

Study Protocol

An Evaluation of the POSSUM Score's Efficacy in Predicting the Outcome of Patients Undergoing a Laparotomy - A Study Protocol

Abstract

Background: POSSUM Score is used to assess the outcome of complication, surgical intervention and the proportion between predicted and observed morbidity and mortality. Such scoring systems have been especially designed to compare patient's severity of illness, predict mortality, morbidity and to plan an effective treatment protocol.

Objectives:

- a. To assess applicability of POSSUM score (morbidity and mortality) in surgical practice in a tertiary care centre in a rural area.
- b. To assess utility of POSSUM score in clinical management.

Methodology:

The complications included in the study will be assessed in patients undergoing laparotomy during the hospital stay irrespective of the period of stay. The severity of these complications will be predicted using POSSUM score. The cases developing complications will be randomly selected to make a total participant size of 100.

Results:

At the end of the study, we expect easy applicability of POSSUM score in assessment of morbidity and mortality in patients undergoing laparotomy.

Conclusion: We hope that POSSUM score is an easy tool which can be applied to assess the morbidity and mortality in patients undergoing laparotomy.

Keywords: POSSUM SCORE, MORBIDITY, MORTALITY, LAPAROTOMY

Introduction:

Background/rationale-At a time, when resources are constrained, and expectations from medical personnel are insurmountable [1], it is important to quantify the risk of peri-operative morbidity and mortality [2]. The prime purpose of any surgical procedure is the curtailment of morbidity and mortality rates [3] thus assisting in the faster adaptation of more effective treatment regimens [4].

Therefore, attention has been focused on the development of scoring systems that standardize patient data thus allowing meaningful comparisons [5]. The formation of such scoring systems has been designed specifically to compare populations and severity of illness, thus predicting mortality, morbidity and helping to form a treatment strategy [6].

One of the scoring systems so developed is-POSSUM SCORE (Physiological and Operative Severity Scoring system for the enumeration of Morbidity) which assesses the outcomes of surgical involvement, its complications and the proportion of predicted and observed morbidity and mortality in range of the population who receives medical care. [7,8,9,10].

Possum score was found in early nineties by Copeland and his colleagues at Department of General Surgery at Warrington Hospital, UK.

It includes a 2-part scoring system-

Physiological score which consists 12 parameters scored during pre-operative period.

Operative score which includes 6 parameters scored during the operative period.

This prospective study was taken up in a district hospital (AVBRH- Acharya Vinoba Bhave Rural Hospital) catering mainly to the rural population (Sawangi, Meghe, Wardha, Maharashtra) [11].

Objectives: To assess applicability of POSSUM score (morbidity and mortality) in surgical practice in a tertiary care centre in a rural area. To assess utility of POSSUM score in clinical management.

Methods:

Study design-Prospective Observational Study

Setting: Present study will be conducted in Acharya Vinoba Bhave Rural Hospital(AVBRH), a tertiary care teaching hospital situated in rural area of Wardha district, in central India attached to Jawaharlal Nehru Medical College, Sawangi Meghe Wardha over a period of 2 years. Among the above cases, those developing complications will be randomly selected to make total participant size of 100. The complications included in the study will be assessed in patient undergoing laparotomy during the hospital stay irrespective of the period of stay.

Variables-Mode of Surgery, Electrolyte imbalance, Blood pressure, Haemoglobin.

Data sources/ measurement-Data will be obtained from the patients records, laboratory records. Data will be entered in the master sheet as per the format and will be fed to appropriate statistical programme for analysis.

Bias-Selection bias and observer bias are expected to occur and will be dealt to avoid any bias.

Study size- 100

Quantitative variables-All the variables will be put into the formula to calculate the morbidity and mortality for the selected patients.

Statistical methods-The correlation will be calculated with appropriate statistical test.

Expected Outcomes/Results:

In this study we expect to see a strong co-relation between morbidity(12) and mortality calculated through POSSUM score(13) giving an idea about the prospectus of a patient undergoing laparotomy in a rural setting with limited resources. We also expect to see POSSUM score to be standardised for any patient undergoing surgery to predict an outcome after any surgery.

Discussion:

In an era of resource limitations and low economic status(14), POSSUM score with its parameters can become an easy and effective tool to predict the outcome of patients undergoing laparotomy pre operatively. POSSUM score can give an idea of possible complications, thus helping the health care provider to take appropriate measures to decrease the post operative morbidity and mortality.

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Annexures:

Tables:

Table 1) Physiological Severity Score

Sr. No.	Variables	1	2	4	8
1)	Age(years)	<60	61-70	>71	-
2)	Cardiac history/signs	No failure	Diuretic, digoxin antianginal or hypertensive therapy	Peripheral oedema, warfarin therapy	Raised JVP
	Chest radiograph	Normal	-	Borderline cardiomegaly	Cardiomegaly
3)	Respiratory history	No dyspnoea	Dyspnoea on exertion	Limiting dyspnoea	Dyspnoea at rest(>30/min)
	Chest radiograph	Normal	Mild COAD	Moderate COAD	Fibrosis or consolidation
4)	Blood pressure(systolic)	110-130	131-170	>171	-
5)	Pulse(beats/min)	50-80	81-100	101-120	>120
6)	GCS	15	12-14	9-11	<9
7)	Haemoglobin(gm%)	13-16	11.5-12.9	10.0-11.4	<10.0
8)	W.B.C (x1000)	4-10	10.1-20.0	>20.1	-
9)	Urea (mg%)	<21	21-28	28-42	>42
10)	Sodium	>136	131-135	126-130	<126
11)	Potassium	3.5-5.0	5.1-5.3	5.4-5.9	>5.9
12)	Electrocardiogram	Normal	-	Atrial fibrillation=60-90	Any other abnormal rhythm or >5 ectopics/min

Table 2) Operative Severity Score

Sr. No.	Variables	1	2	4	8
1)	Operative severity	-	Moderate	Major	Supra major
2)	Multiple procedures within 30 days	1	-	2	>2
3)	Total blood loss(ml)	<100	101-500	501-999	>1000
4)	Peritoneal soiling	None	Minor(serous fluid)	Local pus	Free bowel content(pus/blood)
5)	Presence of malignancy	None	Primary only	Nodal metastasis	Distant metastasis
6)	Mode of surgery	Elective	-	Emergency resuscitation of >2 hr possible	Emergency(<2 hrs surgery needed)

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