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Original Research Article

Relevance of Routinely Prescribed Preoperative Investigations for Patients Undergoing Minor and Intermediate Surgery

Partha Sarathi Dutta[1], Priyadarshi Kundu[2], Bileswar Mistry[3]

[1]Associate Professor, MBBS, MS (General Surgery), Department of General Surgery, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal 722102

[2]Assistant Professor, MBBS, MS (Obstetrics & Gynaecology), Department of Gynaecology and Obstetrics, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal 722102

[3]Assistant Professor, MD (Anatomy), Department of Anatomy, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal 722102

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Corresponding Author: Dr. Partha Sarathi Dutta

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Abstract

Introduction: In order to identify any previous abnormalities that could negatively impact the surgical outcome, routine preoperative investigations are conducted prior to elective surgery. Yet laboratory tests take a lot of time and place a significant strain on the hospital's finances, staff, and patients' families.

Aims: Routine preoperative lab testing is often done before minor surgeries, even in healthy patients, causing resource and financial strain. This study evaluates the likelihood of finding clinically significant abnormalities in such cases.

Materials & Methods: This is a Prospective observational study, place of study IPGME & R & SSKM Hospital, Kolkata Period of Study from March 2010 to August 2011 and this study included a total of 200 patients

Result: In our study, Random Blood Sugar (RBS) was the most frequently ordered investigation, performed in 80 patients (40.0%), and followed by Complete Blood Count (CBC) in 50 patients (25.0%). Renal Function Tests (RFT) was done in 30 patients (15.0%), while both Liver Function Tests (LFT) and Chest X-Ray were ordered in 20 patients each (10.0%). This distribution was statistically significant ($p < 0.00001$).

Conclusion: Unselective testing led to avoidable financial burden on patients and healthcare systems, increased laboratory workload, and inefficient use of hospital resources. In addition, incidental or clinically irrelevant abnormal results often resulted in repeat testing, further escalating costs and causing procedural delays. Thus, the study emphasizes that a selective, clinically indicated approach to preoperative investigations—based on thorough history taking, physical examination, and individual risk assessment—is more cost-effective and rational. Avoiding unnecessary routine testing can substantially reduce healthcare expenditure while maintaining patient safety and quality of care.

Keywords: RBS, Laboratory tests, Cost-effectiveness, Preoperative investigations, Minor surgery and Financial burden.

Introduction

The goal of routine preoperative examinations prior to elective surgery is to identify any preexisting abnormalities that could compromise the surgical outcome. However, laboratory tests take a lot of time and place a significant financial and human cost on the hospital as well as the patient's family. Finding any concomitant medical issues in the patient scheduled for surgery can be done easily, effectively, and affordably with a regular physical examination and a typical preoperative history.Most surgical patients in our region of the nation have no concomitant conditions or very minor ones. The purpose of this study is to determine the likelihood that patients with a normal preoperative history and physical examination will have clinically significant abnormal routine laboratory test results. In order to predict or avoid any complications and to evaluate the physiological state of patients before surgery, preoperative examinations are frequently used. The indiscriminate use of standard laboratory testing before to low-risk procedures, especially in individuals with no severe comorbidities or aberrant clinical findings, has raised concerns in recent years. According to a number of studies, routine testing like this frequently has no effect on perioperative care or enhances patient outcomes, particularly when it comes to minor and

intermediate surgeries, which are linked to low anesthetic and surgical risks [1,2]. Notwithstanding these conclusions, many healthcare settings continue to use a predetermined panel of tests, such as electrocardiograms (ECG), liver function tests (LFT), renal function tests (RFT), complete blood counts (CBC), and chest X-rays.Institutional procedures, medicolegal issues, and disregard for evidence-based recommendations are frequently the causes of this tendency [3,4]. Consequently, these inquiries could result in needless postponements, elevated medical expenses, patient distress, and even intrusive follow-up examinations brought on by coincidental aberrant findings [5].

This study was conducted to assess the clinical relevance of routinely prescribed preoperative investigations in patients undergoing minor and intermediate surgeries in a tertiary care hospital setting. By evaluating the proportion of abnormal findings and their actual impact on surgical decision-making, the study aims to provide data that may inform the development of more rational and cost-effective preoperative testing protocols.

Materials and Methods

Study Design: Prospective observational study

Study Settings: Apparently healthy adult patients between 18 and 60 years of age with mild or no comorbid medical illness undergoing minor and intermediate grade surgery.

Place of Study: IPGME & R & SSKM Hospital, Kolkata

Period of Study: March 2010 to August2011

Sample Size: To obtain normally distributed data, 200 patients were enrolled in a prospective order.

Inclusion Criteria

- Patients scheduled for elective minor or intermediate surgical procedures under general, regional, or local anesthesia.
- Age ≥ 18 years, irrespective of gender.
- American Society of Anesthesiologists (ASA) physical status classification I or II, indicating patients with no or mild systemic disease.

