



# NUTRITION IN SURGICAL PATIENTS; ROLE OF PARTIAL PARENTERAL NUTRITION AND TOTAL PARENTERAL NUTRITION IN IMMEDIATE POST OPERATIVE PERIOD

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**ABSTRACT... Objectives:** The objective of this study was to compare the frequency of complications in postoperative patients with partial parenteral nutrition and total parenteral nutrition in surgical wards. **Study design:** Randomized Controlled Trial. **Setting:** Department of General Surgery of Nishtar Hospital Multan. **Subjects & Methodology:** In this study, sixty patients of either gender with any abdominal surgery like primary repair of enteric perforation and repair of duodenal ulcer perforation were eligible for this study. In PPN group patients were given dextrose 10% in Ringer lactate solution just for 4 days. In TPN group patients got TPN solution that has 25 kcal/kg consistently for 4 days. All supplement preparations were prepared day by day under aseptic conditions. Infusion was performed through a central venous catheter using an injection micro pump. Information was gathered with respect to expanded hospital stay (> 7 days) and wound infection. **Results:** Age range in this study was from 20 to 40 years with mean age of  $31.333 \pm 3.67$  years in PPN group while  $32.200 \pm 3.87$  years in TPN group. Wound Infection was seen 50% in PPN group as compare to 10% in TPN group ( $P=0.000$ ) while Increased Hospital Stay was seen 26.7 % in PPN group as compare to 6.7% in TPN group ( $P=0.037$ ). **Conclusion:** PN feeding does not appear to offer beneficial advantage in rates of complications and it doesn't seem to diminish the length of hospital stay. TPN instantly taking after major surgery is a reasonable parenteral feeding.

**Key words:** Partial parenteral nutrition, Total parenteral nutrition, Complications

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## INTRODUCTION

In current surgical practice it is prudent to oversee patients inside an upgraded recover have them eating normal meal within 1–3 days. Thus, there is no place for routine perioperative nourishment. Just a minority of patients may get benefited by such treatment. These are dominantly patients who are at danger of developing complications after surgery, in particular patients who have endured generous weight reduction, have low body mass record (BMI) (under 18.5–22 kg/m<sup>2</sup> relying upon age) or show incendiary activity.<sup>1</sup> Once patients have infectious complications, nutritious support is by and large required. It is troublesome, ethically unacceptable, to randomize this subgroup into those that do or don't get dietary support.

The primary objectives of perioperative dietary support are to minimize negative protein adjust

by keeping away from starvation, with the reason for looking after muscle, insusceptible, and intellectual capacity and to improve postoperative recovery.<sup>2</sup> About 8-38% of recently hospitalized patients are malnourished and turn out to be more malnourished amid healing center stay.<sup>3</sup> Nutritional support is regularly given by means of the oral, enteral or parenteral route.

At whatever point conceivable, a patient's gastrointestinal tract is used for oral or enteral input, with parenteral nutrition (PN) held for patients with a non-working gastrointestinal tract. PN is a critical adjunctive nourishing treatment and comprises of complex blends of macronutrients and micronutrients. The many-sided quality of PN has brought about the improvement of numerous metabolic, mechanical and septic complexities, which are connected with increments in both

mortality and morbidity. Partial parenteral nutrition (PPN) is a supplemental type of food conveyed intravenously to patients. Glucose, amino acids, salts, lipids, and vitamins are joined in differing sums in the PPN to meet the patient's specific needs. Entanglements from utilizing fractional parenteral nourishment incorporate electrolyte and liquid irregularity, high blood sugars, and disease. These inconveniences are minimized by running blood tests, watching strict sterile conventions, and restricting the time spent on PPN. The administration of total parenteral nutrition (TPN) can obviously keep the impacts of starvation in patients with a nonfunctioning gastrointestinal tract. Be that as it may, it is hazy whether TPN can balance the catabolic reaction to surgical stretch and decrease confusions related with hypercatabolism.<sup>4</sup> Put in an unexpected way, the administration of total parenteral nutrition TPN may bring about noteworthy change in weight, nitrogen adjust, prealbumin levels and other healthful end focuses, yet the impact on clinically vital end focuses, for example, mortality and morbidity, is less sure. The purpose of this study was to compare the frequency of complications in term of wound infection and increased hospital stay in postoperative patients with partial parenteral nutrition and total parenteral nutrition in surgical wards of Nishtar Hospital Multan.

**MATERIAL AND METHODS**

This randomized controlled trial was conducted in department of general surgery of Nishtar Hospital Multan. Sixty patients of either gender with any abdominal surgery like primary repair of enteric perforation and repair of duodenal ulcer perforation were eligible for this study. Patients with history of diabetes, hypertension and renal disease were excluded. At the end of surgery, patients were randomized in the operating room using a sealed envelope to either PPN (Partial Parenteral Nutrition) or TPN (Total Parenteral Nutrition) group.

In PPN group patients were given dextrose 10% and Ringer lactate solution just for 4 days. In TPN group patients got TPN solution that has 25 kcal/kg consistently for 4 days. The proportion

of glucose to lipid in this arrangement was 2:1, and nonprotein calorie to nitrogen (kcal/kg) was 100:1. Multivitamins, electrolytes, trace elements and insulin were additionally incorporated into the TPN solution. Strict aseptic conditions was ensured. Infusion was performed through a central venous catheter using an injection micro pump. Information was gathered with respect to expanded hospital stay (> 7 days) and wound infection.

