# Letters

## FOLLICULAR LESIONS OF THE THYROID: A SURGICAL PERSPECTIVE

Editor,

The management of follicular thyroid lesions has long been a challenge for the surgeon due to the difficulty of differentiating pre-operatively between adenoma and carcinoma. Even with advances in ultrasonography, fine needle aspirate cytology, (FNAC), and immunohistochemistry we are still relying on post-operative pathological analysis for a definitive diagnosis. To date no single test or combination can accurately predict the presence or absence of vascular or capsular invasion in these lesions.[1]

The aim of this study was to investigate the accuracy of FNAC and its influence on the surgical management in this patient population. We collected data for confirmed follicular adenoma or carcinoma on tissue diagnosis over a 5 year period, 2008-2012, from the pathology laboratory of the Belfast City Hospital. We retrospectively analysed the pre-operative FNAC for predictive diagnostic accuracy.

From this 5 year data pool there were a total of 53 follicular thyroid lesions identified on final histology, (45 adenoma and 8 carcinoma). Of these 5 FNAC reports were not available or non-diagnostic, (3 adenoma and 2 carcinoma), giving a total of 48 complete data sets. The FNAC were divided into two categories, benign (Thy 2) and suspicious of malignancy, with all results that couldn't safely be considered benign being consigned to the latter (Thy 3,4&5). It should be noted that all lesions identified as being follicular in nature should be recorded as Thy3.

| | Adenoma | Carcinoma | |
|---|---|---|---|
| Thy 0 | 1 | 2 | FNAC - no report / not done |
| Thy 1 | 2 | 0 | Non-diagnostic |
| Thy 2 | 9 | 0 | Non-neoplastic |
| Thy 3 | 29 | 5 | Neoplasm possible |
| Thy 4 | 2 | 1 | Suspicious for malignancy |
| Thy 5 | 1 | 1 | Malignant |
| Total | 44 | 9 | |

Data from Thy0 and Thy1 were excluded from subsequent calculations due to lack of FNAC direction. Anything that could not be definitively said to be benign was grouped as suspicious of malignancy as from a surgical perspective all of these cases would be offered excision.

| Data, excluding Thy3 category | All data |
|---|---|
| Sensitivity = 100% | Sensitivity = 100% |
| Specificity = 75% | Specificity = 22% |
| Positive predictive value = 40% | Positive predictive value = 18% |
| Negative predictive value = 100% | Negative predictive value = 100% |

From the results we can see that the inclusion or exclusion of follicular lesions (Thy3 category) vastly alters the specificity, positive predictive value and overall diagnostic accuracy of the data. This is particularly relevant to the surgical workload as anyone with a follicular lesion will be offered, as a minimum, a thyroid lobectomy. If this proves to be malignant on histology, following discussion at the Multi-Disciplinary Meeting, some patients will then be offered a completion total thyroidectomy.[2] This increased workload is further compounded by the increasing number of asymptomatic or subclinical thyroid incidentalomas being diagnosed when imaging is performed for other reasons. The incidence of these lesions is high, with various ultrasound studies suggesting 10-67%.[3]

With growing waiting lists, the current economic climate and operating time being a restrictive commodity, better investigations need to be found to reduce the amount of unnecessary surgery being performed. Whilst this is true for all thyroid incidentalomas it is particularly so when it comes to follicular thyroid lesions.

Williams MJ[1], Spence RAJ[1], Lioe TF[2]

Dept of Surgery, BCH.

Dept of Histopathology BCH

Correspondence to: Williams MJ.

E-mail: drmwilliams12@gmail.com

### REFERENCES

1. Gharib H, Papini E, Paschke R, Duick DS, Valcavi R, Hegedus L, *et al*. American Association of Clinical Endocrinologists, Associazione Medici Endocrinologi, and European Thyroid Association medical guidelines for clinical practice for the diagnosis and management of thyroid nodules. *Endocr Pract*. 2010;**16(suppl 1)**:1–43.
2. Perros P, Colley S, Boelaert K, Evans C, Evans RM, Gerrard GE, Guidelines for the management of thyroid cancer. 3rd edition. British Thyroid Association. *Clin Endocrinol* [Internet] 2014 [cited 2014 Aug 28]; **81(suppl 1)**:1-122. Available online from: http://onlinelibrary.wiley.com/doi/10.1111/cen.12515/pdf
3. Aspinall SR, Ong SGS, Wilson MSJ, Lennard TWJ. How shall we manage the incidentally found thyroid nodule? *Surgeon*. 2013;**11(2)**: 96-104.

