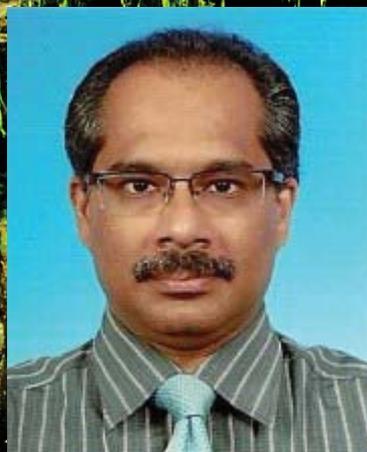




Inaugural First E-ssue

Journey to the
garden city of Japan

In this issue



Message from the
President



Report on
GUT 2012

ALSO:
Colorectal
Surgical
Services
in Malaysia

Message from the President



A new term has begun after GUT 2012 for the present committee and it has been a memorable year. Many activities were carried out by MSGH for the benefit of its members and non members. In the next term we have planned an East Coast meeting in Kuantan, Pahang in January 2013. This meeting would benefit our East Coast doctors who previously had difficulty attending our meetings in the Klang Valley. Interesting topics have been planned for this meeting in Kuantan.

Endoscopy 2013 would also be going on in April 2013 at UMMC with new technologies and lectures by world renowned endoscopists. MSGH has also given grants to our members to attend our regional meetings which I am sure has been very useful to our members. The Klang Valley GI updates will continue to be organized by MSGH which I feel is good platform for our junior doctors to present and discuss interesting cases.

I hope we have another interesting and fruitful year ahead of us.

Dr. Ramesh Gurunathan
President, MSGH

Colorectal Surgical Services in Malaysia

Associate Professor Dr Ismail Sagap
Department of Surgery, UKM Medical Center, Kuala Lumpur

Introduction

Colorectal surgical service has emerged as one of the most important subspecialty services in Malaysia. This is perhaps due to the steady rise in the disease pattern in the subject within the country. For example, the incidence of colorectal malignancy was reported as the second commonest cancer in Malaysia¹ and the most common cancer inflicting men (Figure 1). In addition, complex benign conditions such as symptomatic hemorrhoids, ano-rectal septic complications, rectal prolapse, complicated colonic diverticular disease and inflammatory bowel diseases are similarly increased as well. These require substantial demand for specialist care and treatment for the cost they incur after an inadequate initial treatment will multiply. Re-operations and recurrences of disease are debilitating for both patients and their surgeons.

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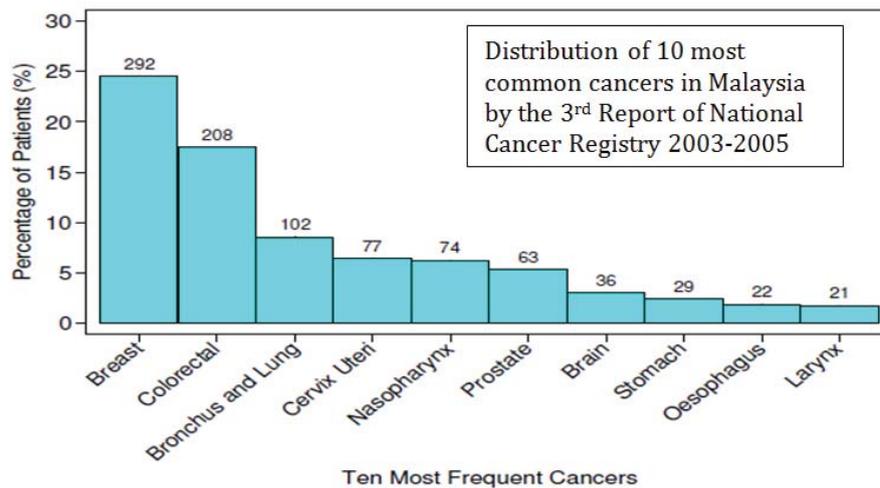


Figure 1

The need for specialized colorectal surgeon training was hailed in 2006 when the Ministry of Health, Malaysia started a fellowship program and identified several main state and university hospitals as training centers. The centers are UKM Medical Centers, UM Medical Center, Hospital Sultanah Bahiyah, Alor Setar, Hospital Selayang, Hospital Tuanku Jaafar, Seremban and Hospital Tuanku Afzan, Kuantan in collaboration with the International Islamic University of Malaysia Colorectal Surgical unit.

