

## Abstracts

# 26th Annual Congress of the Royal College of Surgeons of Thailand, July 2001

### GENERAL SURGERY

#### Nutrition in Surgical Oncology

*Luca Gianotti*

Protein-energy malnutrition is commonly associated with cancer. The paraneoplastic syndrome characterized by involuntary weight loss, anorexia, abnormal metabolisms, and tissue wasting is termed cancer cachexia. Many cancer-related conditions are responsible for the development of cachexia, but in general it is possible to divide them into two main causes of reduced nutrient intake (or absorption) and metabolism imbalance.

The association between cancer malnutrition and poor outcome has been known for many years. There is evidence that nutritional depletion causes alteration of both cellular and humoral immune function and inflammatory response, making patients more susceptible to poor wound healing, increased infectious complications, prolonged postoperative ileus and longer hospital stay. Therefore, nutritional evaluation of the cancer patient has to be done at the time of the diagnosis in order to detect specific nutrient deficits and to identify severely malnourished patients who are at high risk for increased morbidity and mortality and many benefit from a nutritional support. Nutritional status can be determined by using different clinical, anthropometric and laboratory parameters, to determine whether a given patient is either well-nourished or malnourished. Several Societies of parenteral and enteral nutrition established indications and guidelines for the correct prescription of the perioperative nutritional support in surgical patients. These guidelines may be summarized in a decision-making flowchart.

As a general rule, nutritional support should be

provided via the enteral route whenever possible, because enteral feeding has less complications, is easier to administer, less expensive and more physiological than TPN. Whatever route or regimen has been selected, the daily requirements for calories, proteins, fluids, electrolytes, vitamins and trace elements should be satisfied. Caloric requirements can be calculated by using the Harris-Benedict formula. The basal energy expenditure is then adjusted by a correction factor related to the level of activity and the clinical conditions. Practically, the caloric requirement of surgical patients never exceeds 25-28 kcal/kg/day with the exception of subjects suffering from large burns, acute necrotizing pancreatitis, major trauma, or severe sepsis.

In the last 10 years, the interest of several authors moved from the simple calculation of caloric and nitrogen requirement to the study of new and specific dietary substrates (arginine, glutamine, omega-3 fatty acids, etc.) with the ability to modulate host defense mechanisms, inflammatory response, intestinal barrier function, tissue oxygen, nitrogen metabolism, ischemia/reperfusion injury, etc, which could represent theoretical mechanisms for better clinical outcome. Several studies showed outstanding metabolic advantages of glutamine (Gln) supplementation but few trials addressed the impact of Gln on clinical outcomes of surgical cancer patients. In several prospective randomized trials the administration of diets supplemented with different combination of immunonutrients showed, with surprising consistency, a significant improvement of the host defense mechanisms and modulation of the inflammatory and two recent meta-analysis suggested that enteral immunonutrition given shortly after surgery or trauma significantly reduced

the rate of infection and the length of hospitalization. Even more promising results have been obtained by anticipating the administration of these immunoenhancing diets before operation to obtain efficacious concentration of immunonutrients at the time of surgical injury. Perioperative supplementation with immunonutrients prevented the early postoperative depression of the immune response. Intraoperative gut microperfusion was significant higher in the patients receiving the supplemented diet than the in control patients and the higher values of intramucosal jejunal pH observed in the supplemented group suggested that an adequate splanchnic blood flow promoted a good tissue oxygen tension, delivery and utilization. In a phase III prospective, randomized double-blind trial, with 206 cancer patients it was shown that perioperative immunonutrition significantly decreased the rate of postoperative infections, the use of antibiotics, and allowed a two-day shorter length of hospital stay. Moreover, this approach led to a significant saving of health resources used to treat postoperative complications.

Current concepts on cancer therapy are frequently based on multimodality treatment with patients undergoing surgery plus radio- and chemotherapy given pre-, intra- or postoperatively. It is well known that these therapies, especially when provided in an aggressive fashion, may induce damages to both the immune system and to the gastrointestinal tract, sometimes resulting in a decrease in food intake and in a subsequent, worsening of the nutritional status.

Patients submitted to major gastrointestinal surgery, undergoing adjuvant radiation therapy and chemotherapy, could benefit from prolonged nutritional support during adjuvant treatment.

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### **Clinical Governance in Surgery - Where have we Got to?**

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*JG Temple*

'Clinical Governance is a framework in which NHS organisations are accountable for continuously improving the quality of their services, and safeguarding high standards of care by creating an environment in which excellence in Clinical Care will flourish. This is the cornerstone around which developing the new. NHS has been guaranteed by government. There are three fundamentals to this;

1. Setting clear national quality standards.
2. Ensuring local delivery through clinical governance.
3. Monitoring that delivery.

Assessing quality standards has been delegated to NICE in England, and the Clinical Standards Board in Scotland but certainly involves close liaison with the Medical Royal Colleges and Faculties. Clinical Governance leading as it should to life long learning and professional self regulation is the means by which all forms of quality care should be guaranteed. Although the Clinical Standards Board in Scotland does not monitor clinical governance, it assesses and accredits Trusts under its generic standards. These include those tissue related to and underpinning clinical effectiveness: essential elements of clinical governance, i.e., implementation of guidelines and clinical audit performance management. The "new world" should guarantee consistently better clinical outcomes, because the major criticism at the present time is that there is a significant variation in performance from world class to poor if not sub-standard in the current NHS although most organisations and teams would expect to fall within the middle of such a wide variation, delivering an acceptable quality of clinical care. The aim of the whole Clinical Governance direction of travel is to ensure continuous improvement in the quality of care towards the acceptable and eventually excellence. Underpinning all this is a statutory responsibility by all NHS Health Care delivery system be the Trusts or based in Primary Care of having in place arrangements for improving and monitoring the quality of healthcare provided. The new culture is attempting to move from blame to being on a "learning" basis. This can only be achieved by developing proper leadership and breaking down professional barriers.

