

Evaluation of Preoperative Nutritional Status Using Subjective Global Assessment (SGA) Score in Predicting Postoperative Outcome in Patients Undergoing Gastrointestinal Anastomosis

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Abstract: Gastrointestinal anastomosis is one of the most common procedures performed for a wide variety of surgical conditions either as the primary treatment or as part of a major surgery such as cancer surgery to restore anastomosis following resection. Despite meticulous technique, anastomotic surgeries tend to have frequent complications ranging from issues as simple as anaemia following surgery to requiring ventilatory support and repeat surgery for their management. This study aims to evaluate the efficacy of the Subjective Global Assessment (SGA) Score in predicting postoperative morbidity in patients undergoing these surgeries depending on their preoperative nutritional status. The Subjective Global Assessment Score is a valuable tool in predicting postoperative complications in patients undergoing anastomotic surgeries and will enable us to provide perioperative nutritional support to patients who are prone to complications, thereby reducing wastage of human and monetary resources.

Keywords: Gastrointestinal anastomosis, Subjective Global Assessment, SGA score.

I. Introduction

Gastrointestinal anastomosis forms a major portion of procedures being done in general surgery department in the elective setting. Postoperative complications such as anastomotic leak hence morbidity and mortality are very much prevalent in such cases due to nutritional status of these patients. This in turn leads to elevation in the cost involved in postoperative management of these patients and thereby overall health-related expenditure of the State. Routine pre-operative assessment of patients is usually based on BMI which is not reliable owing to adaptation of the patient's body to chronic starvation – such patients appear to have a better post-operative outcome when compared to seemingly healthy patients. Subjective Global Assessment (SGA) score is a simple and effective method of assessing the pre-operative nutritional status of patients which helps in correcting the nutritional deficit before taking the patient for surgery. This in turn will help in reducing the morbidity and mortality associated with major gastrointestinal surgeries involving anastomosis and also the overall expenditure associated with health care in the Government set up.

II. Aims Of The Study

To assess the efficacy of Subjective Global Assessment (SGA) score in correlating preoperative nutritional status with postoperative outcome in patients undergoing gastrointestinal anastomosis surgeries.

III. Objectives of the study

1. To assess the preoperative nutritional status of patients undergoing elective gastrointestinal anastomosis surgeries using a subjective global assessment (SGA) score, determined by medical history and clinical findings.
2. To use this score in predicting postoperative outcome in these patients.
3. To utilize the Subjective Global Assessment (SGA) score to select patients at high risk for postoperative complications and to provide perioperative nutritional support to these patients.
4. To reduce the health-care costs associated with adverse postoperative outcomes in patients undergoing elective gastrointestinal anastomosis surgeries.

Eligibility Criteria

A. Inclusion criteria:

1. Patients - Age between 16 and 80 years in both sexes.
2. All patients undergoing elective Gastrointestinal surgeries involving bowel anastomosis.
3. Patients who consented for inclusion in the study according to designated proforma.

B. Exclusion criteria:

1. Patients undergoing emergency Gastrointestinal surgeries and major elective surgeries other than Gastrointestinal surgeries.
2. Patients who refused to give informed written consent.

IV. Materials And Methods

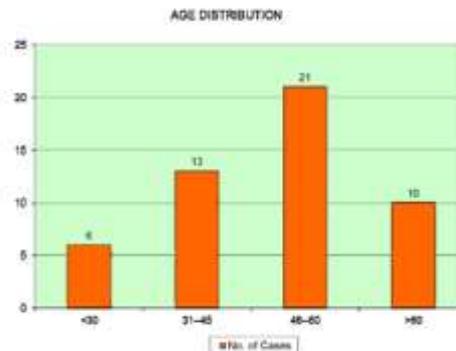
1. Patients subjected to this study were taken from surgical units of Government Rajaji Hospital, Madurai over a period of 6 months from January 2016 to June 2016.
2. 50 patients underwent Gastrointestinal anastomosis surgeries (34 males and 16 females) for various abdominal conditions.
3. Factors such as age, sex, weight loss, anorexia, vomiting, diarrhea, fat wasting, muscle wasting, oedema and ascites were taken into account.
4. Patients were investigated with Haemoglobin, Serum Protein, Complete blood count, blood sugar, renal function test and ultrasonogram of abdomen and pelvis.
5. Patients were classified into 3 groups - A, B & C, based on their preoperative nutritional status using Subjective Global Assessment Score.
6. Patients were operated upon by experienced surgeons and Gastrointestinal anastomosis surgeries were done for their conditions.
7. The incidence of post-operative morbidity was assessed in each group of patients and its correlation with preoperative nutritional status as predicted by the SGA score was observed.

