THE MODERN MANAGEMENT OF SMALL RENAL MASSES

by Dr Max Dias

INTRODUCTION

Most renal masses are discovered incidentally and are typically small. The small renal mass is "classically" defined as a suspicious renal lesion <4cm in size, although this definition is slowly being expanded to include masses 4-7cm in size. 80% of masses <4cm are malignant. The diagnosis of small renal masses is increasing at a rate of 3% per year. This is largely due to increased detection from improved imaging.

The management of small renal masses continues to evolve. Prior to the 1990s the treatment options consisted only of observation, open, partial, or radical (total) nephrectomy. Advancements in the understanding of the natural history of small renal masses and development of minimally invasive techniques have now broadened our options.

ASSESSMENT

Once a renal mass is found the gold standard investigation is a triple phase contrast renal CT. Suspicious lesions have solid components which enhance with contrast or cystic components which contain thick septa or calcification (Figure 1). These findings should prompt referral to an urologist. Comparison with previous imaging may be useful in determining interval growth. Biopsy of a lesion should not be performed before prior consultation with a urologist. Although modern core biopsy of the kidney has improved accuracy, the role of biopsy is limited (e.g. when metastatic disease is suspected) and a negative biopsy does not exclude malignancy.

MANAGEMENT

Since the late 1990s there has been an exponential increase in the use of laparoscopic radical nephrectomy for the treatment of small renal masses. It has been a stellar advancement in the management of kidney cancer as it involves less pain, decreased morbidity and shorter hospital stays with equivalent oncological outcomes compared with the open approach. Few tumours are unable to be treated by this method. More recently there has been reassessment of the indications for total versus partial nephrectomy in an attempt to spare renal function. Indeed partial nephrectomy has been underutilised since the advent of laparoscopic radical nephrectomy, but the trend is slowly being reversed.

The other non-invasive options for treatment are radiofrequency ablation and cryotherapy. Both treatments work by thermal ablation causing local necrosis of the tumour either by heating or freezing. A tumour <4 cm and peripherally located may be treated in this manner. However there is a significantly increased risk of local recurrence, multiple treatments may be required and there is a lack of clearly established radiographic parameters of success. The technique is generally suitable for the older population in whom pure surveillance usually provides a robust option in any event.

Surveillance (observation) is an option in those patients with severe comorbidity, the elderly and in those with significant renal impairment. The risk of metastases with a small renal mass is approximately 3%. The patient needs to be motivated and have 6-12 monthly scans to monitor interval growth. It should be noted that size should not be the only criteria for determining whether to actively treat a lesion. It is increasingly apparent that the location of the tumour (a concept recently coined "tumour nephrometry") is a more important predictor of prognosis. Exophytic (protruding) masses have a worse prognosis than endophytic (contained) ones, as do masses in close proximity to the renal hilum.

The future treatment of small renal masses will lie in improved techniques in laparoscopic (and robotic assisted) partial nephrectomy. Currently, outside of large North American centres, experience in these techniques is limited. There is potentially an increased morbidity with laparoscopic versus open partial nephrectomy but in appropriately selected patients this can be minimised. As techniques continue to evolve this will be less of a concern.

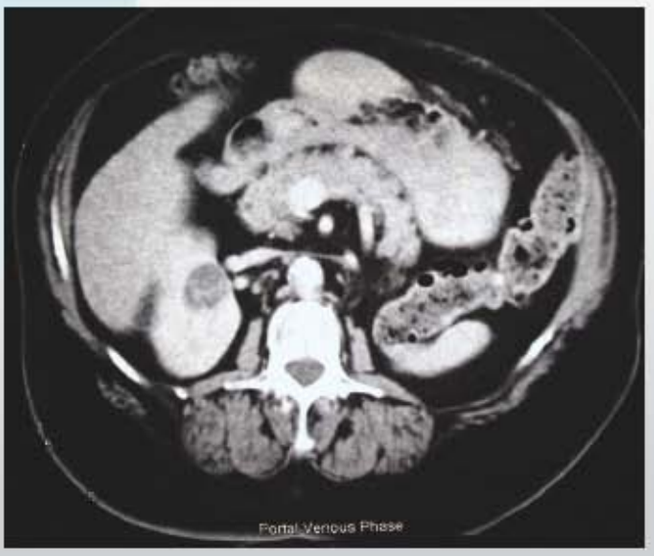

Figure 1. A cross sectional contrast CT demonstrating a 3 cm enhancing right upper pole renal cell carcinoma in a 72 year old lady who had a left nephrectomy for a 4 cm lesion 2 years earlier.