The training is organized by a committee which comprised of Consultant Surgeons from MOH, Universities and private practice. It also receive collaborative and auspicious support from the Malaysian Society of Colorectal Surgeons (MSCRS)

Training module

The module comprises of a 3-year clinical and academic colorectal surgical training to be undertaken both domestically and overseas. Trainees are Malaysian surgeons from the Ministry of Health (MOH) or the universities. The domestic rotation needed trainees to perform 2 years of clinical fellow activities under the supervision of 2 local consultants with a minimum of 6-month per consultant. The remaining 1-year overseas training however, may be performed by duration of choice depending on availability of opportunity and skill acquisition required. This international training is usually sponsored by the trainees' respective employer. Meanwhile, the academic requirement comprises of 2 scientific colorectal publications in relevant peer reviewed journal or 2 preferably oral presentation of the trainees' original clinical colorectal research in scientific conferences. At the end of the 3 year training an exit assessment will be conducted by the training committee to confer their competency. Once successful, the surgeon may be credentialed and privileged as a Colorectal surgeon under the National Specialist Register (NSR).

Advanced skills

Colorectal surgical service had undergone prolific advancements in treatment modalities and surgical skill. This is evident especially in the treatment of colorectal malignancies. In recent years laparoscopic techniques has emerged as an important technique that benefitted patients in terms of rapid recovery, shorter hospital stay, less overall wound complications with similar oncologic

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outcome. Unfortunately, due to the complexity of the procedure and the steep learning curve that goes along with it, laparoscopic colorectal resection skills acquisition is noted to be halted among Malaysian surgeons at a rate of less than 20 % all over the country (figure 2). Colorectal surgical training in Malaysia has now crucially emphasized for the skill to be acquired through fostering hands-on surgical workshops and mentor program. More challenging techniques such as the total mesorectal excision (TME) and endoscopic transanal resection for early rectal cancers which have been proven to provide favorable oncologic outcome are also incorporated in the training. These are enhanced by acquisition of transanal endoscopic (colonoscopy, sigmoidoscopy) and sonographic skills (endoanal EAUS and endorectal ERUS). For these, the training centers are equipped with equipments that provide support for service and training. The training committee has also included robotic surgical exposure to trainees for future needs.