## PROBLEM SOLVING WITH CORONARY CT ANGIOGRAPHY IN CASES OF DIFFICULT CORONARY ANGIOGRAPHY

Editor,

Invasive coronary angiography is the current gold standard in the work-up of non-specific chest pain suggestive of ischaemic heart disease.[1] This case demonstrates how CT coronary angiography can yield a clinically useful answer when traditional catheter angiography runs into difficulty.

A 61 year old female smoker with hyperlipidaemia presented with a four month history of anginal chest pain and dyspnoea with a positive cardiac stress ECG. This was investigated by

invasive coronary angiography, this proved to be challenging due to failure to cannulate the left main coronary artery. However during angiography a large right coronary artery was noted with multiple collateral vessels perfusing the left anterior descending coronary artery territory.

Further anatomical detail of the left coronary artery was revealed through coronary CT angiography which showed a diffusely occluded left main stem with no definite communication with the aorta. Perfusion was maintained by long standing collateralization by vessels originating from a large right coronary artery. The patient went on to receive coronary artery bypass grafting of her left coronary system via a left internal mammary artery graft to the LAD.

In this case, coronary angiography failed to accurately identify pathology in this case due to an inaccessible left coronary artery. As highlighted by figure 1 the left coronary artery was partially visible through contrast supplied from collaterals originating from the right coronary artery. However a significant coronary stenosis could not be excluded. Moreover this patient was not amenable to percutaneous coronary interventions in view of the difficult angiography.

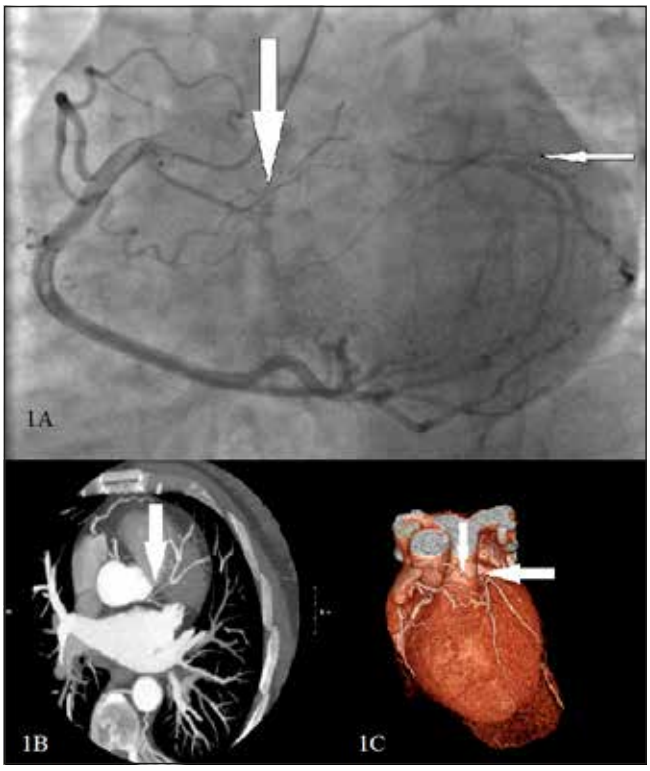


*Fig 1*. Diagnostic Images
1A: Invasive Coronary Angiography.
Large Pointer - Conus branch collaterals to left coronary sinus.
Small Pointer - Left anterior descending artery territory

1B: Coronary CT angiography axial MPR
Pointer – Remnant Left main stem

1C: Coronary CT Angiography 3D reconstruction
Small Pointer: Collaterals from the RCA perfusing LAD
Large Pointer: Left anterior descending artery

A coronary CT angiogram was performed in order to exclude coronary artery disease and provide anatomical detail for possible surgical intervention. As shown in the figure this technique revealed a completely occluded left main stem. There was a very small caliber left main coronary and proximal left anterior descending artery. The caliber of the LAD then became normal with multiple collateral vessels from the right coronary artery providing collateral antegrade and retrograde flow. From this information obtained, the patient further underwent a left internal mammary bypass graft to her left circumflex artery and was subsequently asymptomatic.