Much has been achieved already, not only in Surgery but in all clinical disciplines but it is equally true that much remains to be done. Those improvements, which have occurred, tend once again to be variable rather than consistent and such variations may even occur within a very short distance of each other in a geographic location. At local level the key is the appraisal process but this itself has presented some difficulty.

The appraisal as envisaged by those at senior managerial level is in fact a performance assessment process, underneath which there will have to be a true appraisal process which is non judgmental, proactive and non threatening.

#### ***Annual Assessment (Performance Review)***

There should be an annual performance assessment. This is an employer led process based around the employees individual job plan. The employee has his/her own professional and development needs and the organisation has its service goal. This meeting will be very much therefore an objective setting and completion of

objective type meeting. It will be carried out on an annual basis. It should not necessarily encompass discussion about personal problems. The manager carrying out this "assessment" will be representing the interest of the organisation and career therefore have the interests of the individual as their primary goal. This annual assessment will be one of the measures which informs the clinical governance and the results therefore will be built up year on year to go forward to the five year GMC revalidation process.

#### *Annual Appraisal*

The individual specialist him or herself will have need of an annual appraisal type process which will help their continuing professional development. This should be non-judgemental, supportive and should not involve negotiation although it could result in an agreed report. This appraisal should be carried out regularly at least yearly, if not twice yearly and at local Trust level. There may be debate about who would actually carry out this appraisal, but clearly it should be somebody who the appraisee respects although not necessarily is close to.

The third type of meeting is that which would take place on the five-year cycle to inform revalidation and this, I think is for debate in a wider context.

For all this to take place, appraisees and appraisers will need to know what to expect and the latter will have to have undergone some formal training.

This 'appraisal' mechanisms can then be the basis for professional regulation and revalidation. Whether there is professional self-regulation remains yet to be seen, due to the difficulties which the GMC has experienced over the last two years. The key to all this process will be early diagnosis of dysfunction leading to poor quality of care and bad patient outcomes. In this context, "the Supporting Doctors Protecting Patients" arrangements will hopefully be a step in the right direction. Finally, the whole basis and role for Medical Directors and below them Clinical Directors and the ability of these individuals to have real teeth to produce change needs to be guaranteed. At national level the development and continuance of clear standards of both care in service terms and education and training need to be assured.

Professional behaviour is truly the responsibility of the GMC, aided by the Medical Royal Colleges. Clinical Training is very certainly a role and responsibility overall carried by the GMC but in effect organised by the Medical Royal Colleges and Postgraduate Deans. Service delivery is to be guaranteed by the mechanisms outlined above. At all levels lay involvement is now essential to guarantee public assurance.

Where do the Medical Royal Colleges fit into this?

They have a vital role but they need to play for this quite seriously. The standards required will have some specialty specific basis but should be set around the generic framework. The Colleges need to come together to produce and deliver this framework, and in so going the profession has the advantage of such a system being derived from organisations which have a degree of professional independence. Should the Colleges and the Faculties not be able to achieve this aim, then it will be College Fellows and members who still are used to derive, perform and monitor this framework but they will not be doing that in the name of the Colleges but presumably as part of some wider and more centrally controlled organisation.

There will be a change in culture, which is necessary to move from the blame to a more blame free, learning environment. We need to be able to recognise that "it is not wrong to admit one may have been wrong" and but to have in place an option which allows the individual and the service to learn from that situation.

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#### **Surgical Excellence**

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*Christopher Bulstrode*

Most doctors especially surgeons are keen to strive for the highest standards of clinical practice. However the ever increasing demand for service work has led to tremendous pressure on training, and the time needed for surgeons to bring themselves up to date with the latest advances in their specialty.

If we are to maintain surgical excellence and indeed take it forward, we need sustained support from every individual surgeon, the Colleges representing those professionals and the general public themselves.

The adverse publicity that surgeons have recently received in Britain and the United States may not be altogether a disaster. It may reflect that at last the public is waking up to the fact that they too must take responsibility for good surgery in the future.

We, at the College, have been working at every level to help trainers and examiners make best use of the very limited time that they have available for improving standards.

We have developed techniques for planning training events which can be as short as a couple minutes in a busy list but which are equally valuable in planning a whole training event.

We are also developing new techniques to enable examiners to assess competence more efficiently.

We can provide training in these techniques using

short courses which can be set up to be run by your own surgeons in your own country.

This talk will give some examples of how these systems work.

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### Modern Management of Colorectal Cancer

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*RJC Steele*

The outcome of the treatment of colorectal cancer is still largely determined by stage at presentation and currently there is worldwide interest in screening for this disease. There is also good evidence that screening can prevent colorectal cancer by detecting pre-malignant adenomas. There is also considerable interest in primary prevention using life style modification and chemoprevention. For established colorectal cancer, however, surgery remains the only potentially curative form of treatment and in rectal cancer recent interest has focused on the technique of total mesorectal excision which can achieve local recurrence rates of less than 10 per cent after surgery alone. There is also interest in the local excision of early rectal cancer but this is only suitable for highly selected cases and its overall role is not fully established. Adjuvant preoperative radiotherapy has been shown to further reduce local recurrence rates in rectal cancer and may have an effect on ultimate survival. The use of adjuvant chemotherapy for Duke's stage C cancer is now well established although its overall effect on survival is relatively small. The treatment of advanced disease has improved greatly in recent times with safer hepatic resections for liver metastases and the development of new chemotherapeutic agents. Molecular based treatment is being actively explored but has yet to make an impact.