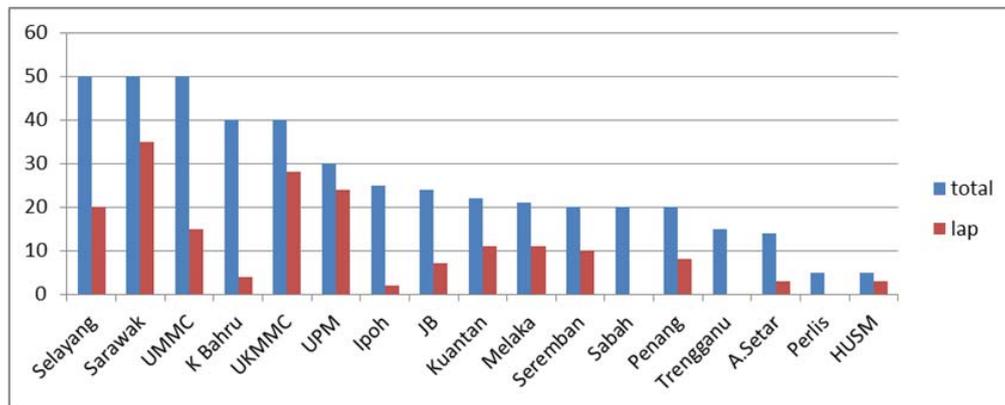


Figure 2: Malaysian Laparoscopic Rectal Cancer Surgery 2011

The treatment for hemorrhoids has also revolutionized towards a more pleasant minimally invasive technique of stapled haemorrhoidopexy. This involved the use of a transanally circular stapling device that produces a scar less hedging of prolapsed hemorrhoids to a higher position as well as minimal mucosal resection at the level of its pedicle obtunding the anal cushion vascular inflow. This procedure has resulted in a satisfactorily lesser pain experience for patients and reasonably low recurrence rate if performed by trained personnel. A much easier technique that uses a somewhat similar concept to staple haemorrhoidopexy is the hemorrhoid artery ligation (HAL). In this procedure the inflow of haemorrhoidal circulation is identified through Doppler technology and sutured at multiple arterial points. Whenever necessary this is coupled with a technique that produces crumpling and hinging upwards of the prolapsed hemorrhoids. A technique called haemorrhoid artery ligation with recto-anal repair (HAL-RAR). Both stapled haemorrhoidopexy and HAL-RAR has gained recognition by colorectal subspecialty fraternity of Malaysia to be incorporated in its training program.

A new modality for treatment of ano-rectal fistula through ligation of fistula tract within the inter-sphincteric space (LIFT) has beginning to gain acceptance among Malaysian Colorectal surgeons. Results from Malaysia has received international recognition through publication in prestigious journal.² The training committee in collaboration with MSCRS is continuously encouraging the younger generation to take up new challenges in the treatment of colorectal diseases in Malaysia and uplift further Malaysia's international reputation in this field.

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Research and Multi-disciplinary team (MDT)

Prolific development in the provision of optimal services to patients is impossible without imparting research culture among health providers and working through multiple-disciplinary team (MDT). Protocols that involved collaborative effort with pathologists, radiologists, oncologists, gastroenterologists, geneticists, stoma care personnel, nutritionist and nurses in producing local outcome results are now emphasized. The MOH has provided Clinical Research Centers (CRC) within their hospitals to promote research while academic activities such as research publications and presentations may be obtained through training within the university hospitals. Since its initiation, colorectal surgical training in Malaysia has seen multiple international publications and significant contributions in relevant scientific conferences. More importantly, trainees has obtained good training program from renowned international colorectal centers such as the Cleveland Clinic and UCLA USA, St Marks Hospital, UK, Korean University Medical Center, South Korea, Singapore General Hospital and National University of Singapore, The Austin Hospital, Melbourne, Australia, Sri Lanka and Chulalongkorn University, Thailand. In brief, the training has very much resulted in borderless networking across the globe and extended our reach to better patients care.

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GUT 2012

by Prof Sanjiv Mahadeva

After several consecutive MSGH meetings in KL - APDW 2010, GUT 2011 & APAGE HP 2012 - the Gastroenterology community were more than ready for a different venue for the next meeting in 2012! Melaka provided us all with a refreshing change of scene, and a quick reminder for some of us how much this historical town has changed over the years. The conference venue of the Holiday Inn was quaint and charming with its view of the rapidly developed Melakan coastal frontline. For some of us, this change was "development", for the rest, it was too much change too fast.



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On to the scientific programme. The succinctly developed two and a half day programme was a credit to the scientific chairpersons, Dr Tan Huck Joo and Dato' Prof Goh Khean Lee. With plenary and symposia on topics ranging from Functional Dyspepsia to Hepatocellular Carcinoma to Pancreatitis, there was indeed something for most clinicians in the field of Gastroenterology. GUT 2012 was duly blessed with the presence of international stars in Gastroenterology, with the likes of Emad El-Omar from the U.K. (Editor of Gut, 2nd highest ranking GI journal) and Richard Kozarek from the USA (Executive Director of Digestive Disease Institute of the Virginia Mason Medical Centre, Seattle), both of whom delivered the Panir Chelvam Memorial Lecture and MSGH Oration respectively. However, these were not the only "stars" of the programme. Old friends of MSGH, namely Nageshwar Reddy (India), Henry Chan Lik Yuen (Hong Kong, China) and Lawrence Ho Khek Yu (Singapore) kept participants enthralled by their usual audience-gripping lectures.



