



A PROSPECTIVE NON RANDOMIZED STUDY OF IMMUNONUTRITION IN MAJOR ELECTIVE ABDOMINAL SURGERY

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ABSTRACT

AIM The study aims to investigate the effect of Immunonutrients on patients undergoing Elective Major Gastrointestinal surgery by assessment of changes in the clinical outcome in terms of postoperative complications compared to a normal diet.

MATERIALS AND METHODOLOGY A prospective non randomized study which included 50 patients who underwent major elective GI surgery for both benign and malignant diseases with IMN supplementation. The study group n=50 where administered 30 gms of IMN formula three times a day for 5 days preoperatively by oral route. The control group were given a normal diet during the study period. The preoperative variables measured were weight, BMI. The post operative variables are the primary outcomes of infectious complications such as SSI, UTI, pneumonia, wound abscess and anastomotic leaks were recorded in the prescribed proforma.

CONCLUSION: The study outcome has proved a beneficial reduction of infectious complications and substantial improvement with the immunonutrient formula and it emphasizes the subset of malnourished patients are markedly benefitted.

KEYWORDS : IMN supplementation, immunonutrient, Immunonutrition, major abdominal surgeries

INTRODUCTION

Surgery, infection, injury and stress all these factors pose a catabolic state by the presence of an inflammation and thereby depletion of conditionally essential nutrients leading to increase in the risk of postoperative complications and eventually delay the recovery and enhance the overall morbidity of the surgical patients.

The role of Immunonutrients as a supplemental nutrition in elective gastrointestinal surgical patients and modulating the inflammatory response and improvement in postoperative outcome is to be evaluated.

AIM

The study aims to investigate the effect of Immunonutrients on patients undergoing Elective Major Gastrointestinal surgery by assessment of changes in the clinical outcome in terms of postoperative complications compared to a normal diet.

MATERIALS AND METHODOLOGY:

This is a Case Control study done in Department of surgery Trichy SRM medical college hospital and research centre, Trichy.

Inclusion Criteria:

All patients above 13years of age. Planned for elective major Gastro intestinal surgery

Exclusion Criteria:

- Intestinal obstruction.
- Vomiting and diarrhea.
- Diabetes mellitus.
- Pregnancy
- No evidence of liver and renal disease

A prospective non randomized study which included 50 patients who underwent major elective GI surgery for both benign and malignant diseases with IMN supplementation. The study group n=50 where administered 30 gms of IMN formula three times a day for 5 days preoperatively by oral route. The control group were given a normal diet during the study period. The preoperative variables measured were weight, BMI. The post operative variables are the primary outcomes of infectious complications such as SSI, UTI, pneumonia, wound abscess and anastomotic leaks were recorded in the prescribed proforma.

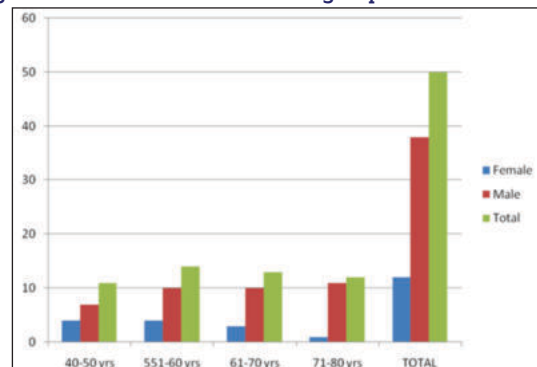
Composition Of Immunonutrients

Nutrients	Units	Per/100gm powder
Energy	Kcal	337.4
protein	gm	20
carbohydrate	gm	63
fat	gm	0.6
L-glutamine	Mg	500
l-arginine	Mg	3000
DHA	Mg	80
Linoleic acid	Mg	32
taurine	Mg	38
colostrum	Mg	2
vitamin C	Mg	83
vitaminE	Mg	33.3
vitamin K	Mg	50
vit A	Mcg	1812
biotin	Mcg	30
vit D	Mcg	2.2
Essential minerals		
Iron	Mg	18
Zinc	Mg	11
Selenium	Mg	15
Magnesium	Mcg	200
Calcium	Mg	1200
Copper	Mcg	410
molybdenum & chromium	Mcg	35
phosphorus-	Mg	700

RESULTS & OBSERVATIONS

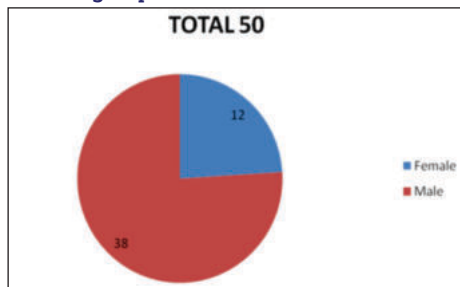
The age of the persons varies from 40 to 80 years. The age wise, sex wise distribution are appended in the diagram

Agewise sexwise distribution case group



The male persons are comparatively higher in number both in case groups and control groups as illustrated by the pie diagram below.

Sexwise case group



Surgeries are done as illustrated in the chart below according to the clinical diagnosis made earlier.

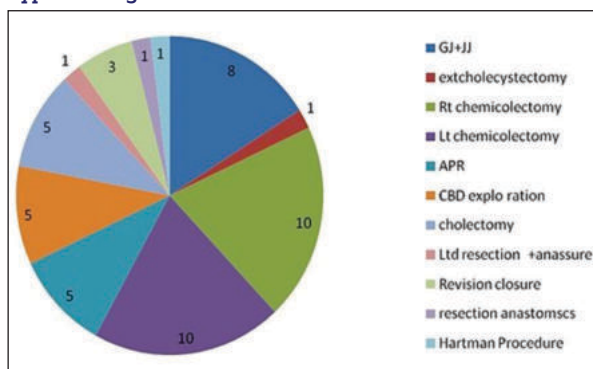
There were 11 types of surgeries done on 50 persons of case group- the details of which are appended below.