This case report highlights the utility of multi-modal cardiac imaging in cases with unusual coronary anatomy and inconclusive invasive angiography and thus aids in clinical decision making.[1]

*Gianluca Gonzi[1], Bryan Loo[2], Orla Buckley[1], William Torreggiani*
[1]Radiology Department, [2]Cardiology Department, Adelaide and Meath Hospital incorporating the National Children's Hospital, Dublin, Ireland.

Correspondence to: Gianluca Gonzi

gianluca.gonz@gmail.com

## REFERENCES

1. Knickelbine T, Lesser JR, Hass TS, Brandenburg ER, Gleason-Han BK, Flygenring B et al. Identification of unexpected nonatherosclerotic cardiovascular disease with coronary ct angiography. *JACC Cardiovasc Imaging.* 2009; **2(8)**:1085-92.

## DELAYED SPINAL CORD ISCHAEMIA AFTER HYBRID THORACO-ABDOMINAL ANEURYSM (TAA) REPAIR

Editor,

The management of thoraco-abdominal aneurysms (TAA) remains a surgical challenge with high rates of morbidity and mortality.

Spinal cord ischaemia with subsequent neurological sequelae is a recognised complication of these repairs, with most of this morbidity occuring acutely. There is no completely satisfactory method of protecting the cord during repair. One strategy is to pre-operatively visualise the segmental artery supplying the Adamkiewicz artery and ensure its revascularisation. Alternatively, a catheter may be placed into the intrathecal space to assess CSF pressure, allowing free drainage of CSF to a pressure below 10mmHg[1].

We report delayed cord ischaemia in a 76-year-old man with a previous open abdominal aortic aneurysm (AAA) repair, presenting with a Crawford Type II TAA.

A hybrid endovascular and open repair was undertaken. Prior to induction, a spinal catheter was inserted, allowing free CSF drainage to below a pressure of 10mmHg. Open visceral revascularisation was performed using a four-limbed graft from the existing distal infra-renal aortic graft to the left and right renal arteries, superior mesenteric artery and coeliac

axis (Figure 1). Endovascular TAA stent grafting was then performed via an open aortic graft conduit using a Relay® thoracic stent. The graft extended proximally beyond the left subclavian and distally to the infra-renal aorta. The APTT was maintained at 2-3 times normal range throughout with heparin.

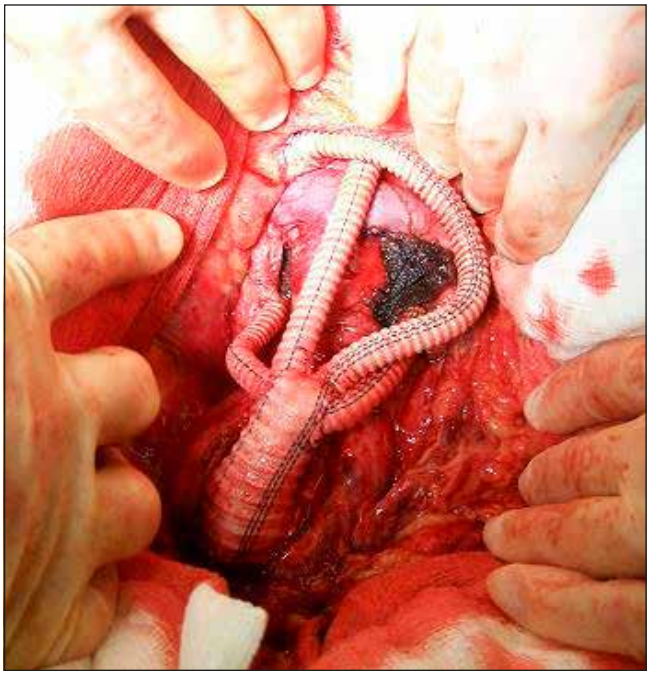

*Fig 1.*

Once extubated, lower limb motor and sensory function were confirmed as normal and there was no evidence of organ dysfunction.

Twenty-four hours post-operatively the patient developed bilateral lower limb flaccid paralysis, with sensory and motor deficit from T8 downwards. Despite spinal fluid drainage via the spinal drain, there was no improvement. CT showed no evidence of epidural haematoma but showed spinal cord infarction and oedema distal to T8. MRI confirmed anterior pattern spinal cord infarction distal to T8. The patient recovered from surgery but had persistent paralysis of the lower limbs, unchanged at the 12 month review.