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GASTRO-INTESTINAL STENTS

by Dr Eliot Roach

INTRODUCTION

Stents have been used in gastro-intestinal endoscopic procedures for many years. Plastic stents to treat biliary obstruction and stenosing oesophageal cancer have been used since the 1970s. Recent advances in endoscope and stent technology have greatly expanded the application of these devices allowing more treatment options for patients who may be unfit for surgery, for those with non-operable metastatic disease or as treatment for patients who need further work up of their condition and who may eventually undergo surgery or other treatment.

Indications for GI stenting include benign and malignant obstructing lesions of the oesophagus, duodenum, bile ducts, pancreas, rectum and colon, pancreatic pseudo-cysts and malignant tracheo-esophageal fistulas.

Stents are made of plastic, silicon or metal, vary in diameter from 2mm plastic stents to 25mm metal stents, and may be straight, curved, flanged or pigtail in shape. They can be inserted temporarily or permanently.

INDICATIONS

Plastic stents 2-3mm diameter and 5-10cm long can be inserted during ERCP into the bile duct to relieve obstruction in benign and malignant biliary strictures, or into the pancreatic duct to prevent pancreatitis after endoscopic biliary/pancreatic sphincterotomy.

Common indications are malignant biliary obstruction due to pancreatic head carcinoma or cholangiocarcinoma, and benign biliary strictures caused by gallstones and sclerosing cholangitis. Once obstruction is relieved, cholagitis and jaundice will resolve, allowing further staging of disease and assessment of operability.

Stents may be also used as an adjunct to other treatment modalities such as external beam or internal (brachytherapy) radiotherapy and do not preclude surgery at a later stage.

Plastic stents can be easily removed endoscopically once the acute problem has resolved but if necessary can remain in place for several months.

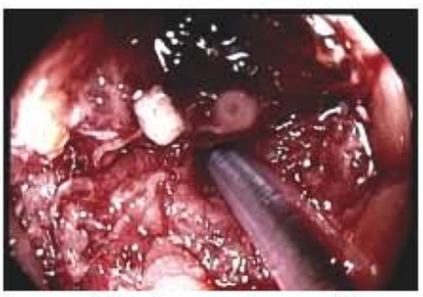

Image 1) Endoscopic image of a stenosing colon cancer with plastic stent catheter inserted through stricture.

Image 2) Endoscopic image of colon cancer after stent insertion and deployment showing the mesh structure of the metal stent.

Plastic stents eventually block with bio-film debris composed of bile and bacteria and will need to be removed and replaced endoscopically. These stents can be replaced multiple times.

Non-operable malignant strictures of the bile ducts may be better treated by insertion of larger diameter self-expanding metal stents. These are less likely to block but may suffer problems including tumour ingrowth and stent migration. They cannot be removed hence patient selection is very important.

Benign oesophageal strictures unresponsive to bougie/balloon dilatations may be treated by endoscopic insertion of flexible silicon stents. These exert radial force resulting in dilatation of the stricture over time. They can be removed endoscopically after several months. Stent migration into the stomach is the main problem.

Malignant strictures of the oesophagus, rectum and colon in patients with obstructive symptoms who are unfit for surgery due to age, co-morbidity, cachexia or metastastic disease, or in those undergoing chemo-radiotherapy can have symptoms such as dysphagia, vomiting, abdominal pain and tenemus relieved by insertion of self-expanding metal stents. Stent insertion does not preclude subsequent surgery in someone who has had down-staging of tumour by chemo-radiotherapy.

Stenting has no biological effect on tumour growth or spread but may reduce symptoms considerably.

TECHNICAL ASPECTS OF STENT INSERTION

- Pre-procedure imaging with CT scan, Barium X rays and endoscopy to define the anatomy of the lesion.
- Patient anaesthetised, possibly intubated if risk of aspiration.
- Endoscopy theatre with gastroenterologist or surgeon, specialist nursing staff, anaesthetist, radiographer, X-ray equipment.
- Guidewire and catheter passed through endoscope into stricture, contrast dye injected, fluoroscopic images taken.
- Compressed metal stent/catheter device is passed through endoscope and positioned across stricture.
- The outer plastic catheter sleeve is withdrawn under fluoroscopic and endoscopic vision, allowing the stent to expand.
- X-ray and endoscopic imaging confirm position of stent.

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LAPAROSCOPIC UPPER GASTROINTESTINAL AND BARIATRIC SURGERY – AN UPDATE

by Dr Garett Smith

INTRODUCTION

Few areas of surgery have been as profoundly affected by the introduction of minimally invasive techniques as upper gastrointestinal (Upper GI) and bariatric (weight loss) surgery. Operations that were previously performed by upper abdominal or thoracic incisions are now able to be performed via minimally invasive techniques with significantly reduced operative morbidity. The aim of this article is to review the current status of minimally invasive upper GI surgical procedures.