Observation Of The Study

The study included 50 patients of whom 39 were male patients and 11 were female patients. The patients were attending the surgical out-patients department of Government Rajaji Hospital, Madurai. Among the 50 cases, the common age group of patients was between 46-60 years followed by patients between 31-45 years. Least incidence of requirement of surgery was found in young patients below 30 years of age. The observations and results of the study are depicted in the following tables.

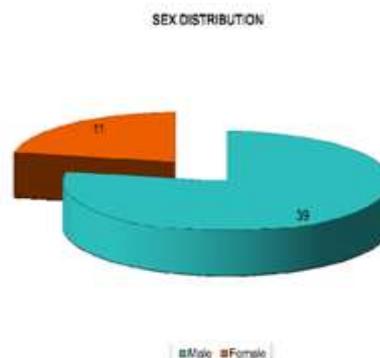
AGE DISTRIBUTION

AGE	No. of Cases	%
<30	6	12.00
31-45	13	26.00
46-60	21	42.00
>60	10	20.00
Total	50	100.00



Sex Distribution

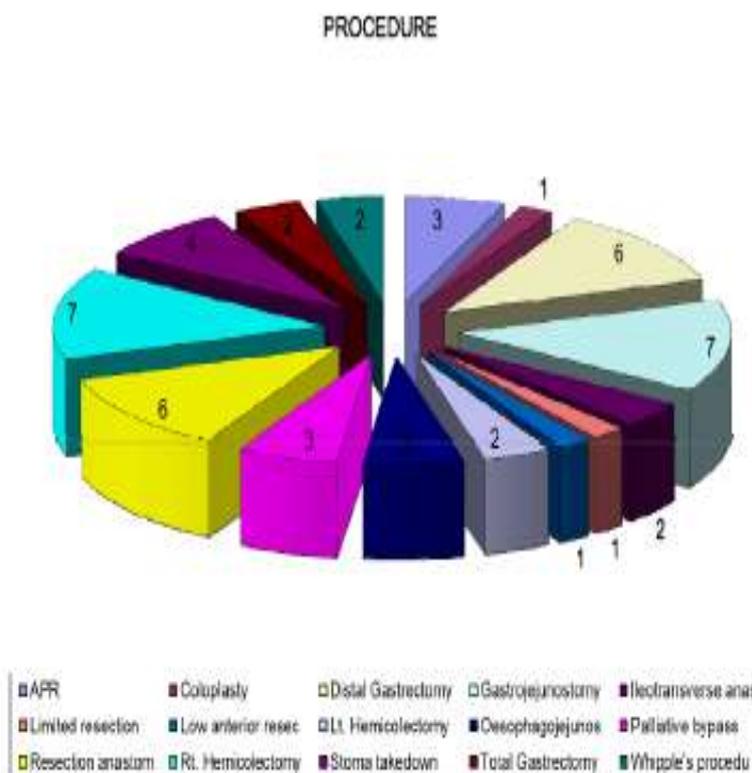
Sex vs	Yes	No	Total
Morbidity			
MALE	18	21	39
FEMALE	5	6	11
Total	23	27	50