Type II aneurysms have a significantly greater risk of paraplegia, with up to 22% of patients presenting with paraplegia up to 3 months after seemingly successful surgery[1]. A series of 89 urgent and elective high-risk patients in Europe demonstrated an 8% risk of paraplegia[1]. Crawford *et al.,* observed an immediate neurological deficit in 68% and a delayed deficit in 32% of patients affected[2]. Murphy *et al.,* found no difference in spinal cord ischaemic rates between patients undergoing hybrid repair and those undergoing open repair[3].

Adjunctive techniques are used to reduce the risk of cord ischaemia. A randomised controlled trial by Coselli et al., demonstrated an 80% reduction in the relative risk of post-operative paraplegia when the technique of CSF drainage was implemented[4]. Safi et al., showed an acute CSF pressure increase in patients prior to development of spinal cord paralysis, preceeded by a period of blood pressure instability[5].

We suggest that delayed spinal cord ischaemia can still occur in a hybrid type repair despite adjunctive CSF drainage. Morbidity and mortality rates are improving but surgery for TAA still carries significant risk.

[1] *Dorothy Johnston MB, BCh, BAO
*Core trainee in Surgery*

[1]William Campbell BSc, PhD, FRCS
*Registrar in General Surgery*

[1]Denis W Harkin MD, FRCSEd, FRCSI, FEBVS
*Consultant Vascular Surgeon*

[1] Regional vascular surgical unit, Royal Victoria Hospital, Grosvenor Road, Belfast BT12 6AB, Northern Ireland

Correspondence to: Dorothy Johnston

Email: djohnston21@qub.ac.uk

## REFERENCES

1. Bicknell CD, Riga CV, Wolfe JH. Prevention of paraplegia during thoracoabdominal aortic aneurysm repair. *Eur J Vasc Endovasc Surg.* 2009;**37(6):**654-60.
2. Crawford ES, Coselli J S. Thoracoabdominal aneurysm surgery. *Semin Thorac Cardiovasc Surg.* 1991; **3(4):**300-22
3. Murphy EH, Beck AW, Clagett GP. Combined aortic debranching and thoracic endovascular aneurysm repair (TEVAR) effective but at a cost. *Arch Surg.* 2009;**144(3):**222-7.
4. Coselli JS, LeMaire SA, Köksoy C, Schmittling ZC, Curling PE. Cerebrospinal fluid drainage reduces paraplegia after thoracoabdominal aortic aneurysm repair: results of a randomized clinical trial. *J Vasc Surg*. 2002; **35(4):**631-9.
5. Safi, H.J., Miller, C.C., Azizzadeh, A., and Iliopoulos, D.C. Observations on delayed neurologic deficits after thoracoabdominal aortic aneurysm repair. *J Vasc Surg*. 1997; **26(4)**: 616–22

## CAMPYLOBACTER: A CHANGE IN PUBLIC HEALTH APPROACH

Editor,

Following the recent focus on campylobacter during Food Safety Week 2014[1], it would be timely to inform readers of recent changes in Public Health investigation of campylobacter cases.

Campylobacter remains the most commonly reported cause of food poisoning. The main sources include raw or undercooked meat (especially poultry), unpasteurised milk and untreated water[2].

Presently, campylobacter infections are reported by microbiology laboratories and clinical teams to the Health Protection Service at Public Health Agency (PHA). Campylobacter reports in Northern Ireland have increased from 843 cases in 2008 to 1350 cases in 2013. Similar increases in campylobacter cases have been seen in all areas across UK. This may be due to increasing sensitivity of testing methods used by laboratories, however, ultimately the cause

is unknown.

Until recently all campylobacter cases reported to PHA were sent a postal questionnaire. Completed questionnaires were then reviewed to identify infection control measures required and to identify outbreaks promptly.

An audit was undertaken to review current practice and identify potential service improvements in this area of health protection.

The audit looked at Campylobacter cases over a 6 month period in 2013. Over this time period there were a total of 837 laboratory notifications with 403 (48%) cases returning questionnaires.

Median time from onset of symptoms until confirmation of infection was 9 days and median time between laboratory confirmation and receipt of completed questionnaires was also a further 9 days.