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### Liver Metastases

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*Rowan Parks*

Liver resection for metastatic disease is predominantly undertaken for patients with colorectal metastases. Numerous studies have documented the unfavorable prognosis of untreated colorectal hepatic metastases. Without treatment, 60-75 per cent patients are dead at one year and the mortality rate at 3 years is almost 100 per cent. Hepatic resection, if possible, is the treatment of choice for colorectal metastases and offers the only potential for cure. Five-year survival rates range between 25-50 per cent in most major centres. The number of metastases is no longer considered to be an

important predictor of long-term survival. Complete excision of all demonstrable tumour with clear resection margins has been shown to be of much greater importance. Segmental based resection allows excision of bilateral or multiple liver metastases that previously might have been deemed irresectable. Staged hepatic resection is another technique whereby large volumes of liver tissue can be resected without inducing hepatic insufficiency. There is increasing evidence that selected patients who develop recurrent hepatic tumour following previous resection of colorectal liver metastases will benefit from re-resection.

Surgical resection of hepatic metastases from neuroendocrine tumors is curative in some cases and is usually effective in relieving symptoms. Palliative debulking or cytoreductive surgery is often worth while as it offers a chance of prolonged survival and may cause complete or partial relief of incapacitating symptoms related to hormone production.

The role of hepatic resection for non-colorectal and non-neuroendocrine metastases is less well defined. Most studies report small number of patients and must be regarded as anecdotal. There is little evidence to support routine resection of metastases from tumours of the oesophagus, stomach, small intestine, pancreas, breast or liver metastases from gynaecological organs. However, resection of metastases from primary renal cell carcinoma, Wilms' tumour and adrenocortical carcinoma is indicated.

Alternative therapeutic strategies for management of liver metastases include interstitial ablative techniques such as cryotherapy, radiofrequency ablation or percutaneous ethanol injection.

The majority of patients with liver metastases are not suitable for resection and chemotherapy offer the only hope of palliation. It is not possible to cure patients with liver metastases by using chemotherapy but symptoms palliation and prolonged survival has been reported for patients with disseminated disease. Chemotherapy may be administered systemically or regionally by the hepatic artery or portal vein. Chemotherapy may be given as the sole form of treatment in patients with unresectable disease (palliative) or may be given prior to resection (neo-adjuvant) or following resection (adjuvant).

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### Adjuvant Chemotherapy for Colorectal Metastases

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*Rowan Parks*

Liver metastases occur in approx 40 per cent of patients with colorectal carcinoma and they are the principal cause of death in these patients. Hepatic resection is at present the only treatment offering potential

cure, with long term survival rates being in the order of 25-50 per cent. Unfortunately, at the present time only 10-15 per cent of colorectal metastases are considered resectable. Adjuvant chemotherapy administered after resection of colorectal liver metastases to reduce the risk of recurrence has been assessed in both retrospective and also prospective comparative studies. Until recently none have shown significant effectiveness. However, two recent studies using adjuvant hepatic artery infusion combined with systemic chemotherapy after liver resection have demonstrated significant benefits with improved recurrence free survival compared with surgery alone and improved overall survival. These results are encouraging for the future.

Pre-operative chemotherapy is already used in practice in many institutions prior to resection of colorectal liver metastases although the principal of the method is not yet validated by phase III clinical study. It is not infrequently administered to patients with synchronous metastases during the delay between resection of the primary tumour and liver resection for the metastases with reduction in the size of the metastases often being observed. Pre-operative chemotherapy has been shown in some cases to cause reduction of tumour size thus allowing previously unresectable metastases to become resectable. A large prospective randomised clinical trial examining the effectiveness of neoadjuvant chemotherapy is currently underway.

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## Pancreatic Cancer

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*Rowan Parks*

Pancreatic cancer is the sixth leading cause of cancer related death. Surgical resection offers the only hope of long-term survival but the aggressive nature of the disease together with its late presentation results in an extremely poor overall prognosis. Only 10 per cent of affected patients are alive 12 months after diagnosis and the overall 5-year survival is less than 3 per cent. Recent progress in the diagnosis and staging of pancreatic cancer means that only those with a realistic hope of cure need undergo laparotomy. Computed Tomography (CT) is the most widely used and most useful modality for the diagnosis and staging of pancreatic cancer. Despite technological advances it cannot, however, detect small sub-capsular liver metastases or peritoneal deposits. The usefulness of CT in detecting vascular invasion by pancreatic cancer varies in the literature and remains highly dependant on patient selection and local experience. Such criticism can also be levelled and newer

investigative modalities such as Magnetic Resonance Imaging (MRI), Endoscopic Ultrasonography (EUS) and Intra-Vascular Ultrasonography (IVUS). In recent years interest has focused on the usefulness of laparoscopy combined with laparoscopic ultrasonography in the staging of patients with pancreatic cancer. In approximately one third of patients this technique will reveal local invasion or occult metastatic lesions not identified by other imaging modalities.

Surgical excision offers the only chance of a cure in patients with pancreatic cancer. Unfortunately only about 20 per cent of patients with cancer of the pancreatic head and less than 3 per cent of those with carcinoma of the body or tail have lesions that are suitable for resection. The Whipple operation or pancreaticoduodenectomy is the conventional curative procedure for carcinoma involving the pancreatic head. This procedure has been associated with mortality rate in excess of 20 per cent, but improvements in patient assessment, perioperative and surgical technique have resulted in mortality rates falling to less than 5 per cent in most major centres.

Chemotherapy and/or radiotherapy have been used as adjuvant treatment modalities to surgical resection with inconclusive results and continued to be evaluated in clinical trials.

Unfortunately the majority of patients with pancreatic cancer are not candidates for curative resection. Jaundice can be relieved by biliary stenting or surgical bypass procedures. Controlled clinical trials have demonstrated that endoscopic stenting is associated with fewer early complications but more late complications compared with surgical biliary bypass. For most patients with pancreatic cancer, the main priority is the palliation of pain and the management of cachexia. The pain of pancreatic cancer usually requires regular increasing doses of opiate therapy. Alternative additional treatments include percutaneous coeliac plexus blockade with alcohol or the newer technique of thoracoscopic division of the splanchnic nerves. Attenuation of the severe weight loss and anorexia associated with advanced disease may be achieved using fish oil derivatives such as eicosapentaenoic acid (EPA).