Exclusion Criteria

- Unwilling patients
- Patients with malignancy
- Patients with severe comorbidity (severe respiratory, cardiovascular, neurological and renal disease)
- Pregnancy

Study Variables

- Age (in years)
- Gender (Male / Female)
- Complete Blood Count (CBC) – Hemoglobin, Total Leukocyte Count, Platelet Count
- Random Blood Sugar (RBS)
- Renal Function Tests (RFT)

Table 1: NICE guidelines classification of minor and intermediate grade surgery

Grade 1 surgery or minor surgery (examples)	Grade 2 or Intermediate surgery (examples)
Excision of skin lesion e,g, excision of sebaceous cyst, dermoid cyst, lipoma, incision & drainage, lymphnode biopsy, sclerotherapy, circumcision, eversion of sac, etc.	Mesh hernioplasty, Trendelenberg operation, orchidectomy, hemorrhoidectomy, fistulotomy, lateral anal sphincterotomy, excision of breast lump, laparoscopic cholecystectomy & open cholecystectomy, etc.

In concordance with NICE guidelines [6], we have selected patients with preoperative diagnosis of sebaceous cyst, dermoid cyst, ganglion, lipoma, lymph node biopsy, incision & drainage of abscess, haemangioma, circumcision, hydrocele, fibroadenoma, prepateller bursitis, in growing toe nail as grade 1 or minor surgery. Patients with cholelithiasis, inguinal hernia, undescended testis, varicose vein, hemorrhoid, fistula-in-ano, and fissure-in-ano were included in grade 2 or intermediate surgery.

Statistical Analysis: For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analysed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while Data were entered into Excel and analysed using SPSS and GraphPad Prism. Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests were used to compare independent groups, while paired t-tests accounted for correlations in paired data. Chi-square tests (including Fisher's exact test for small sample sizes) were used for categorical data comparisons. P-values ≤ 0.05 were considered statistically significant.

Result

Table 2: Distribution of Age and Sex Distribution of Study

		Frequency	Percent	P-value
Age Group (Years)	<20	20	10.0%	<.00001
	21–30	30	15.0%	
	41–50	40	20.0%	
	51–60	60	30.0%	
	>60	50	25.0%	
	Total	200	100.0%	
Sex	Male	130	65.0%	<.00001
	Female	70	35.0%	
	Total	200	100.0%	

Table 3: Distribution of Clinical Relevance of Routine Preoperative Investigations in Minor and Intermediate Surgeries

Investigation	Frequency	Percent	P-value
Complete Blood Count (CBC)	50	25.0%	<.00001
Random Blood Sugar (RBS)	80	40.0%	
Renal Function Tests (RFT)	30	15.0%	
Liver Function Tests (LFT)	20	10.0%	
Chest X-Ray	20	10.0%	
Total	200	100.0%	

Table 4: Distribution of Postoperative Outcomes Based on Preoperative Investigation Findings

Outcome Parameter	Frequency	Percent	P-value
Intraoperative Complications	45	22.5%	.01242
Postoperative Complications	50	25.0%	
Unplanned ICU Admission	45	22.5%	
Surgery Postponed/Cancelled	30	15.0%	
Length of Hospital Stay (days)	30	15.0%	
Total	200	100.0%	

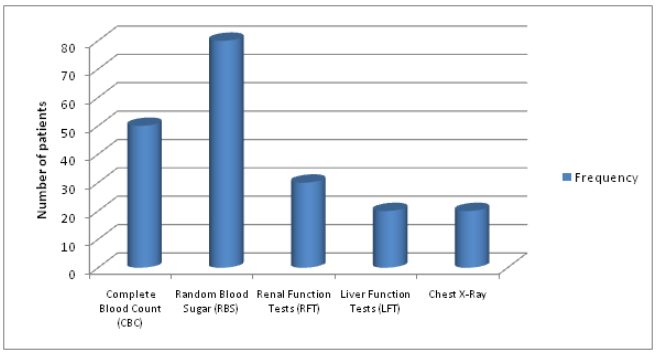

Figure 1: Distribution of Clinical Relevance of Routine Preoperative Investigations in Minor and Intermediate Surgeries