Data was analyzed with statistical analysis program (SPSS version 20). Analysis was done to compare proportion (like age groups, gender) of PPN Group and TPN group. Frequency and percentage was computed for qualitative variables like age groups, gender, wound infection and increased hospital stay. Chi-square test was applied to compare outcomes in both groups taken  $p \leq 0.05$  as significant

**RESULTS**

Age range in this study was from 20 to 40 years with mean age of  $31.333 \pm 3.67$  years in PPN group while  $32.200 \pm 3.87$  years in TPN group. Majority of patients were male in both groups as shown in Table-I.

Demographics	PPN n(%)	TPN n(%)
Male	25(83.3%)	21(70%)
Female	5(16.7%)	9(30%)
Repair of duodenal ulcer perforation	14(46.7%)	9(30%)
Repair of enteric perforation	16(53.3%)	21(70%)

**Table-I. Basic Demographics n=30**

Wound Infection was seen 50% in PPN group as compare to 10% in TPN group ( $P=0.000$ ) while Increased Hospital Stay was seen 26.7 % in PPN group as compare to 6.7% in TPN group ( $P=0.037$ ) as shown in Table-II.

Outcomes	PPN n(%)	TPN n(%)	P value
Wound Infection	15(50%)	3(10%)	0.000
Increased Hospital Stay	8(26.7%)	2(6.7%)	0.037

**Table-II. Comparison of outcomes in both groups n=60**

## DISCUSSION

Well-nourished patients react to, and recuperate from disease and surgery superior to undernourished patients. Studies demonstrate that 30–40% of patients show poor nourishment on admission to doctor's facility and that both normal and sub-optimal nutritional status deteriorate in hospital.<sup>5</sup> The physiological and psychosocial burdens of surgery increment the danger of poor nutritious status, which is obviously connected to poorer outcomes.<sup>6,7</sup> Poor nutrition has clinical, economical and personal satisfaction consequences.<sup>7</sup> Positive results for surgery depend intensely on adequate immune defense and wound healing. Both depend on improved blend of new proteins, which is altogether constrained by negative nitrogen and vitality adjust. A key point is that positive nitrogen adjust (net protein synthesis) can't be accomplished with negative energy balance. Semi-starvation will come within days as compare to weeks, when intake neglects to meet requirements, especially for protein and energy. In this study wound Infection was seen 50% in PPN group as compare to 10% in TPN group ( $P=0.000$ ) while increased hospital stay was seen 26.7 % in PPN group as compare to 6.7% in TPN group ( $P=0.037$ ). The most well-known issue identified with pharmaceutical preparation of PN definitions is everyday changes of patients' requirement following change in their clinical and physiological conditions.<sup>8-11</sup> Enhancing the nature of patients' metabolic backings can be accomplished with sufficient nutritious evaluation utilizing a standard convention. This is particularly critical in the settings, for example, a referral teaching hospital with high prevalence of nutritional support complexities.<sup>12</sup> The ASPEN principles for nutritional support, suggest that all patients who are possibility for PN should undergo nutritional assessment at baseline before initiation of metabolic support. Baseline nutritional assessments incorporate social affair of patients' demographic information, for example, age, sex, weight, stature, dietary history, physical examinations including anthropometric data, and biochemical parameters. These estimations can be utilized to separate amongst intense and

perpetual ailing health and figuring of patients' dietary prerequisites. These measurements were done to some degree for a large portion of the patients amid hospitalization course and had been recorded in their therapeutic diagrams. In view of the patients' standard dietary measurements, a metabolic bolster's arrangement for liquids, calories, protein, fat, and starch ought to be intended for every patient.<sup>13</sup> We have utilized ASPEN criteria for assessment of PN in the study. Roughly 21.1% of the patients got calorie objectives, yet we have not found any big relationship between's the patients' calorie admission and mortality. However sample size of the study was too little for assessment of relationships between the parameters. 80% of the patients got adequate liquid (volume) and it appears that low calorie admission was not because of inadequate intake of volume. Electrolytes, vitamins, minerals and other follow components are fundamental part of PN and metabolic complications can emerge taking after inappropriate replacement of these nutrients.<sup>11,13</sup> From these components, calcium was frequently replaced and inappropriately for the patients. Adequate calcium substitution is essential as there is a significant urine calcium loss in patients who receiving PN.<sup>14,15</sup>

## CONCLUSION

PN feeding does not appear to offer beneficial advantage in rates of complications and it doesn't seem to diminish the length of hospital stay. TPN instantly taking after major surgery is a reasonable parenteral feeding.

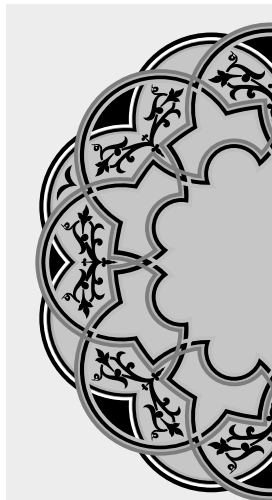
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*“Success is a lousy teacher,  
It seduces smart people into  
thinking they can’t lose.”*

**Bill Gates**

**AUTHORSHIP AND CONTRIBUTION DECLARATION**

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