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## Endoscopic Management of Pancreatic Pseudocyst

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*S Panpimanmas, S Chantawibul, T Ratanachu-ek*

**Background:** Pancreatic pseudocyst is a complication of both pancreatitis and pancreatic injury and it can cause many complications e.g. upper gut obstruction, biliary obstruction, severe bleeding, infection and abscess

formation. Successful treatment is not only surgical or percutaneous drainage, but nowadays minimally invasive endoscopic method is gaining popularity.

**Objective:** The aim of this study is to evaluate the techniques and the results of endoscopic drainage.

**Methods:** Between January 1997 and December 2000 endoscopic treatment of 5 pseudocyst-patients were retrospectively studied. Endoscopic cystogastrostomy was performed in two cases, one case was complication from acute pancreatitis and another from chronic pancreatitis. Endoscopic transpapillary drainage was performed in three cases, one case was complication

from blunt abdominal injury, one case from acute pancreatitis and the third case was infected pseudocyst with abscess formation.

**Results:** All of successful endoscopic procedures were adequately drained without any mortality. There was another one case of large pseudocyst that we tried cystoduodenostomy but failed because of pyloric obstruction.

**Conclusion:** Endoscopic treatment of pancreatic pseudocysts is highly effective method and safe. It should be considered as an alternative option before standard surgical drainage in selected patients.

## NEUROLOGICAL SURGERY

### Tumours of the Lateral Skull Base

*RT Ramsden*

Skull base surgery has emerged in the last two decades as an important subspecialty combining the interests and skills of the neurosurgeon, the otolaryngologist, the ophthalmologist, the plastic surgeon and the neuroradiologist. Lesions hitherto regarded as inaccessible to surgery have yielded to new and ingenious approaches and to microsurgical and navigational techniques. Lateral skull base surgery involves the petrous temporal bone, and adjacent structures, namely the clivus, the occipital bone, the upper spine and neck, the infratemporal and pterygopalatine fossae as well as the posterior cranial fossa. Arising in these areas are a wide variety of tumours, some relatively common, some very rare. Tumours of neural, vascular, meningeal, glandular, osseous and cutaneous origin are encountered. This paper will deal with a large series of lateral skull base and cerebellopontine angle tumours dealt with by the Skull Base team at Manchester Royal Infirmary since 1977. They include in particular vestibular schwannomas (acoustic neuromas) and chemodectomas of the temporal bone as well as a wide range of less common lesions many of which require individually tailored surgery and treatment strategies.

### Novel Therapeutic Strategies for Treatment of Posterior Fossa Tumors

*V Chanyavanich, N Tisavipat, M Thaithonglang, T Seangruji, G Veerakul, P Kankirawatana, A Wongkajornsilp*

**Objectives:** To study novel therapeutic strategies for treatment of posterior fossa tumors such as immunogene therapy, the role of p53 protein mutation in astrocytoma. MIB-1 Labeling Index staining method in benign, atypical and malignant meningioma tumor specimens were used to predict appropriate multimodality therapeutic approaches when malignant transformations occur.

**Materials and Methods:** One hundred and forty-four posterior fossa tumors patients operated between June 1995-August 1998 were reviewed for symptoms free survival and outcome with follow up period until September 2000. Surgical specimens of benign astrocytoma were processed and tissue culture of recurrent glioblastoma cell were performed. The expression of Fas ligand (FasL) on the surface of tumor cell has been used as a mechanism in which tumor cell by direct contact T-cell that harbor Fas on their cell surface can undergo apoptosis. Assessment of p53 protein mutation by using p53 protein monoclonal antibody (NCL-p53-DO7) in astrocytoma tumor specimens can detected immuno-

histochemically mutation or allelic loss of the p53 gene. This monoclonal antibody recognized both wild type and mutant forms of human p53 protein under denaturing and non-denaturing condition. High temperature antigen unmasking technique may improve staining in some cases.

Sixty nine recurrent meningiomas in thirty one patients were studied with immuno histo-chemical staining by Ki-67 with the monoclonal antibody MIB-1 (Westbrook, ME) using an avidin biotinylated immunoperoxidase and microwave processing procedure. The mean MIB-1 LI (Labeling Index) were compared between the first histopathological features (Kruskal-Wallis test) at the first operation and the successive ones.

**Results:** Malignant gliomas cells were cultured and two novel episomes that can express the antisense FASL mRNA and the FAS mRNA within eukaryotic cells were used to demonstrate in vitro anticancer immune response. p53 Protein mutation was shown to be present more markedly in benign astrocytoma patients that demonstrated recurrence and malignant transformation in tissue biopsy specimens submitted to antibody staining. Atypical meningioma showed higher MIB-Labeling Index 0.7-23.2 per cent (Mean = 6.4%) and malignant meningioma showed 2.7-37.9 per cent (Mean = 25.6%) comparing to benign meningioma 0.00-7.2 per cent (Mean = 0.8%).

**Conclusion:** Immunogene therapy and assessment of p53 protein mutation constituted novel therapeutic strategies in treatment of benign and malignant glioma. Tumor marker such as MIB-1 Labelling Index is a reliable tool to monitor malignant change of meningioma that dictates multimodality therapy.