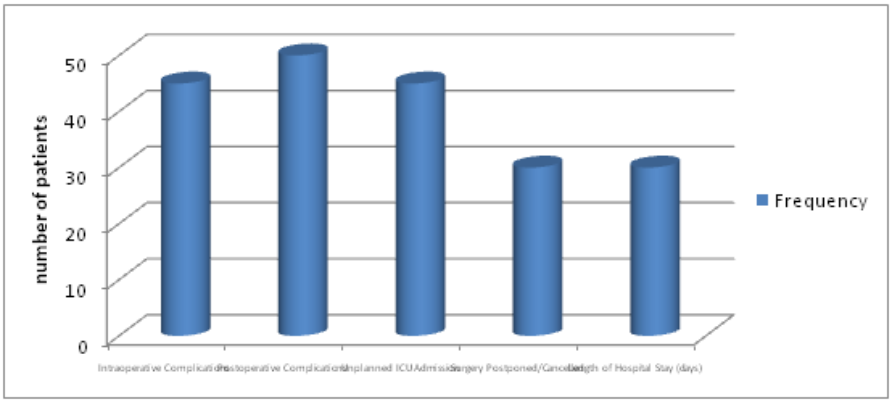

Figure 2: Distribution of Postoperative Outcomes Based on Preoperative Investigation Findings

In our study, most patients were aged 51–60 years (30.0%), followed by >60 years (25.0%), 41–50 years (20.0%), 21–30 years (15.0%), and <20 years (10.0%), with a statistically significant distribution ($p < 0.00001$).In our study of 200 patients, 130 were male (65.0%) and 70 were female (35.0%), showing a statistically significant sex distribution ($p < 0.00001$).In our study, Random Blood Sugar (RBS) was the most frequently ordered investigation, performed in 80 patients (40.0%), and followed by Complete Blood Count (CBC) in 50 patients (25.0%). Renal Function Tests (RFT) was done in 30 patients (15.0%), while both Liver Function Tests (LFT) and Chest X-Ray were ordered in 20 patients each (10.0%). This distribution was statistically significant ($p < 0.00001$).In our study, postoperative complications were the most common outcome, observed in 50 patients (25.0%), followed by intraoperative complications and unplanned ICU admissions, each seen in 45 patients (22.5%). Surgery was postponed or cancelled in 30 patients (15.0%), and prolonged hospital stay (≥2 days) was noted in another 30 patients (15.0%). The overall distribution of these outcomes was statistically significant ($p = 0.01242$).

Discussion

We found that the majority of patients in our study were aged between 51–60 years [60 out of 200 patients (30.0%)], which was statistically significant ($p < 0.00001$). This age distribution is consistent with findings from similar studies, where the highest proportion of patients undergoing surgical procedures also fell within this age group. Mohanan PV et al (2025) [7], supported this trend in their respective populations.

We found that the male population was higher [130 (65.0%)] compared to the female population [70 (35.0%)], with a male-to-female ratio of 1.8:1. This difference was statistically significant ($p < 0.00001$). Similar findings have been reported by Sharma et al. (2019) [8], who also observed male predominance in surgical or preoperative patient cohorts. Studies by Ramesh et al. (2020) [9] further support this trend, often attributing it to greater health-seeking behavior and occupational exposure among males.

We observed that Random Blood Sugar (RBS) testing was the most frequently performed preoperative investigation, conducted in 80 out of 200 patients (40.0%), which was statistically significant ($p < 0.00001$). Similar trends have been reported in previous studies by Gupta et al. (2018)[10], where RBS was routinely ordered to screen for undiagnosed or uncontrolled diabetes.

We observed that postoperative complications occurred in 50 out of 200 patients (25.0%), indicating a notable incidence of adverse outcomes following surgery, with the result being statistically significant ($p = 0.01242$). Similar findings have been reported by Patel et al. (2023)[11] also documented comparable complication rates, underscoring the importance of vigilant perioperative monitoring.

Conclusion

We concluded that emphasizes that even in patients having small and intermediate procedures without serious comorbidities, routine preoperative laboratory testing is routinely carried out. Males made up the majority of the patients, who were mostly between the ages of 51 and 60. Elective, indication-based preoperative testing guided by patient age, comorbidities, clinical history, physical examination, and the type of surgery was found to be more appropriate than blanket testing. Routine investigations contributed to unnecessary healthcare costs, patient anxiety, procedural delays, and inefficient utilization of hospital resources without demonstrable improvement in patient safety or outcomes.

Therefore, the study supports adherence to evidence-based guidelines advocating rational and targeted preoperative evaluation rather than routine testing for all patients undergoing minor and intermediate surgery. Implementing such a strategy can optimize resource utilization, reduce financial burden, and maintain high standards of patient care without compromising perioperative safety.

Unselective testing led to avoidable financial burden on patients and healthcare systems, increased laboratory workload, and inefficient use of hospital resources. In addition, incidental or clinically irrelevant abnormal results often resulted in repeat testing, further escalating costs and causing procedural delays.

Thus, the study emphasizes that a selective, clinically indicated approach to preoperative investigations—based on thorough history taking, physical examination, and individual risk assessment—is more cost-effective and rational. Avoiding unnecessary routine testing can substantially reduce healthcare expenditure while maintaining patient safety and quality of care.

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