Management of INTESTINAL FAILURE in Children In Developing Countries

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The term Short Gut Syndrome (SGS) was loosely used to define, the
pathophysiological disorders that result from the removal of a large part of the
small bowel. Anatomically, it was used to define, a small bowel length of 30
cms with ileo-caecal valve & 45 cms without it. Although the mucosal
absorptive surface is anatomically short in most of them, SGS (IF) also
occurs, with normal absorptive surface area, but functionally deficient
mucosa, or due to abnormal motility.

An alternative term, is Intestinal Failure (IF). IF was defined by Irving &
colleagues in 1980, as a “Reduction in functioning gut mass below the
minimal necessary for adequate digestion & absorption of nutrients”. Currently, IF is defined as “Reduced Gastrointestinal absorption to the extent
that Macronutrient, & / or, fluid & electrolyte Supplements, are required to
maintain health & / or Growth” (Fleming & Remington). This definition widens
the concept, to include the need for, enteral & parenteral nutrition for normal
growth & development, to treat intestinal failure in Children. IF in infants &
children is a challenging problem in developing countries, because of limited
resources & facilities, & in addition, the size of the Paediatric population, is
large. This problem is further aggravated by pre-existing malnutrition & delay
in referral. In addition, social factors & customs, delays the need for therapy.

IF may be acute or chronic, anatomical or physiological, or both. The problem
may be reversible or irreversible, & needs short term or long term nutritional
support. The end result is a malabsorptive state, & if not treated leads to,
growth failure, morbidity & mortality. G. Hill summarized the causes of
intestinal failure, as due to the bowel being, "obstructed, fistulated, inflamed,
too short or cannot cope". The various congenital causes that lead to IF
(SGS) are intestinal Atresia : esp. Jejunal atresia. Long segment
Hirschsprung’s disease, Neuronal Intestinal dysplasia (NID), gastroschisis &
exomphalos, malrotation with volvulus, visceral myopathy & other related
lesions such as, chylous ascites, & Meconium peritonitis.

In the neonatal period NNEC, is the major cause for IF (SGS). Malabsorptive
states due to congenital enzyme defects or villous disease also contributes to
it. Among acquired disorders: High output Intestinal fistula, Acute
Inflammatory Bowel disease in the tropics, – Acute Segmental Enteritis of
small bowel & Acute Colitis with hemolytic-uraemic syndrome (HUS), are
problems in developing countries. Kawasaki Disease with ischemic bowel &
Henoch-Schonlein purpura, with bowel necrosis may lead to IF (SGS).
Abdominal tuberculosis is still a problem in certain regions, although the incidence has come down. Although uncommon, Crohn’s disease & Ulcerative colitis, are evolving problems in our region. In infants & Children, High output Intestinal Fistula, Short-gut syndrome secondary to small bowel volvulus, massive bowel resection, major abdominal trauma, severe acute pancreatitis, chylous ascites or chylothorax, Mesenteric vascular injuries, are rare causes of IF.

Management of IF (SBS) consists of four phases:

Phase I : Resuscitation, Phase
Phase II : Definitive management
Phase III : Re-alimentation – re-education of the bowel
Phase IV : Recovery or Home care

The backbone of definitive management is provision of safe & effective, long term nutrition support. Although surgical management plays a role in long term venous access & in the initial phases of corrective surgical procedures, such as infolding or tapering, incorporation of valves, short- circuiting loops & reservoir pouches are of limited value. The procedure of intestinal lengthening (Bianchi’s technique), has been used with some success, but, in comparison to longterm nutritional support, it has not shown any definitive advantage. Newer procedures, such as, serial transverse enteroplasty, has shown promising results in children with SBS. The role of intestinal transplantation, is still experimental & expensive, & It is limited to, certain select centres. The role of hormones in mucosal growth (GH & IGF), are still not well established, but early results are not encouraging.

In our series, apart from definitive surgical procedures for primary disease, nutritional support has been the main stay, of management of infants & children with IF. The ultimate aim is to decrease the use of parenteral nutrition, & to improve the mucosal absorptive function. The major problems are cost, duration of hospital stay, & the cost re-imburshment, by insurance firms. Sepsis is the most dreaded complication, of long term parenteral nutrition, followed by liver dysfunction. The newer fish oil based emulsions, have shown promising results in reducing or reverting parenteral nutrition induced liver dysfunction. In the long term, home nutritional support (HNS) & cyclic nutrition in the hospital or at home, are preferred, in our environment. The role of Immuno-nutrition, will be discussed, with specific reference to developing countries. A multi-disciplinary team approach is essential, for successful management.

In this lecture, the author's personal experience, in managing IF (SGS) in children in developing countries, over the last 30 years will be discussed. The support of the family members, hospital & the society are essential for successful management & outcome.
In conclusion, management of IF (SGS) is a challenging, yet rewarding problem in developing countries. We have our successes & failures. Good to excellent results are obtained, in many congenital lesions leading to IF, high output fistulas, tropical inflammatory bowel disease & other lesions in our environment. Awareness & early referral, will improve results. Special nutrition support service team & nursing staff are needed to reduce sepsis. We have to modify our services, to suit family needs & affordability. Insurance system needs be changed, to help children, through governmental regulations.