Title of the Thesis / Research:

Effects of post operative enteral L-Glutamine supplementation on nutritional status, antioxidant status, postoperative outcomes and inflammatory response in subjects with head and neck and/or upper GI malignancies.

1. Preamble (or Prelude) / Introduction:

Head and neck (HNC) and Upper GI (UGI) malignancy is one of the ten most frequent cancers worldwide (Chen, et al, 2007). Globally, there are around 2,70,000 new cases annually and 1,45,000 deaths, of which two-thirds occur in developing countries and one-third of the world’s burden accounts for Indian sub-continent majorly affecting men due to tobacco and alcohol use (Subramanian, et al, 2009). Tobacco smoking has been identified as a major risk factor for both head and neck cancers and esophageal cancers (Subramanian, et al, 2009).


Glutamine is the most abundant free amino acid in plasma and tissue pools and plays an important intermediate in a number of metabolic pathways. There is evidence that glutamine may both stimulate protein synthesis and inhibit protein degradation (Smith, et al, 1990). There is increasing evidence supporting a protective role for glutamine supplementation in enteral or total parenteral nutrition (Amores-Sa´ nchez, et al, 1999). In relation to cancer, it seems that a supplementation of glutamine in the diet may be beneficial for several reasons (Decker-Baumann, et al 1999).

Tumour progression is associated with an avid consumption of host glutamine by tumour cells and a depression in the activity of natural killer cells due to a decrease in glutathione concentrations in these cells (Fahr, et al, 1988). Therefore, dietary supplementation of glutamine
could have the beneficial effect of restoring the levels of glutathione inside natural killer cells. At the same time, however, it could have the deleterious effect of feeding the tumour (Yoshida, et al, 1995). However, because glutamine consumption by tumours is almost absolutely dissipative, an increase in the growth rate of the tumour due to this a process should not be expected (Austgen, et al, 1992), (Luque, et al, 1990).

In fact, there are experimental data that seem to indicate that a dietary supplement diminishes tumour growth by restoring the function of natural killer cells and improves protein metabolism of the host or patient (Yoshida, et al, 1995), (Fahr, et al, 1994).

Additionally, an oral supplement of glutamine can increase the selectivity of antitumor drugs (Decker-Baumann, et al 1999), (Jian, et al1999), (Miller, et al, 1999) by protecting the patient from oxidative damage through an increase in glutathione contents (Nair, et al, 1995). Several groups have shown that glutamine can also protect against oxidative damage induced by radiotherapy (Yoshida, et al, 1995), (Miller, et al, 1999), (Canuto, et al, 1995).

However, there is no consensus on the usefulness of glutamine supplementation for cancer patients (Jensen, et al, 1994). For instance, a recent double-blind, randomized study on glutamine supplementation in cancer patients receiving chemotherapy concluded that glutamine did not have a significant effect on either tumour response or secondary effects of chemotherapy (Bozzetti, et al, 1997).

In this study we will evaluate the effects of enteral L Glutamine supplementation on postoperative outcomes, antioxidant status, nutritional status and systemic inflammatory response in patients with head and neck cancers and upper GI malignancies posted for surgery.