Majority of questionnaires (96%) did not identify any risk factor exposures, further cases or outbreaks. Of the remaining cases, only 1% led to environmental inspection and sampling of food premises.

On further discussion with other health protection units across the UK, it became clear that there is a wide variation in approach to investigation of campylobacter. Currently there is no evidence to identify the optimal approach to investigation of this disease.

Several limitations were identified from our audit. These included the immediate loss of information on 52% of cases and the significant time delay of 18 days between onset of symptoms and review of case information. Given campylobacters' relatively short incubation period of 3 days on average, these responses were not timely enough to facilitate infection prevention or early identification of outbreaks.

The fact that only 4% of cases required further action revealed an obvious mismatch between the investigative resources required and Public Health action taken.

Based on this audit a new approach to public health investigation of campylobacter was instigated in July 2014, adapted from Good Practice statements published elsewhere[3].

Cases are now reviewed and classified as Not linked, Possibly linked or Probably linked dependant on a number of factors, with a graded response for each. This simple change in clinical practice has led to service improvements from both temporal and financial perspectives.

The PHA would continue to encourage all health professionals in primary and secondary care to be aware of food-borne pathogens. If enteric infection is suspected we would recommend that microbiological testing is requested and that all symptomatic patients are given general infection prevention control advice.

The authors have no conflict of interest.

Dr Philip Wilson,Dr Philip Veal.

Affiliation for all authors: Public Health Agency, 12–22 Linenhall Street, Belfast. BT2 8BS

Correspondence to Philip Wilson – pwilson27@qub.ac.uk

**REFERENCES:**

1. Food Standards Agency. *Food Safety Week 2014: 'Don't wash raw chicken'.* London: Food Standards Agency. Available online from: http://www.food.gov.uk/news-updates/campaigns/campylobacter/fsw-2014. [Last accessed December 2014].
2. Public Health England. *Campylobacter : guidance, data and analysis.* London: Public Health, UK Government. Available online from: https://www.gov.uk/government/collections/campylobacter-guidance-data-and-analysis. [Last accessed December 2014]
3. Health Protection Agency Scotland. Gastrointestinal and zoonoses. Surveillance data and systems. Campylobacter laboratory reporting system. Glasgow: Health Protection Scotland; 2012. Available online from: http://www.hps.scot.nhs.uk/giz/ssdetail.aspx?id=195. [Last accessed December 2014.]

## TWO CASES OF PRIMARY ADENOCARCINOMA OF AN ILEAL CONDUIT : CASE REPORTS AND REVIEW OF THE LITERATURE

Editor,

Ileal conduits are used for urinary diversion following cystectomy for trauma, malignancy, congenital defect or neurogenic non-functioning bladder. Urinary diversion tumours are usually in uretero-sigmoidostomies where mixed faeces and urine may be tumourogenic.[1] Tumours in transpositioned small bowel segments are usually found post-cystectomy seeded from the primary[2]. Primary malignancy of the small bowel is uncommon, with 175 cases in the UK over two years. Primary tumours in an ileal conduit are exceptionally rare[2].

We present two patients with primary adenocarcinoma in their ileal conduits.

This 78-year-old woman underwent radical cystectomy and ileal conduit for transitional cell carcinoma (T2N0, Grade 3, CIS bladder only). She had lifelong ciclosporin post cardiac transplant for cardiomyopathy. On admission for bleeding she developed abdominal pain, vomiting and non-functioning stoma. Examination revealed abdominal tenderness and a parastomal hernia. CT scan demonstrated thickened omentum, parastomal hernia, ileal conduit dilatation and small bowel obstruction.

At laparotomy, an ileal conduit tumour was found, adherent to transverse colon, with widespread tumour deposits. The ileal conduit was taken down and refashioned and right hemicolectomy and ileostomy was performed.

Pathology confirmed poorly differentiated adenocarcinoma with desmoplastic stroma arising from the conduit wall involving the ileum, colon and omentum (Figure 1). The patient died from cardiogenic shock within 24 hours.