LAPAROSCOPIC FUNDOPLICATION (LF) FOR GASTRO-OESOPHAGEAL REFLUX DISEASE

Symptomatic gastro-oesophageal reflux disease (GORD) affects approximately 12% of the adult Australian population. GORD symptoms may be broadly divided into peptic (heartburn), volume (regurgitation, aspiration) and supra-oesophageal (cough, bronchospasm, voice change) symptoms. Effective acid suppression relieves the peptic component of GORD symptoms however a significant minority of patients are left with volume and supra-oesophageal symptoms and associated impaired quality of life. Acid suppression has minimal effect on the bile and pancreatic juice component of refluxate which is noxious and has been implicated in the progression of reflux oesophagitis through to Barrett's oesophagus and oesophageal cancer. Patients with persistent symptoms and patients intolerant of acid suppression should be considered for laparoscopic fundoplication (LF). LF involves "wrapping" the fundus around the lower oesophageal sphincter. This creates an effective anti-reflux barrier. A partial fundoplication as opposed to a traditional Nissen or total fundoplication results in less fundoplication side-effects such as dysphagia and "bloat".[1] When patients are carefully selected by their surgeon for fundoplication, improvement of quality of life is significant and patient satisfaction rates are high. LF generally involves a one or two night stay in hospital and dietary modifications for one month or so after surgery. Patients are generally able to return to full activities two weeks following their operation.

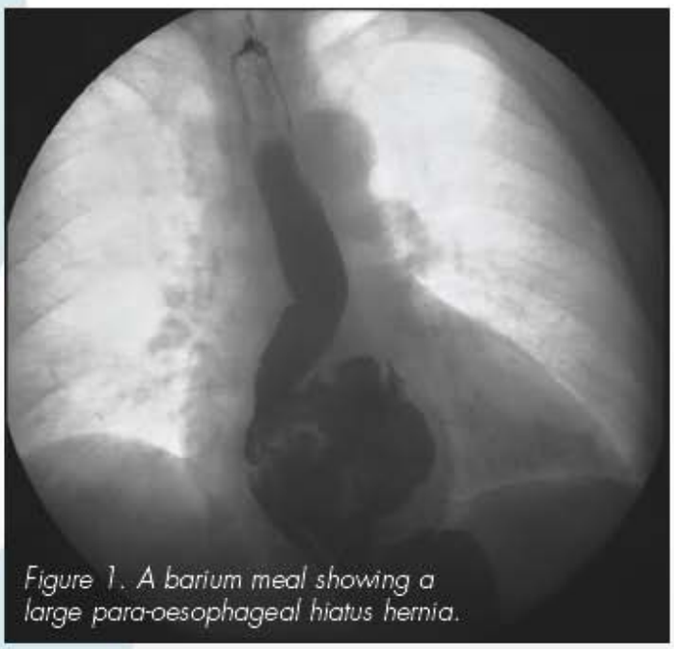

Figure 1. A barium meal showing a large para-oesophageal hiatus hernia.

LARGE HIATUS HERNIA (PARA-OESOPHAGEAL HERNIA)

Para-oesophageal hernias (PH) typically effect the older population and are more commonly found in females. These patients may give a history of symptomatic GORD however patients with PH tend to present with "mechanical" symptoms of oesophageal or gastric obstruction, chest pain or dyspnoea. There is a risk of intra-thoracic gastric volvulus with potential catastrophic outcome in patients with PH. Even large hiatus hernias with the entire stomach in the chest are able to be treated laparoscopically. Patients undergoing laparoscopic repair of PH report excellent symptomatic outcome and the risk of intra-thoracic volvulus is mitigated.[2]

LAPAROSCOPIC BARIATRIC (WEIGHT LOSS) SURGERY

A number of factors have recently led to an explosion in the numbers of operations performed for weight loss in Australia. These factors include an acknowledgement by the National Health and Medical Research Council (NHMRC)[3] of the superiority of operative weight loss strategies over non-operative treatments. Recent comparative trials of surgery and medical treatment have shown a superiority for surgery in terms of excess weight loss, co-morbidity resolution and more recently in the Swedish obese subject study, an improvement in overall medium term mortality in patients undergoing surgery for weight loss.[4]

All modern forms of bariatric surgery are able to be performed laparoscopically. These include laparoscopic adjustable gastric banding (LAGB), laparoscopic sleeve gastrectomy and laparoscopic gastric bypass. In recent years LAGB surgery has been compared to non-surgical treatment for obesity in a number of influential randomised trials. Unsurprisingly, the results of LAGB at short term follow-up were far superior to that of diet/exercise/pharmacotherapy. LAGB remains a satisfactory surgical therapy for many patients with morbid obesity however concerns have arisen surrounding device-related complications and the high rate of re-operation. Many gastric banding patients will have restrictions placed upon the consistency of food they are able to eat due to the "constriction" of the gastric band. This may prevent some patients eating healthy food such as fruit and vegetables and resorting to calorie dense liquids as an alternative.