Details of surgery

GJ+JJ	8
extcholecystectomy	1
Rt hemicolectomy	10
Lt hemicolectomy	10
APR	5
CBD Exploration	5
Cholecystectomy	5
Ltd resection + anastomosis	1
Revision closure	3
resection anastomosis	1
Hartman Procedure	1
Total	50

The detailed surgeries done are best illustrated by the diagram also for easy visibility.

Types of surgeries done



A similar number of surgeries were done on the control group of fifty persons also to monitor the effect of the intervention of nutrition on the case group.

The impact of nutrients

The data collected on the 50 patients of case group on parameters of weight and BMI are appended below- before and after the intervention of added immuno nutrition by oral intake.

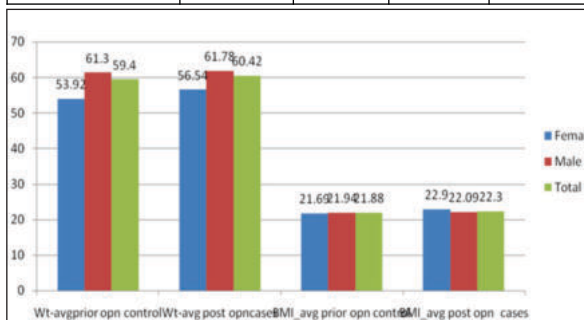
Before operation –Case Group After surgery and intervention of nutrition

Patients	weight(avg)	BMI(avg)	weight(avg)	BMI(avg)
Female	53.92kgs	21.69	56.54	22.9
Male	61.3 kgs	21.94	61.78	22.09

Total	59.4 kgs	21.88	60.42	22.3
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Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Hieght - Preop	50	1.6470	.07702	.01089
Case	50	1.6442	.06737	.00953
Control	50			
Weight - Preop	50	59.40	5.901	.834
Case	50	60.42	5.296	.749
Control	50			
BMI - Preop	50	21.8776	1.46839	.20766
Case	50	22.3704	1.82726	.25841
Control	50			
Height - Postop	50	1.6470	.07702	.01089
Case	50	1.6442	.06737	.00953
Control	50			
Weight - Postop	50	60.42	5.296	.749
Case	50	59.50	4.925	.696
Control	50			
BMI - Postop	50	22.30305	1.746991	.247062
Case	50	22.03404	1.732114	.244958
Control	50			



There was an isolated incidence in the Case group with nutrients intake and it is only two with this symptom in the control group. hence there is no significant variance between the groups.

Pneumonia

Considering the attack of pneumonia only.. 5 patients got suffered in the case group whereas this is as high as 36 % in the standard group. The p <0.05 is significant . The P value is 0.001

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.767 ^b	1	.001		
Continuity Correction ^a	9.237	1	.002		
Likelihood Ratio	11.498	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.658	1	.001		
N of Valid Cases	98				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.78.

Wound infection

The case group was affected by 36% and the control group by an enhanced level 50%. It can be confidently assessed that immunonutrients has a significant impact on the patients in reducing factors which help to increase the symptom of wound

infection.

Crosstab

		Group		Total
		Case	Control	
Wound infection - Day 3	Yes Count	15	24	39
	% within Group	31.3%	48.0%	39.8%
Total	No Count	33	26	59
	% within Group	68.8%	52.0%	60.2%
Total	Count	48	50	98
	% within Group	100.0%	100.0%	100.0%

Abdominal abscess

Both the groups have registered totally negative incidences during the study period making it irrelevant to comment on comparisons.

Anastomotic Leak

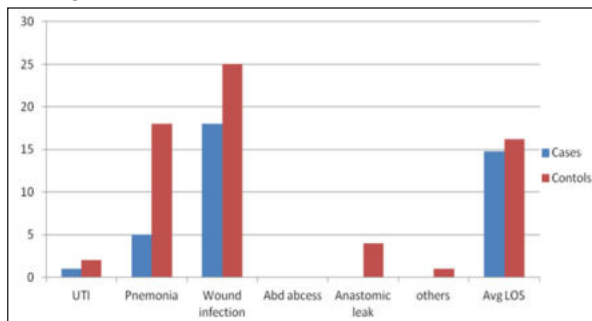
The control group with absence of added nutrients intervention reported a occurrence of one patient while it is none on the case group.

Others

The control group had a single instance complication.

Length of stay

The average hospital stay of the case group was 14.82 days while that of control group was higher at 16.78 days, indicating a reduction of 12% on hospital stay . The lower number of hospital stay along with better quality of life at hospital undoubtedly help to conclude that the intervention with immunonutrients on patients has a positive impact on healing.



The above said point are best illustrated by the table and the bar diagram shown below.

Post operative complications

Symptoms	Cases	Controls
UTI	1	2
Pneumonia	5	18
Wound infection	15	24
Abd abscess	-	-
Anastomotic leak	-	1
Avg Los	14.82	16.17

It is evident from the above data that after the intake of immunonutrients the weight of all categories of the sample group has marginally increased in spite of the expected correction on the lower side.

CONCLUSION:

The study outcome has proved a beneficial reduction of infectious complications and substantial improvement with the immunonutrient formula and it emphasizes the subset of malnourished patients are markedly benefitted.

LIMITATIONS:

The limitation of the study is that biochemical markers like serum prealbumin and serum transthyretin the markers of the

nutritional protein status was not measured. The more specific inflammatory markers

CRPIL-6, TNF-alpha ,neopterin were not recorded in the postoperative setting and hence the biochemical variables of inflammation could not be extrapolated with the positive improvement in clinical outcome with respect to infections.

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