Always a favourite of the GUT meetings, the clinical case-based discussions were masterly delivered and co-ordinated by Dr Soon Su Yang (HCC) and Dr Nik Kosai (GERD) - enthralled the audience and challenging the expert panels with a variety of true-life cases from Malaysia. The best five free research papers were presented on the first day of GUT 2012, which ensured a decent audience for budding researchers to highlight their work.

With all the "work" during the daytime, it was time for "play" at the Malaysia Night Gala Dinner. This regular feature at the GUT meetings is the only opportunity for both faculty and participants to mingle in a carefree environment, enjoy "free" food and savour some local entertainment. The gala dinner at GUT 2012 was a "full-house". Delegates were entertained by an evening of wise-cracks from long-suffering emcee Prof Sanjiv Mahadeva and the main attraction, local celebrity comedian Douglas Lim.

GUT 2012 would not have happened without the support from the Biomedical Industry, and the MSGH remains extremely grateful for many of its regular and some new found partners. All in all, whilst the audience had thinned out by the last few sessions on the last day, we believe many of the delegates will remember GUT 2012 in fondness, for the change it provided from previous meetings, and with satisfaction, for the great scientific programme and entertainment.

MSGH Boleh !

Journey to the garden city of Japan: Kurashiki

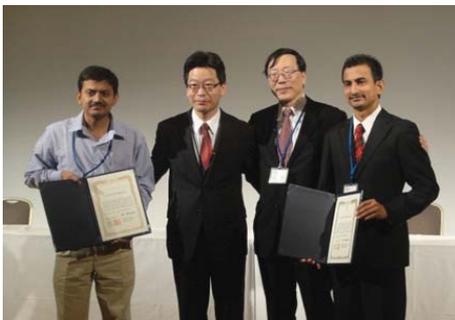
By Dr. Mahadevan Deva Tata

Oct 2012

My journey to the land of the rising sun, Japan was a dream come true. I always wanted to experience the working culture in Japan. MSGH and JSGE made my dream come true. I would like to thank the MSGH and JSGE councils lead by Prof. Sugano, Mr. Ramesh Gurunathan and their councils for giving me this chance of a lifetime.

When it was announced that I won this year's young investigator's award and will be working in Japan for 4 months; I was both delighted and fearful; how will fit into Japanese culture? Even though I have been doing endoscope for more than 6 years in Tuanku Ja'afar Hospital Seremban, going to Japan learning with the great Prof Haruma and Dr Kamada make go weak at the knees. Some of my friends even started to call me, Mr. YaMaha even before I left.

After the JSGE meeting in Tokyo in April; I was sent to Kawasaki Medical School hospital (KMSH) in Kurashiki. Kurashiki is a small city in Okayama prefecture. Kurashiki is in between the hills of Okayama and close to the Seto inland sea. If you like historical buildings like in the "The Last Samurai", you will love Kurashiki. The famous Ohara Art museum is situated in this town too.



JSGE award ceremony. From my right, Prof Sugano, Prof Chiba and Dr Amit (another winner from India)



Kurashiki biken area near Ohara Art museum



Symbol of a prefect mentor

Lessons learned...

In Kawasaki medical school hospital, I was posted in Prof Ken Haruma's team. Dr T. Kamada was put in charge of my training.

My routine usually begins in the endoscope rooms (2-3 days/week), Upper GI surgery (2-3 times/week), ESD (2 times/week), Outpatient clinic (Thursdays) and meetings (CME, Combine meeting, Research meeting all done consecutively on Tuesday nights.

During my training; I was able to learn early gastric and esophagus cancer diagnosis using NBI and magnifying endoscopy and basic ESD under the supervision of Prof Ken Haruma and Dr. T. Kamada. There is no word to describe my heart felt gratitude. I am forever in debt to these two inspiring gentlemen for the knowledge they have passed on to me. Prof Ken Haruma (pic 1) will be my symbol of a prefect mentor.