Laparoscopic sleeve gastrectomy is a resectional (and therefore irreversible) procedure which involves removing the greater curve of the stomach and leaving a narrow sleeve of stomach along the lesser curve. This results in a restrictive effect as well as removing the gastric fundus which is a rich source of ghrelin (an appetite

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stimulant). This is a more involved procedure than gastric banding but mitigates the risk of long term device-related complications following sleeve gastrectomy. Weight loss is more predictable and greater than with gastric banding and consistency limitations are considerably less [5].

Gastric bypass surgery is a combined restrictive and malabsorptive procedure and represents the most complex of weight loss operations commonly performed. Gastric bypass surgery results in malabsorption of calories (and nutrients) by virtue of food bypassing the proximal jejunum. Gastric bypass surgery has traditionally been seen as the most effective surgical treatment for type II diabetes however recent short term data suggests that sleeve gastrectomy may prove to be as effective.[6]

Patients undergoing weight loss surgery should be managed within an environment of a multidisciplinary clinic involving some or all of the following: at least one (preferably two or three) surgeons, a specialist bariatric nurse, a dietician, psychologist and exercise physiologists. It is important that patients are followed closely and compliance with post-surgical dietary advice maximised.

LAPAROSCOPIC GENERAL SURGERY

Laparoscopic inguinal hernia repair

Laparoscopic inguinal hernia repair enables the positioning of mesh behind the inguinal defect in the pre-peritoneal plane. This approach is associated with earlier ambulation, less peri-operative pain and a lower risk of chronic groin pain than the traditional open repair. As techniques for laparoscopic inguinal hernia repair have improved, the risk of recurrence has decreased to that comparable to open repair. Patients who have had previous pelvic surgery or who are unfit for a general anaesthetic may be better treated with an open repair.

Laparoscopic cholecystectomy

Of all laparoscopic upper GI procedures laparoscopic cholecystectomy is the most well established and the benefits of a laparoscopic approach over an open approach are incontrovertible. More recent developments have included laparoscopic bile duct exploration to remove common bile duct stones and laparoscopic treatment of patients with acute cholecystitis. The laparoscopic treatment in these two latter situations obviates the need for further procedures.

References can be supplied on request.

GASTRO-INTESTINAL STENTS

CONTINUED FROM 1ST PAGE

COMPLICATIONS

- Technical failure due to anatomy of tumour or inability to pass a guidewire across the stricture.
- Perforation and bleeding
- Stent migration
- Tumour ingrowth
- Stent blockage

COST AND OUTCOMES

Patient survival, improvement in morbidity, avoidance of unnecessary surgery and shorter hospital stay need to be balanced against the cost of the procedure which includes the proceduralist and anaesthetist fee, radiology fees and the cost of the stent ($3000 for metal stents).

Patient selection is important so that unnecessary procedures are not undertaken in patients who have very limited survival and who may not derive substantial benefit from stent insertion.

NEWS FROM THE SAN

Spiritual Care Services is the new name of the former SAH Chaplains Department. The name change reflects both the pastoral and spiritual care the 10 strong team provides.

A new state-of–the art PET-CT camera for a range of oncological applications has been installed at Northern Nuclear Medicine on site at the San. This follows the installation of 2 new SPECT-CT gamma cameras installed earlier in the year. Contact Dr David McHarg 9473 8750.

The 10th annual San Run for Life Fun Run is on Sunday October 17th this year. Starting at 8am, school teams, families and friends are all invited to participate in either the 5 km walk or 5 km run, or the 10 km run. Entry fees $10/$15/$20. Local schools can compete for the Perpetual Schools Championship Cup and the Open Schools Challenge events. The event is fundraising for the San's research arm, the Australasian Research Institute (ARI).Registrations at www.sanrunforlife.com.au. Ring 9487 9405.

The rollout of the San's new **Intensive Care Clinical Information and Management system Metavision's iMDsoft continues with an expected live date in Spring.** The new system will provide medical and nursing staff with point of care information in an integrated format and automatically download data from a variety of sources, maximising patient care.

SAH has partnered with Sydney Medical School at the University of Sydney to establish a Multidisciplinary Clinical School. Funded through the Department of Health and Ageing's Increased Clinical Training Capacity program, the funding provides for the development, teaching and clinical training of students. Academic positions are currently being sought in Medicine, Surgery, Obstetrics, Gynaecology and Neonatology and Clinical Ophthalmology. Contact Dr Jeanette Conley jeanette.conley@sah.org.au

Dalcross Adventist Hospital (purchased and renamed July 2010) will soon enjoy the benefits of a new O-arm imaging system used in association with Stealth Station navigation in the operating theatre. With improved patient outcomes and safety features the O-arm will be available for use by neuro, orthopaedic and ENT surgeons.

NEWLY ACCREDITED DOCTORS

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Dr Banumathy Banu
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