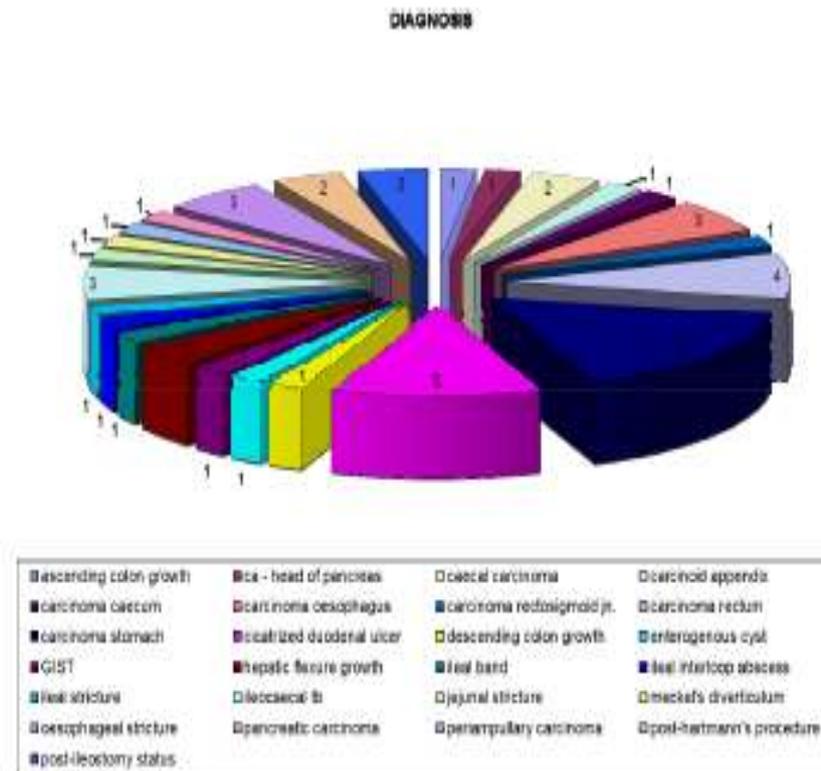
Procedures Performed

Procedure	No. of Cases	%
APR	3	6.00
Coloplasty	1	2.00
Distal Gastrectomy	6	12.00
Gastrojejunostomy	7	14.00
Ileotransverse anas	2	4.00
Limited resection	1	2.00
Low anterior resec	1	2.00
Lt. Hemicolectomy	2	4.00
Oesophagojejunos	3	6.00
Palliative bypass	3	6.00
Resection anastom	6	12.00
Rt. Hemicolectomy	7	14.00
Stoma takedown	4	8.00
Total Gastrectomy	2	4.00
Whipple's procedu	2	4.00
Total	50	100.00

Procedure Performed



Conditions For Which Anastomosis Was Done



V. Discussion Of The Study

In the study conducted, 50 patients were included out of which 39 patients were male and 11 patients were female patients. Patients most commonly belonged to 46-60 years age group which included 42% of patients followed by 26% of patients belonging to 31-45 years age group. The least occurrence was seen in less than 30 years age group. The commonest symptom that occurred in the patients was weight loss which was seen in 41 out of 50 patients constituting 82% of the study group. Other clinical features included anorexia seen in 72% of patients, fat loss in 54%, vomiting seen in 48%, diarrhea seen in 40%, muscle wasting in 28%, oedema in 18%, least common being ascites seen in 14% of patients. The incidence of vomiting was seen to be higher in patients having upper gastrointestinal pathology while diarrhea was more common in patients with colonic and distal small intestinal disorders. The commonest condition seen in the patients was Carcinoma Stomach which was the diagnosis in 8 patients out of 50, constituting 16% of the study group.

The most frequently performed procedures were Gastrojejunostomy and Right Hemicolectomy which were performed in 7 patients each, constituting 14% each of the total study group. There was no significant difference in the incidence of postoperative morbidity in male and female patients. The importance of preoperative BMI in the study group has been observed to be significant with all patients belonging to low BMI of less than 18.5 developing complications postoperatively compared to less than 20% of patients with normal BMI developing morbidity. Coming to the most important aspect of the study which is the Subjective Global Assessment score: out of 14 patients who belonged to the well nourished SGA Group A, only 1 patient was found to have developed postoperative morbidity, namely requirement of postoperative blood transfusion. One third of patients, namely 7 out of 21 patients belonging to the moderately nourished Group B, developed postoperative complications. Out of the 7 patients, 3 of them required blood transfusions, 2 patients required fresh frozen plasma and albumin transfusion, 1 patient required ventilator support and 1 patient developed anastomotic leak which was managed conservatively.