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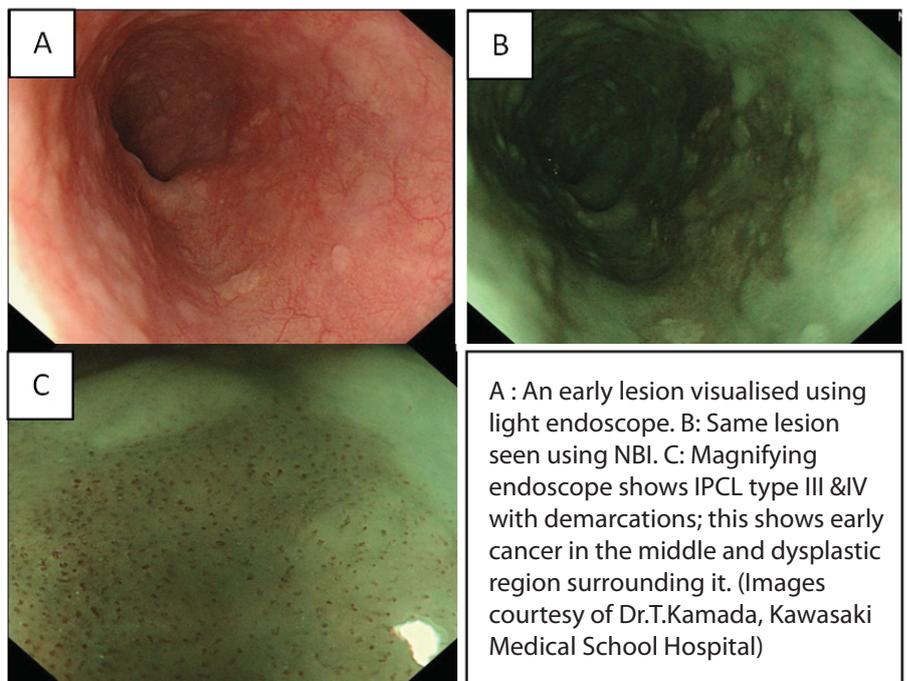
With Dr. Kamada at Okayama castle

One of the key to diagnose early lesions in the gastrointestinal system is to train our eyes to see these lesions since these lesions (esp. early cancers) are rare in Malaysia. We know that what our mind doesn't know, our eyes don't see. So I took me about one month to start seeing like them. Almost all their endoscope books are in Japanese language; but I learned systematically with the help of Dr.Kamada and occasional quiz by Prof Haruma in the viewing room. In short, you must not scope to learn, but learn to scope well. Here, I would like to share a few lessons that I learned on how to do a detailed endoscope and how I trained my eyes?

First and foremost, I learned endoscopic anatomy. As I gathered that many endoscopists may agree, doing an Upper endoscopy is easy. The challenge or the difficulty is in the diagnosis of the early lesions. This is because in upper endoscopy we need to go through at least four different organs and three different epithelium surfaces (more if you do nasal endoscopy).

As a surgeon, anatomy is the basis of my field. Similarly, in endoscopy, most of the work based on how well you know the gastrointestinal system and how to manoeuvre systematically your way inside the gastrointestinal system. In KMSH, all endoscope pictures are taken at same positions and sites. This is done by the whole team. The standard and quality is like mirror images when comparing between endoscopists.

I learned basic pathology of gastrointestinal system, example IPCLs, NBI images, FICE, magnifying changes and its interpretations. For an example, in esophagus; early lesions are easily seen by using both NBI and normal. We have the tendencies to rush the scope when we are in the esophagus. One of the lessons I learned is to use NBI either when going in or coming out to visualise the esophagus in detail. Dysplastic lesions can be seen clearly by using NBI, usually seen as a brown patch or pink colour sign (chromoendoscopy). The Upper endoscope may take slightly longer than usual but we can truly exclude cancers and diagnose each patient with concrete diagnosis even if it is benign (eosinophilic esophagitis, short segment Barrett's esophagus, ectopic gastric mucosa and etc.).