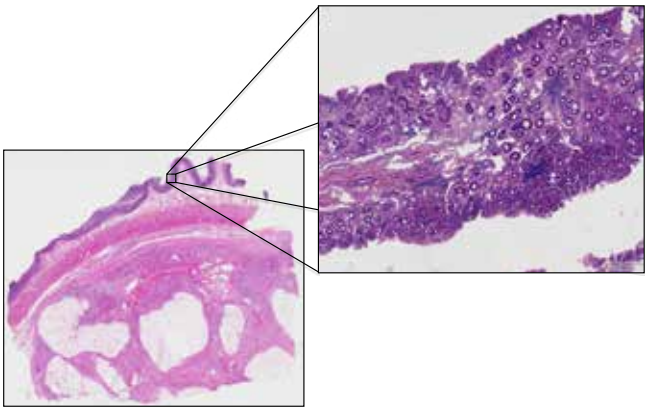

*Figure 1: A low and high power photomicrograph of poorly differentiated adenocarcinoma arising from the wall of the conduit.*

A 45-year-old woman with congenital ectopia vesica had cystectomy and ileal conduit formation at age five. Later, she had multiple gynaecological procedures, strangulated hernia repair, division of adhesions, hysterectomy and excision of the resultant enterocutaneous fistula.

Presenting with abdominal pain, CT scan showed an obstructing lesion in her urostomy and hydronephrosis. At laparotomy, the conduit was excised and a new one fashioned. Pathology demonstrated a mixed neuroendocrine tumour and mucinous adenocarcinoma. She had adjuvant chemotherapy and remains disease free.

Primary adenocarcinoma in an ileal conduit is rare with the absolute risk unknown[2]. Carcinogenic nitrosamines, increased oxidative stress or release of inflammatory mediators (epidermal growth factor, cytokines and cyclo-oxygenase-2) as a result of chronic inflammation or recurrent infections are possible mechanisms of carcinogenesis[3]. Biopsies of ileal mucosa in patients for 7 years post-surgery found mucosal thinning and villous atrophy but no malignancy.[3] This may have underestimated the latent-period which can be up to 40 years.

Small bowel adenocarcinoma is treated primarily by surgery, however, many present late.[4] Limited data suggests improved survival with adjuvant chemotherapy.[4]

There is no evidence that immunosuppression increases the risk of malignancy in ileal conduits. However, an increased risk of malignancy in renal transplant and rheumatoid arthritis patients, treated with azathioprine, has been observed, with case reports of cancers in patients with Crohn's who receive immunosuppression.[5]

These cases highlight the potential for malignancy in ileal conduits. A high level of suspicion is appropriate in patients with urinary obstruction or pain in the urostomy. They require radiological and endoscopic evaluation for recurrence or primary malignancies of the conduit. Patients with longstanding urinary diversion may warrant surveillance, however there is no consensus regarding this.

Irwin GW[1], Woolsey S[2], McManus D[3], Lee J[1], Gardiner KR[1]

List of authors:

1. Dept. of Surgery, Belfast City Hospital, Lisburn Road, Belfast BT9 7AB. 2. Dept. of Urology, Belfast City Hospital, Lisburn Road, Belfast BT9 7AB. 3. Dept. of Pathology, Belfast City Hospital, Lisburn Road, Belfast BT9 7AB.

Correspondence to Gareth Irwin

garethirwin@doctors.org.uk

## REFERENCES

1. Wielding S, Fineron P, Driscoll PJ, Anderson DN. Late malignant change in an ileal conduit. *Int J Urol.* 2008;**15**(1):99-101.
2. Jian PY, Godoy G, Coburn M, Lynch G, Ro JY, Zhai QJ, *et al.* Adenocarcinoma following urinary diversion. *Can Urol Assoc J.* 2012;**6**(2):E77-80.
3. Aragona F, De Caro R, Parenti A, Artibani W, Bassi P, Munari PF, *et al*. Structural and ultrastructural changes in ileal neobladder mucosa: a 7-year follow-up. *Br J Urol.* 1998;**81**(1):55-61.
4. Dasari BV, Gardiner KR. Management of adenocarcinoma of the small intestine. *Gastrointest Cancer Res.* 2009;**3**(3):121-2.
5. Dasari BV, McBrearty A, Gardiner K. Immunosuppression in patients with Crohn's disease and neoplasia: an ongoing clinical dilemma. Dis Colon Rectum 2012;**55**(9):1008-11.