In the study group, 15 patients belonged to SGA Group C or the poorly nourished group. Of these, all 15 patients developed postoperative morbidity and required prolonged intensive care and hospital stay. 8 out of 15 patients required both blood and fresh frozen plasma transfusions for a minimum of 3 days and a maximum of 5 days. 3 patients developed postoperative anastomotic leak of which 2 patients had to be reoperated and stoma was created. 4 patients required ventilatory support for a minimum of 2 days and maximum of 6 days. 10 out of these 15 patients developed postoperative wound infection.

VI. Conclusion

The study was successfully completed and the Subjective Global Assessment score proved to be 100% successful in predicting postoperative morbidity in poorly nourished patients. The study shows the correlation between preoperative nutritional status of patients undergoing gastrointestinal anastomotic surgeries and the corresponding postoperative morbidity in these patients. Thus, the Subjective Global Assessment score is a valuable tool in predicting the occurrence of postoperative complications in patients whose preoperative nutritional status is below optimum level. Implementing this scoring system routinely in our wards prior to taking up patients for major surgeries and optimizing the nutritional status (improving status from Group C to Group A) with preoperative nutritional support will reduce the incidence of adverse outcomes in patients and will consequently reduce the health related monetary as well as resource expenditure of the State.

References

- [1]. Nadamuni NN, Prahlad Rao N. Body mass index: a measure of nutritional status in Indian population. *Eur J Clin Nutr* 1994;48 (Suppl 3):S131-S140.
- [2]. Indian Council of Medical Research. National Nutrition Monitoring Bureau Report for the Year 1996: Rural Surveys. Hyderabad: National Institute for Nutrition. 1996.
- [3]. Neumayer LA, Smout RJ, Horn HG, Horn SD. Early and sufficient feeding reduces length of stay and charges in surgical patients. *J Surg Res* 2001;95:73-7.
- [4]. Heys SD, Walker LG, Smith I, Eremin O. Enteral nutritional supplementation with key nutrients in patients with critical illness and cancer: a meta-analysis of randomized controlled clinical trials. *Ann Surg* 1999;229:467-77.
- [5]. Smedley F, Bowling T, James M, Stokes E, Goodger C, O'Connor O, et al. Randomized clinical trial of the effects of preoperative and postoperative oral nutritional supplements on clinical course and cost of care. *Br J Surg* 2004;91:983-90.
- [6]. Potter J, Langhorne P, Roberts M. Routine protein energy supplementation in adults: systematic review. *Br Med J* 1998;317:495-501.
- [7]. Lewis SJ, Egger M, Sylvester PA, Thomas S. Early enteral feeding versus "nil by mouth" after gastrointestinal surgery: systematic review and meta-analysis of controlled trials. *Br Med J* 2001;323:773-6.
- [8]. Jones JM. The methodology of nutritional screening and assessment tools. *J Hum Nutr Diet* 2002;15:59-71.
- [9]. Kondrup J, Allison SP, Elia M, Vellas B, Plauth M, and the Educational and Clinical Practice Committee, European Society of Parenteral and Enteral Nutrition (ESPEN). ESPEN guidelines for nutrition screening 2002. *Clin Nutr* 2003; 22: 415-21.
- [10]. ASPEN Board of Directors and the Clinical Guidelines Task Force. Guidelines for the use of parenteral, enteral nutrition in adult and pediatric patients. *J Parenteral Enteral Nutr* 2002;26:13A-138SA.
- [11]. Soares MJ, Shetty PS. Basal metabolic rates and metabolic economy in chronic undernutrition. *Eur J Clin Nutr* 1991;45:363-73.
- [12]. Jeejeebhoy KN. Clinical and functional assessments. In: Shils ME, Olson JA, Shike M, Eds. *Modern Nutrition in Health and Disease*, 8th ed. Philadelphia: Lea and Febiger. 1994: p.805-11.
- [13]. Detsky AS, Baker JP, Mendelson RA, Wolman SL, Wesson DE, Jeejeebhoy KN.
- [14]. Evaluating the accuracy of nutritional assessment techniques applied to hospitalized patients: methodology and comparisons. *J Parenter Enteral Nutr* 1984;8:153-9.
- [15]. Detsky AS, McLaughlin JR, Baker JP, Johnston N, Whittaker S, Mendelson RA, et al. What is subjective global assessment of nutritional status? *J Parenter Enteral Nutr* 1987;11:8-13.
- [16]. Persson C, Sjoden PO, Glimelius B. The Swedish version of the patient-generated subjective global assessment of nutritional status: gastrointestinal vs urological cancers. *Clin Nutr* 1999;18:71-7.
- [17]. Julien JP, Combe C, Lasseur C. Subjective global assessment of nutrition a useful diagnostic tool for nurses? *EDTNA ERCA J* 2001;27:193-6.
- [18]. Stephenson GR, Moretti EW, El-Moalem H, Clavien PA, Tuttle-Newhall JE.
- [19]. Malnutrition in liver transplant patients: preoperative subjective global assessment is predictive of outcomes after liver transplantation. *Transplantation* 2001;72:666-70.
- [20]. Sacks GS, Dearman K, Replogle WH, Cora VL, Meeks M, Canada T. Use of subjective global assessment to identify nutrition-associated complications and death in geriatric long-term care facility residents. *J Am Coll Nutr* 2000;19:570-7.

