



A Clinical Study on the Effect of Preoperative Nutritional Status on Post Operative Wound Healing In Elective Laparotomy Cases

Dr Subrata Das, Dr Pratyush Kumar

Professor, DEPARTMENT OF GENERAL SURGERY, HMCH, BBSR.

2nd Year Pg Resident, DEPARTMENT OF GENERAL SURGERY, HMCH, BBSR.

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AIMS AND OBJECTIVE

- To study the preoperative nutritional status with parameter like serum albumin, BMI, Hb, lymphocyte count.
- To study the effect of malnutrition on postoperative wound healing.

MATERIALS AND METHODS

- This prospective study was conducted by selection of random 50 cases posted for major elective surgery at HiTech Medical college and Hospital, BBSR during the period from Feb 2024 to July 2024.
- The data in the study was collected by the use of a proforma.
- Cutoff values for serum albumin, total Lymphocytes, Haemoglobin, BM are taken as < 3.5, <1500, <10 gm, 18.5 to 24.9 respectively.
- To collect relevant information from individual patient by a meticulous clinical examination, history taking and specific investigation such as plasma albumin, hemoglobin, lymphocyte count were carried out. 50 cases were studied over a period of 6 months and the outcome documented.

□ Inclusion criteria:

1. Patients who were posted for elective laparotomy surgeries
2. Patient without co-morbidities like diabetes, jaundice, connective tissue disorder and chronic renal disorders or other immunodeficiency states.
3. Both sexes 18 to 70 years of age

□ Exclusion criteria:

1. Patients with above said co-morbidities
2. Patients with previous similar surgery
3. Patients on long term steroids

I. INTRODUCTION

- The adverse effect of malnutrition on the morbidity and mortality of patients was first recognized by Hippocrates (460 BC-370 BC) many centuries ago.
- There is a substantial evidence to show that cases having manifestations of malnourishment have a high risk of complications and also a higher mortality rate when compared to patients who have adequate nutritional reserves.
- A history regarding diet, clinical examination and relevant lab findings are the essential tools required for an accurate assessment of a patient's preoperative nutritional status.
- The serum albumin level is the most readily available and clinically useful parameter that predicts peri-operative morbidity and mortality.
- A serum albumin level greater than 3.5 g/dl suggests adequate protein stores and it confers a protective effect through several biological mechanisms.
- Decreased serum albumin is related to delayed wound repair, reduced collagen formation in the operative site or in the anastomotic site and reduction in immunological functions, like initiation of phagocytic response and formation of granuloma.

II. RESULTS

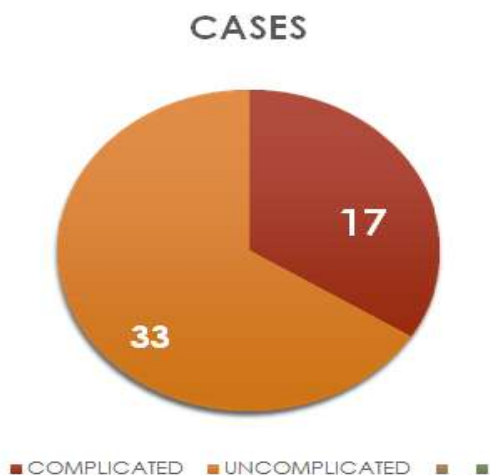
□ Comparison of complicated Vs uncomplicated cases

- Each laparotomy patient in the study group were followed up and complications in form of wound gaping in the 8th post operative day or anastomotic leaks either in the immediate post operative period or upon the initiation of oral feeds was recorded.
- Of the 50 cases in the study group about 17 cases amounting to 34% developed complications while 33 cases constituting 66% did not develop any post operative complications



CASES

patients developed complication.
 Hence the calculated p value was 0.012 and was found to be significant.



Serum albumin

The level of serum albumin preoperatively is noted in 50 cases. Of which 16 patients had values < 3.5 while 34 patients had values > 3.5. Of the 16 patients with hypo albumin levels 12 patients developed complications and Among the patients with normal albumin levels only 5 out of 34

Sr. Albumin	Complications(17)	
	Yes	No
<3.5(16)	12	4
>3.5(34)	5	29

Comparison of Hb%

Of the total 50 cases 20 patients had Hb levels < 10 and 30 patients had > 10. There were 13 patients with complication among the anaemic patients while only 4 patients among those with Hb % > 10 developed complication.

The p value was 0.02 and was found to be significant.

Hb%	Complications(17)	
	Yes	No
<10(20)	13	7
>10(30)	4	26



Comparison of total lymphocyte count vs complications

There were 18 patients with Lymphocyte count < 1500 of which 13 patients developed complications in contrast to just 4 of the 32 patients with count > 1500.

This pointed towards a clear association with lymphopenia and postoperative complication and P-value was checked which was significant with a value of 0.009

Lymphocyte count	Complications(17)	
	Yes	No
<1500(18)	13	5
>1500(32)	4	28

Comparison of BMI with postop complications

Among the 2 patients with BMI < 18.5 both developed complications while only 2 patients out of the 6 with BMI > 24.9 developed complication. But only 11 of the 42 patients with BMI in normal range developed complications.

Thus even though there was an association between abnormal BMI and post operative complications, the calculated P-value is 0.162 which was found to be statistically not significant

BMI	Complications(17)	
	Yes	No
<18.5(2)	2	0
18.5–24.9(42)	11	31
>25(6)	4	2

Comparison of Malnourishment and Postoperative complications

Among the 50 cases 31 patients are malnourished with regard to any one of the 4 nutrient indices pre operatively. Of these 31 cases 16 cases developed post operative complication. On the other hand 19 patients were

completely well nourished and among them only one patient developed post operative complication.

Thus a very strong association was seen between preoperative nutritional status and post operative complications which was statistically proved by a P-value of 0.028 which was statistically significant



	Complications
Malnourished(31)	16
Wellnourished(19)	1

III. CONCLUSION

From our study it can be fairly concluded that the preoperative nutritional status of the patient has a major impact on the postoperative wound healing. A poor preoperative status predisposes to many complications like wound gaping and leak.

Serum albumin has an indirect association with incidence of postoperative complications and their severity. Levels <3.5 had more complications than those with > 3.5. The association is statistically significant

Anemia has a detrimental effect on wound healing and its severity is directly reflected on the postoperative complications. Blood levels < 10 gm % are found to be significantly associated with postoperative morbidity.

Obesity observed by BMI values are found to have a relation to postoperative complications but there association is not statistically significant.

Total Lymphocytes level have a strong association with postoperative wound healing.

Thus we conclude that there is a statistically significant association present between preoperative nutritional status and postoperative wound healing.

Correct monitoring and correction of preoperative nutrient deficiency with blood products and supplements greatly reduce the incidence of postoperative complications.

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