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### The Turnover Distal Epineurial Sheath Tube for Repair of Peripheral Nerve Gaps

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*W Suwansingh, C Chatdokmaiprai, S Worapongpaiboon*

Autologous nerve grafting is the conventional technique for bridging nerve gaps, despite its various disadvantages. In this study, the authors investigated the effects of the turnover distal epineurial sheath tube as an alternative to nerve grafting for the repair of nerve gaps, by using sciatic nerve models in 14 rats. The experimental models are 14 left sciatic nerves, autologous nerve grafting after segmental resection, and 14 right sciatic nerves, turnover distal epineurial sheath tube after segmental resection. Then the repaired sciatic nerves were harvested for histologic and quantitative histomorphometric evaluation at the 11<sup>th</sup> week after the operation. In quantitative

evaluation of Schwann cells count, the difference between conventional nerve graft group and distal epineurial sheath tube group was not statistically significant ( $p > 0.05$ ).

In conclusion, the turnover distal epineurial sheath tube provides a suitable conduit between two stumps, eliminates donor-site morbidity, reduces the operating time; consequently, it might be an alternative to nerve grafting for nerve gap repair.

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### The Health Outcomes Among Neurosurgical Patients During Transitional Period from Hospital to Home

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*S Suntharasri, P Dokhom, A Homskul, P Petchtone, T Jenjirojpipat, T Yordkaew, M Pongput, P Pradudkaew*

**Objectives:** This study aims at evaluating health problems among neurosurgical patients during their transit from hospital to home.

**Patients and Methods:** The study was conducted over a 4 month-period from August to November 2000 at neurosurgical ward, Siriraj Hospital, Mahidol University. A total of 79 patients were enrolled into the study while they were informed of their hospital discharge. Health outcomes were described through level of consciousness, level of cognition, level of independence and illness complications. Patients' health outcomes were measured by utilizing the observation and interview check list at the hospital discharge day, at the second, and at the fourth week after hospital discharge. Data were obtained from reviewing the patients' charts.

**Results:** The majority of patients were male and were in their late adulthood (age 41-60 years). There were very small numbers of patients who showed Glasgow Coma Score (GCS) of lesser than 11. However, it was found that at the hospital discharge day the majority of patients were not able to resume their previous physical abilities. Patients also had problems with knowledge and understanding in regard to eating, self-cleaning and elimination. Regarding illness complications, it was found that at the hospital discharge day, there was a very small number of patients who showed illness complications such as respiratory tract infection, urinary tract infection, first degree pressure ulcer, and stiffness of joints. Nevertheless, there was increased in number of patients who had developed illness complications in second and fourth week after hospital discharge. Additionally, stiffness of joints and surgical wound infection seemed to be prominent after the patients left the hospital.

**Conclusion:** The results of this study revealed that neurosurgical patients need care during their transitional period from hospital to home. The provision of extended

care from neurosurgical nurses therefore should be taken into consideration.

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### **Carotid Endarterectomy in Symptomatic Carotid Artery Stenosis: Siriraj Experience**

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*P Mutirangura, C Ruengsethakul, C Wongwanit,  
P Ophasanond, N Prayoonwivat*

Nine carotid endarterectomies have been carried out in vascular surgery unit, Siriraj Hospital since January, 1999. All patients had multiple episodes of transient ischemic attacks or minor stroke with CT brain demonstrating evidence of cerebral infarctions. Carotid duplex scan was used as the first step of assessment of extracranial carotid arteries. Carotid arteriography was finally performed preoperatively in all patients confirming severe degree of stenosis at ipsilateral proximal part of internal carotid arteries. The patients were also assessed by neurologists, cardiologists and anaesthetists for the agreement of indications and fitness for surgery. Internal shunt in carotid artery was routinely used to preserve cerebral circulation during the procedures. Saphenous vein patch was used for closure of arteriotomy to avoid late stricture at endarterectomy site. There was no intra-operative complications. Eight patient had immediate good consciousness at recovery room and all of them had no subsequent neurological deficit. One patient with severe bilateral carotid stenosis underwent left carotid endarterectomy, the symptomatic side. He had remained well with active mobility for seven days before he died from cerebral haemorrhage following severe hypertension.

Carotid endarterectomy is beneficial for patients with ischaemic stroke due to severe internal carotid artery stenosis. The procedure can be carried out safely in experienced surgical team. However intensive post-operative monitoring is necessary in particular severe bilateral carotid artery stenosis.

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### **From Self-Retaining Brain Retractor Toward 3-points Mayfield's Headrest: What We Can Do in Thailand**

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*M Wongsirisuwan, S Nunta-Aree*

**Objective:** To point out and stress the ability of making delicate surgical instruments in Thailand.

**Materials and Methods:** Stainless steel of medical grade was used together with alloy used in heavy industry. Paper draft was digitally processed using CAD/CAM programs. Instruments were tested under real situations

in neurosurgical operations.

**Results:** After presenting self-retaining brain and was awarded (ICS inventor award and Ministry of Public Health award) last year. This year we will present the ability to develop many neurosurgical instruments for our own purposes including instruments with complex and delicate structures like 3-points Mayfield's headrest. Others are neurosurgical instruments such as handrest, high speed saw, high speed burr, Gardner Weil's skull traction, and microdissectors that have been developed as well. All instruments served well, especially their cheaper costs when compared to imported and can be personalized for individual surgeons. Some instruments we developed were created by using high techniques and equipments in engineering such as lathe by CNC, casting in a mould to achieve the prototype first and then redefined by CNC.

**Conclusion:** From now on, we do strongly believe that most surgical instruments used nowadays can be made in our own country by a close collaboration between doctors and engineers and with the help of medical and engineer technology. Our future hope is to make implanted devices such as cervical plate, titanium implanted device, etc. We hope that our works will initiate others to put their great effort in creating of new innovative surgical instruments for their own purposes.

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### **Implementation of Clinical Practice Guideline (CPG) for Minor Head Injury at Songklanagarind Hospital: Preliminary Result**

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*S Ratanalert*

**Objective:** To evaluate the impact of CPG for minor head injury defining appropriateness of care and outcome of patients.