Proforma

Subjective Global Assessment

Name: _____
Date: _____

Medical History	A	B	C
WEIGHT Wt change past 6 months 0--5% loss 5-10% loss >10% loss Usual weight..... Current weight..... Amount weight loss..... % weight loss..... Weight change past 2 weeks No change; normal weight Increase to within 5% Increase (1 level above) No change, but below usual wt Increase to within 5-10% Decrease Amount.....			
DIETARY INTAKE No change; adequate No change; inadequate Change Suboptimal diet Full liquid Hypocaloric liquid Starvation Intake borderline; increasing Intake borderline; decreasing Intake poor; no change Intake poor; increasing Intake poor; decreasing Duration of change.....			
GASTROINTESTINAL SYMPTOMS Frequency (never, daily, no. of times/week) Duration (<2wk, >2wk) Nausea Vomiting Diarrhoea Anorexia None; intermittent Some (daily >2 week) All (daily >2 week)			
FUNCTIONAL CAPACITY No dysfunction Difficulty with ambulation/normal activities Bed/chair-ridden Change past 2 week Improved No change Regressed Duration of change.....			

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Physical examination	A	B	C
SUBCUTANEOUS FAT			
Under the eyes	Slightly bulging area		Hollowed look, depression, dark circles
Triceps	Large space between fingers		Very little space between fingers, or fingers touch
Biceps	Large space between fingers		Very little space between fingers, or fingers touch
MUSCLE WASTING			
Temple	Well-defined muscle/fat	Slight depression	Hollowing, depression
Clavicle	Not visible in Males; may be visible but not prominent in females Rounded	Some protrusion; may not be all the way along	Protruding/prominent bone
Shoulder		No square look; acromion process may protrude slightly	Square look; bones prominent
Scapula/ribs	Bones not prominent; no significant depressions	Mild depressions or bone may show slightly, not all areas	Bones prominent; significant depressions
Quadriceps	Well rounded; no depressions	Mild depression	Depression; thin
Calf	Well developed		Thin; no muscle definition
Knee	Bones not prominent		Bones prominent
Interosseous muscle between thumb and forefinger	Muscle protrudes; could be flat in females		Flat or depressed area
OEDEMA (related to malnutrition)	No sign	Mild to moderate	Severe
ASCITES (related to malnutrition)	No sign	Mild to moderate	Severe
OVERALL SGA RATING	A	B	C

Adapted from: Detsky et al., 1994²; Baxter Healthcare Corporation, 1993; McCann, 1996 (Ferguson, Bauer, Banks, Capra, 1996)³

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