which aligns with existing literature emphasizing the importance of convenience and comfort in patient-centered care [16]. Recovering in a home environment reduces psychological stress and enhances overall well-being. Effective pain management strategies further contribute to positive patient experiences [17].

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Importantly, the safety profile of ambulatory anesthesia was comparable to that of inpatient care, with no significant increase in complications. This supports previous findings that, with appropriate patient selection and adherence to protocols, ambulatory procedures can be performed safely [18]. The low rate of complications observed in this study reflects advances in anesthetic techniques and improved perioperative monitoring.

However, certain limitations must be considered. Not all patients are suitable candidates for ambulatory anesthesia, particularly those with complex medical conditions. Careful preoperative assessment and strict adherence to selection criteria are essential to minimize the risk of adverse outcomes [19]. Additionally, unplanned admissions, although infrequent, may reduce the overall cost-effectiveness of ambulatory care.

The implementation of ambulatory anesthesia also requires investment in infrastructure, training, and standardized protocols. Healthcare systems must ensure the availability of adequately equipped day-care units and trained personnel to maximize the benefits of this approach [20]. Policymakers should consider promoting ambulatory care models to enhance efficiency and reduce healthcare costs.

Overall, the results of this study reinforce the growing evidence that ambulatory anesthesia is a safe, efficient, and cost-effective alternative to inpatient care. Its adoption can lead to improved resource utilization, better patient outcomes, and enhanced satisfaction, making it a valuable component of modern healthcare systems.

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Conclusion

Ambulatory anesthesia is a cost-effective and patient-centered approach that significantly reduces healthcare expenditure while improving recovery and satisfaction. It should be widely adopted in appropriate clinical settings.

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