**Design:** Prospective study

**Setting:** Emergency Department at a University Hospital.

**Patients:** Five hundred and three minor head injury patients who were treated at Songklanagarind Hospital during November 1999-April 2000.

**Methods:** Introduction of the CPG by dissemination of full printed CPG and 'academic detailing'. All medical records of injured patients were reviewed and high risk procedure, when identified, were fed back individually in daily basis. Glasgow Outcome Scale (GOS) was measured at 6 months after injury.

**Results:** All patients had good recovery. No case of 'Talk and Coma' was found. Four out of eight intracranial abnormalities shown by CT scan were operated for clot



evacuation. Stiff neck examinations were gradually declined during this study. Utilization review of CT scan was performed and found to be unnecessary in only 0.4 per cent. All discharged patients at emergency department were educated regarding their injuries and neurological observation at home.

**Conclusion:** Implementation of CPG increased the appropriateness of care for minor head injury patients.

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### Rationale of Functional Brain Mapping and Early Experience of Intraoperative Electrical Stimulation Technique

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*S Nunta-Aree, P Saesue*

**Objective:** Surgery of lesion at the eloquent areas of the brain, such as the sensori-motor cortex, Broca area, Wernicke's area and around their subcortical fiber, has significant risk of neurological deficit. Using anatomical landmarks alone is unreliable. For maximal resection with minimal neurological deficit, functional brain mapping either intraoperatively or extraoperatively is indicated.

**Methods:** Bipolar electrical stimulation was applied to cerebral cortex and subcortical area. Motor area was identified by electrical evoked motor response. Sensory area was identified by electrical evoked paresthesia. Broca's area was identified by electrical evoked counting arrest and the Wernicke's area was identified by electrical evoked naming arrest. For motor function mapping, the patient was operated under either asleep or awake craniotomy. For sensory and language functions mapping, the patient was operated under awake craniotomy only. The technique is also applicable to map the superior colliculus, facial colliculus, vagal trigone, hypoglossal trigone and spinal corticospinal tract.

**Results:** Intraoperative electrical stimulation is more preferred than other functional mapping techniques such as, functional-MRI, PET, MEG, SSEP, transcranial magnetic stimulation and chronic subdural electrode, because 1) it is the only single technique that can map subcortical fiber and brainstem motor nuclei. 2) Besides chronic subdural electrode, it is the single technique that can map language area and sensorimotor homunculus. 3) It is real-time and does not have problem from brain shifting. 4) It is the most accurate and cheapest technique.

Our early experience from September 2000 to May 2001 shows the followings. 1) Though it is possible to map motor area under asleep craniotomy, it is better to do while the patient is awake. Very minute motion is detectable and detail homunculus mapping is possible

under awake craniotomy only. 2) The sensori-motor cortex has some small nonfunctioning blanks that can be safely operated through. Some functioning areas of the motor cortex, such as the face area and trunk area can also be operated through without permanent deficit. 3) Wernicke's and Broca areas are randomly located around the Sylvian's fissure without reliable anatomical landmarks. The pattern is different from description in classic anatomical texts. 4) Subcortical fiber stimulation is more difficult than cortical stimulation, especially under asleep condition. 5) Functioning area usually is on the midgyrus. Functioning area within the sulcus is never found. 6) Most adult patients tolerated and cooperated the awake craniotomy well but shivering is a frequent problem though under temperature control. 7) Aggressive supratotal (tumor + surrounding nonfunctional brain) removal was attempted for glioma and total removal for other lesions. So far, 12 cases were operated (3 cases under asleep craniotomy and 9 cases under awake craniotomy). Supratotal removal was done in 3 cases, total removal in 7 cases and subtotal removal in 2 cases. The reasons for subtotal removal were failure to map the internal capsule under asleep condition in one case (thalamic glioma) and intraoperative hemiplegia terminated the operation in another case (insular glioma). Transient neurological deficit with full recovery was frequently seen. There was one permanent monoplegia caused by injury to the lenticulo-striate arteries during removal of a glioma invading the basal ganglia. 8) Intraoperative electrical evoked seizure was possible but it was uncommonly seen. It happened once as a focal seizure caused by stimulation on the motor cortex. 9) Internal capsule is the most challenging part. For maximal safety, the patient should be full conscious and the surgeon proceeds slowly by alternative stimulation before each millimeter resection. 10) Optic radiation has never been successfully mapped. Thus, quadrantanopsia occurred in some cases but it caused no significant problem to the patient life.

**Conclusion:** Brain mapping maximizes resection of the lesion and minimizes neurological deficit.

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### Survival and Survival Predictors of Medulloblastoma Patients in Southern Thailand

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*B Sripairojkul*

**Objective:** To find out the survival and survival predictors of medulloblastoma patients in Songklanagarind hospital.

**Design:** Retrospective study

**Patients:** Forty medulloblastoma patients who were treated at Songklanagarind Hospital during 1989-2000.

**Method:** The tumor registry form was reviewed to identify medulloblastoma patients. All medical records of Medulloblastoma patients were reviewed. Cox regression method was used to find the survival and survival predictors of the patients.

**Results:** Fifty per cent survival of the patients was about 24 months. Age under 3 years old had 50 per cent survival at 5 months. By contrast, age older than 3 years had 50 per cent survival at 58 months. The patients who had post-operative complication had 50 per cent survival only 3 months. By contrast, the patients without post-operative complication had 50 per cent survival 77 months. Cox regression showed age and post-operative complication are survival predictors.

**Conclusion:** Crude 50 per cent survival of Medulloblastoma is about 24 months. Age and post-operative complication are survival predictors of the patients.

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### The Profiles of Thai Neurosurgical Patients Admitted at Siriraj Hospital

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**Objectives:** This study aims at describing the profile of neurosurgical patients admitted to neurosurgical ward, Siriraj Hospital, Mahidol University.