## ADULT SMALL BOWEL MALROTATION – AN AUDIT OF LOCAL PRACTICE.

Editor,

Small bowel malrotation (SBM) is a congenital anatomic anomaly resulting from an abnormal rotation of the midgut during embryogenesis which places the patient at risk of acute and chronic complications. SBM is historically regarded as a paediatric phenomenon, however over the past 30 years literature has increasingly focused on the incidence, significance and management of SBM within the adult population. Traditionally prevalence is often quoted as ~0.2% however authors of more recent studies agree the true incidence of malrotation in adults is underestimated due to the wide range of potential clinical presentations [1].

Symptoms are often mistaken for irritable bowel syndrome, peptic ulcer disease, biliary and pancreatic disease and psychiatric disorders. A number of studies have noted those initially classified as 'asymptomatic' have in fact on careful questioning reported abdominal complaints attributable to their malrotation[1]. Therefore an abnormal junction in an adult should not be dismissed simply as a normal variant.

Upper GI contrast fluoroscopy remains the examination of choice, however with increasing utilisation of CT more recent studies have observed features such as an abnormal SMA/SMV relationship or associated extra-intestinal abnormalities such as aplasia of the uncinate process of pancreas[2].

The greatest controversy surrounds the management of the asymptomatic patient who is discovered incidentally to have malrotation on radiologic examination. The literature is divided with some authors advocating a surgical Ladd procedure only in symptomatic patients. In 2006 Malek

and Burd[3] undertook a unique 'decision analysis' study to assess the risk of surgery compared with "watchful waiting." They concluded observation of completely asymptomatic malrotation in adults older than 20 years of age resulted in increased life expectancy in those individuals.

In contrast, other authors have argued any risk of midgut volvulus, regardless of how small, warrants operative intervention[4]. In the absence of an adequately sensitive or specific tool to predict those at risk of developing such complications, some authors argue surgical intervention should be considered. Authors have also suggested increased access to laparoscopic Ladds procedures, which are associated with reduced post-operative morbidity, should encourage prophylactic correction of asymptomatic SBM[5].

An audit of local practice revealed adequate visualisation of the duodeno-jejunal junction on 92% of audited barium swallows and meals. However only 14% of adult patients with a radiologically diagnosed SBM were referred to a surgical team. As a result of this audit it has been agreed a departmental standardised protocol for upper gastrointestinal barium studies should be created and the local upper gastrointestinal surgeons have supported the referral of adult patients with radiologically diagnosed SBM.

The authors have no conflict of interest.

Maria McGill, Richard Wright

Department of Radiology, Royal Victoria Hospital, Belfast, Northern Ireland

**REFERENCES:**

1. Pickhardt PJ, Bhalla S. Intestinal malrotation in adolescents and adults: spectrum of clinical and imaging features. *AJR Am J Roengenol.* 2002; **179(6)**: 1429-35.
2. Zissin R, Rathaus V, Oscadchy A, Kots E, Gayer G, Shapiro-Feinberg M. Intestinal malrotation as an incidental finding on CT adults. *Abdom Imaging*. 1999; **24(6)**: 550-5.
3. Malek MM, Burd RS. The optimal management of malrotation diagnosed after infancy: a decision analysis. *Am J Surg.* 2006; **191(1)**: 45-51.
4. Kapfer SA1, Rappold JF. Intestinal malrotation – not just the pediatric surgeons problem. *J Am Coll Surg*. 2004; **199(4)**: 628-35.
5. Seymour NE, Andersen DK. Laparoscopic treatment of intestinal malrotation in adults. *JSLS*. 2005; **9(3)**: 298-301.

## TRAINEE EXPERIENCE OF OPEN CHOLECYSTECTOMY IN THE LAPAROSCOPIC ERA

Editor,

The laparoscopic approach to gallbladder surgery has almost completely replaced conventional open cholecystectomy (OC) as the gold standard for symptomatic cholelithiasis. The open approach is generally reserved for complex cases with unclear anatomy or intra-operative complications that cannot be managed laparoscopically[1, 2].

The combination of low conversion rates to OC and decreased training hours due to the introduction of the European working Time Directive has led to a hypothesis that current trainees may not be competent to perform open cholecystectomy[1-3]. As the need for conversion to OC is not always predictable, and since experienced colleagues may not be at hand, this is a potentially important clinical governance issue.