**Patients and Methods:** Sample of this study included patients admitted to neurosurgical ward, Siriraj Hospital from 1997 to 1999. Data were obtained from reviewing the patients' charts.

**Results:** Total patients were 1,436 with age from 1 month to 96 years ( $X=40.96$  years,  $SD = 22.12$  years). About 52 per cent of patients were male and 48 per cent were female. Types of brain diseases that most frequently found among male patients were brain tumor (30.9%), intracerebral hemorrhage (22.9%) and vascular malformation (16.4%). While the types of brain diseases among female were brain tumor (38.2%), vascular malformation (19.4%) and intracerebral hemorrhage (18.4%). Half of the patients had to be hospitalized more than 5 days before they obtained their surgeries. Over 40 per cent of patients were hospitalized for more than 21 days. Within this number, 4.7 per cent stayed in the hospital longer than 100 days (with the maximum days of 281). Patients who suffered from brain tumor showed longer hospital stay than patients with other brain diseases. Male and female patients showed similar mortality rate of 12.7 per cent and 12.2 per cent respectively. Intracerebral

hemorrhage was found to be the most leading cause of death among all admitted patients.

**Conclusion:** The results of this study indicate that brain tumor is the major cause of brain diseases among Thai patients, while intracerebral hemorrhage is the disease that leads to the cause of death among them. It is therefore recommended that these two significant brain diseases should be prevented. The length of hospital stay among these patients was relatively long. Thus, the efforts to reduce the length of hospital stay should be taken into serious consideration.

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### Hemi-contralateral C7 Transfer to Median Nerve in the Treatment of Root Avulsion Brachial Plexus Injury

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*P Songcharoen, S Wongtrakul, B Mahaisavariya*

**Objective:** The purpose of this study is to present the outcomes of new surgical procedure of using hemi-contralateral C7 transfer to the median nerve to restore hand function in patients with root avulsion brachial plexus injury.

**Materials and Methods:** This study was carried out as a prospective study during July 1993 to July 1999 in 111 patients with complete brachial plexus root avulsion who underwent contralateral C7 nerve root transfer to median nerve (via a vascularized pedicle interposition ulnar nerve graft) to restore hand function. The indication for this procedure was total root avulsion brachial plexus injury diagnosed with preoperative myelography and confirmed at surgery. The hemi-contralateral C7 transfer was a part of nerve transfer procedures in patients who also required spinal axillary to musculocutaneous and phrenic nerve transfers to restore elbow and shoulder function. Hemi-contralateral C7 nerve transfer was performed as a primary procedure (at the same time or within 2 weeks of the other nerve transfer procedures to restore shoulder and elbow functions) in 62 patients and as a secondary procedure in additional 49 patients. Twenty-one of the 62 patients in the primary group had sufficient follow-up (at least 3 years) to assess the motor and sensory recovery in the median nerve. The adverse effects of the operation were also analyzed in all 111 patients.

**Results:** Six of 21 patients (28.6%) obtained M3 and 4 (19%) had M2 recovery of the wrist and finger flexors. Ten patients (47.6%) had S3 and 7 (33.3%) had S2 recovery in the median nerve area. The rate of advancing Tinell's sign was clinically significant between those achieving M3 function and the remaining patients. Patients aged 18 and younger had the best motor recovery. No correlation was found between the time of surgery

after the initial injury, medical comorbidities, and the clinical outcomes. There were 108 of 111 patients (97.3%) experienced temporary paresthesias in the median nerve area postoperatively which resolved by an average of 2.8 months after procedure. Three patients (2.7%) had motor weakness of the donor limb; this resolved completely in 2 and left a mild deficit in wrist extension in one patient (0.9%).

**Conclusion:** Hemi-contralateral C7 transfer to median nerve provides a relatively low success rate and some risks of downgrading the donor limb function. This procedure should be carefully considered before its use over an alternative procedure with less morbidity. The indications, selection of patients and techniques for the procedure need to become better defined in the future.

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### Problems and Needs Among Family Caregivers of Neurosurgical Patients.

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*S. Rojanavong, T. Intarasomjai, N. Angpanitcharoen, N. Bejraputra, U. Keawkab, S. Ployhin, P. Petchtone*

**Objectives:** The purpose of this study is to explore problems and needs among family caregivers of neurosurgical patients at the hospital discharge phase.

**Material and Methods:** The study was conducted at neurosurgical ward, Siriraj Hospital, Mahidol University.

Forty family caregivers of neurosurgical patients were invited to participate in the study. Data were collected by interviewing the participants at the hospital discharge day about their problems and needs in giving care of their neurosurgical patients. In order to obtain additional family caregivers' problems at home, telephone interviews were also conducted after the hospital discharge day.

**Results:** The majority of family caregivers were the age of 21-40 years. Most of them were patients' daughters, were educated to the elementary level and had low socioeconomic status. Family caregivers expressed their concerns and worries in accordance with the patients' health status especially among the one whose patients' consciousness or cognition were impaired. This indicated that they needed to be provided with information about financial assistant resources, health care assistant resources and essential care giving skills. Assuring of patients prognosis was also identified as one major need. Information from telephone interview indicated that family caregiver experienced more problems in providing patient care and needed more information and emotional support from neurosurgical nurses.

**Conclusion:** The results of this study revealed that neurosurgical nurses can help facilitating family caregivers of neurosurgical patients by providing them with essential information as well as them an emotional support.

## LAPAROSCOPIC SURGERY

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### Preliminary Results of Laparoscopic Total Mesorectal Excision and Colonic J-Pouch Reconstruction in Rectal Cancer

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*MKW Li, CC Chung, WWC Tsang*

**Aim:** Our objective was to assess the technical feasibility, safety and results of performing total mesorectal excision (TME), which is now the widely accepted operation of choice in low and mid-rectal cancers, in the laparoscopic fashion.

**Methods:** From March 1999 onwards, all patients with low or mid-rectal cancers who were admitted into

our unit were subjected to laparoscopic TME (LTME) with a covering loop ileostomy. Exclusion criteria included (1) clinical or radiological evidence of distant metastasis; (2) locally advanced disease as evident by clinical perirectal tumour fixation or adjacent organ involvement on CAT scan. The ileostomy would be closed at around 12 weeks after the surgery and after the integrity of the anastomosis has been confirmed by a barium enema study. All patients were followed at 3, 6, 12, 18 and 24 months after the ileostomy closure to assess their bowel function and any evidence of recurrence.

**Results:** Twenty-one consecutive patients were sub-

ject to LTME. There were 12 males and 9 females with a mean age of 63 (40-80). The average distance of the tumour from anal verge was 7.5 cm (4-10). The mean operating time was 197 mins (135-300 mins). Average blood loss was 144 ml (20-600 ml). There was no conversion. Mean postoperative stay was 10.5 days (7-21 days). The anastomosis was on average 4.2 cm (2-5 cm) from the anal verge. The average distal margin was 4.5 cm (3.6 cm). There was 5 Dukes'A, 6 Dukes'B and 10 Dukes'C disease. There was no mortality or anastomotic leakage. At an average follow-up period of 10 months, there was no local recurrence but 2 systemic recurrence. Six patients developed complications: 4 patients developed transient postoperative urine retention including one male with impotence. One patient developed port-site hernia which required re-operation. One other patient developed pouchitis after ileostomy closure which necessitated subsequent pouch excision. At 3 month after ileostomy closure, the average bowel motion was 4.5/day with no incontinence or constipation. Eleven per cent of the patient had fecal urgency and 22 per cent had sensation of incomplete evacuation. At 6 months after ileostomy closure, the average bowel motion was 1.8/day and three was no recorded incontinence, constipation, urgency or sensation of incomplete evacuation.

**Conclusion:** LTME is a feasible and safe operation with an acceptable operating time and morbidity rate. Preliminary functional outcome is comparable to open surgery.

### Laparoscopic Assisted Resection for Rectal Cancer

CC Chung, SW Chan, WWC Tsang, MKW Li

**Aim:** To share our experience and results with laparoscopic assisted resection for rectal cancer.

**Methods:** We have started laparoscopic colorectal surgery since 1992, and data was collected prospectively. Patients with proven rectal adenocarcinoma (cm from anal verge) were selected. Patients were excluded if: (1) tumour was palpable per abdomen; (2) PR examination reviewed perirectal fixation; (3) ultrasound or CT scan revealed invasion of adjacent structures; (4) patient did not consent to laparoscopic approach. The postoperative course was carefully followed. Patients were followed-up cautiously after discharge and any complication or recurrence were noted.

**Results:** From May 1992 to March 2001, 191 patients (aged 26-90, median = 63) had undergone laparoscopic assisted rectal resection. The results were as follow:

M : F	94 : 97	
Curative : Palliative	159:32	
Operation :	Anterior Resection	85
	Low Anterior Resection	30
	Total Mesorectal Excision	28
	Abdomino-perineal Resection	40
	Other	8
Operation Time(min)		30-370(median=95)
Hospital Stay (days)		5-96(median=7.5)
Conversion :		15 (8%)
Complications:	Mortality	2
	Anastomotic Leakage	3
	Ureteric Injury	1
	Small Bowel Injury	1
	Port-site Herniation	1
	Port-site Recurrence	1

Five patients were lost to follow up. 156 patients (84%) were still alive and 133 patients(72%) with curative resection remained disease-free at an median follow-up of 48 months (2-104 months).

**Conclusion:** Laparoscopic surgery in rectal cancer can achieve similar survival results with acceptable operation time and complication rates. With good patient selection, conversion rate should be low. These results speak in favour of laparoscopic approach.

### Endoscopic Thyroidectomy by Axillary Approach: Rajavithi Technique

S Chantawibul, S Lokechareonlarp, V Benjasirichai, C Pokawatana

**Background:** In October 2000, YIkeda, H Takami, and their colleagues reported the first thyroidectomy by axillary approach in The Journal of Cardiovascular Surgery. The details of their technique were clearly described in that original paper. Here, we developed our technique that had some different points.

**Surgical technique:** Under general anesthesia and supine position, the patient's neck is slightly extended. The axilla on the same side of the lesion is fully exposed by raising the arm 90° - 90° over the head. A 10-mm incision is made at midpart just below the anterior axillary line for camera port. By using sharp and blunt dissections, a working tunnel was created anterior to pectoral fascia pointed directly toward the thyroid gland. Then, another two 5-mm ports are inserted right and left to the first 10-mm port, 2-3 cm below the anterior axillary line and at least 3-4 cm from the first port. With the aid of Laparoscopic Coagulating Shears slim (LCSs), (Johnson-Johnson Medical, Cincinnati, OH, USA), the dissection is

done in the sub-platysmal plane up to the anterior border of sternocleidomastoid muscle. At this point, the fourth 5-mm port, 2 cm below the camera port, is inserted for suction, irrigation and another useful function, retraction. Step by step, cut the sternohyoid and sternothyroid muscles, free the inferior pole, identify the recurrent laryngeal nerve, dissect the gland from the trachea, cut the isthmus and finally, the superior pole. After removal of the thyroid gland, the cut ends of strap muscles are

sutured back with 3-0 absorbable material and one 3-mm closed suction drain is placed under the muscles. Skin is closed in a subcuticular manner.

**Conclusions:** This axilla approach has superb cosmetic result. The main disadvantages include the time consumed and difficulty to indentify the contralateral thyroid lobe. The fourth suctionable port is very helpful in dissection and prevention of nerve injury.