We set out to evaluate the experience and competencies of higher surgical trainees in Northern Ireland in the performance of OC.

An email survey of all higher surgical trainees in Northern Ireland was conducted. Each trainee provided their year of training, along with details of how many LC's and OC's they had assisted with, performed with assistance or performed independently. Trainees' confidence to perform the 12 different steps of an OC, as outlined on Intercollegiate Surgical Curriculum Project (ISCP) assessment form were also assessed. Trainee opinion on the available options to enhance OC training was also sought.

Twenty seven (79%) of the higher surgical trainees responded to the survey. The level of training covered the full spectrum of Specialist Training (ST) 3 to ST 8, with 11 (41%) responders within their final 2 years of training.

The survey data is summarised in Table 1.

8 out of the 10 trainees who had performed more than 10 OC's under supervision were in the last two years of their training. Of these 8 trainees, 5 had rotated through an HPB unit.

When asked about their confidence in performing all steps of an OC, 7 trainees were confident of carrying out all steps independently. The most junior trainee confident at performing an OC independently was ST6 level. 9 trainees did not feel confident to perform all steps even with assistance. Of the 9 trainees who had passed through the regional HPB unit, 6 were confident of all steps of OC.

18 (67%) trainees felt they should not be performing LC independently if they were not confident to perform OC. 16 of these 18 trainees plan to perform LC's independently in the future

All trainees felt that through attending theatre lists and rotating through HPB, their ability to perform OC would improve. Simulator practice and watching videos were identified as potentially useful adjuncts to open cholecystectomy training.

The current open surgical simulation studies show, in general, a benefit in developing the surgical skills of surgical trainees. However, these studies do have limitations. There are no current simulators in the literature for training in open cholecystectomy. In hepatobiliary surgery, simulators do exist for t-tube insertion and are being developed for practising forming a choledochojejunostomy and pancreaticojejunostomy[4, 5]. We feel there would be a benefit in developing a simulator for the teaching and practice of open cholecystectomy.

In conclusion, whilst it is of paramount importance to

 

Table 1.

*Number of procedures performed by surgical trainees*

| Number of trainees who performed each procedure | Number of Procedures | | | | |
|---|---|---|---|---|---|
| | 0-10 | 11-20 | 21-30 | 31-40 | ≥40 |
| LC's assisted | - | - | 2 | 3 | 22 |
| LC's performed under supervision | 1 | 1 | 1 | 2 | 22 |
| LC's performed independently | 8 | 6 | 2 | 3 | 8 |
| OC's assisted | 5 | 12 | 5 | 4 | 1 |
| OC's performed under supervision | 17 | 8 | 1 | 1 | - |
| OC's performed independently | 27 | - | - | - | - |

competently perform a laparoscopic cholecystectomy by the completion of higher surgical training, the core skills of performing an open cholecystectomy in a complex situation need to be maintained. Training therefore needs to address the needs of the trainees through rotation through an HPB unit, and simulation.

Stephen McCain, Claire Jones, Mark Taylor, Gareth Morris-Stiff.

Department of Hepato-Pancreatico-Biliary Surgery, Mater Hospital, Crumlin Road, Belfast, Antrim, BT14 6AB, Northern Ireland

Correspondence to Mr Stephen McCain.E-mail: Smccain02@qub.ac.uk

## REFERENCES

1. Livingston EH, Rege RV. A nationwide study of conversion from laparoscopic to open cholecystectomy. *Am J Surg*. 2004; **188 (3)**: 205–11.
2. Sakpal SV, Bindra SS, Chamberlain RS. Laparoscopic cholecystectomy conversion rates two decades later. *JSLS*. 2010;**14(4)**:476-83
3. Morris-Stiff GJ, Sarasin S, Edwards P, Lewis WG, Lewis MH. The European Working Time Directive: One for all and all for one? *Surgery*. 2005;**137(3)**:293-7.
4. Reznick R, Regehr G, MacRae H, Martin J, McCulloch W. Testing technical skill via an innovative "bench station" examination. *Am J Surg*. 1997;**173(3)**:226–30
5. Narumi S, Toyoki Y, Ishido K, Kudo D, Umehara M, Kimura N, et al. Introduction of a simulation model for choledocho- and pancreaticojejunostomy. *Hepatogastroenterology*. 2012;**59(119):**2333-4

 