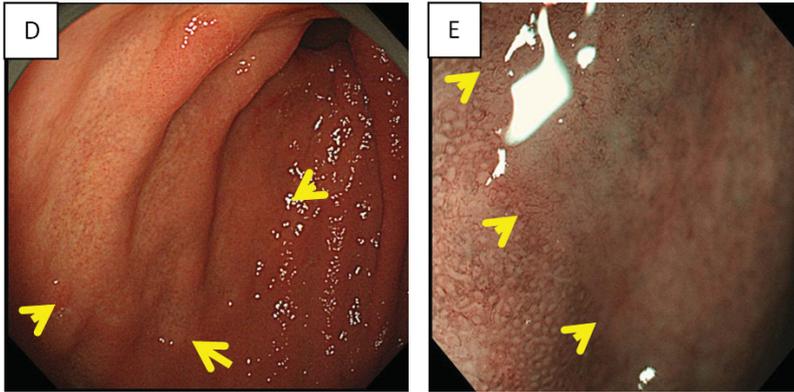


A : An early lesion visualised using light endoscope. B: Same lesion seen using NBI. C: Magnifying endoscope shows IPCL type III &IV with demarcations; this shows early cancer in the middle and dysplastic region surrounding it. (Images courtesy of Dr.T.Kamada, Kawasaki Medical School Hospital)

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Performing endoscopy in the stomach is like looking at the football field from the grand stands. Then if you want to go find something in detail then you might need a binocular to examine the field closely and care must be taken so that you don't miss a spot while you are doing this. There are many guidelines written to systematically examine the stomach. Although, this is nothing new for me, looking inside the stomach and to look for lesions; I learned how to use dyes such as indigo carmine and acetic acid, NBI and magnifying to enhance small lesions. I learned endoscopic diagnosis of RAC pattern (regular arrangement of collecting venules), Atrophic gastritis, Intestinal metaplasia and early cancers even more accurately than before.



D: Type IIc, signet ring cell carcinoma of stomach. E: Same lesion seen using magnifying endoscope shows demarcation and destruction of normal gastric pits.

(Images courtesy of Dr.T.Kamada, Kawasaki Medical School Hospital)

Beside the clinical scenario, there are many other things that I can learn from KMSH. The training of junior doctors, from their intern to their residents are all focused on clinical exposure so much so that during the endoscope procedure, all the work is done by the team doctors, right from the getting the patients into the room, sedation, biopsy, labelling, getting the patients out and etc. The nurses, even though know most the work, will only come in if there is a shortage of staff. The medical students are also allowed to help. The fluidity of their work amazes me, even though they have only 5 nurses to go around 6-7 rooms. We perform about 25 upper endoscopy and 20 colonoscopy every day. Everyone has a fixed job to do.

During my training in Kawasaki Medical School Hospital, I was able to join the Upper GI surgeries done by Prof Toshihiro Hirai and Assoc. Prof H. Matsumoto. It is nothing like being in the Japanese surgical team to learn the fine art of cancer surgery. The team performs at least 3 cancer cases every week.



Upper GI surgery team. From right, Prof T. Hirai, me, Assoc. Prof H. Matsumoto, Dr. Kawai, Dr. Hiyasita and medical student

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With the help of their counterpart in gastro team who diligently diagnose cancers early; most of their surgeries are for curative early cancers. They meet weekly for combine clinico-pathology meeting every Tuesday night to discuss new cases diagnose during the week and histology of old case that have been operated the previous week. This join meeting is also gives the young surgeons and Gastro residents a chance to present their patients and get exposed to questions from both teams. Everyone in this meeting has a laser pointer with them. So at some cases you can see many laser pointers on the screen stressing their points.



Group picture after my last lecture at Kawasaki Medical School hospital in August 2012

I was also allowed to learn some basic genetic and molecular investigations in the Kawasaki Medical School Molecular lab under the guidance of Assoc. Prof A. Shiotani. Finally, the secrets of good working culture in Japan which fascinate me are: punctuality, honesty, commitment, solidarity, comradeship and humility. My stay in Japan was a memorable one; it was nothing like I feared. Everyone in Japan is polite and caring. I would like to personally thank Dr. Kamada for his time and hospitality to make sure my stay in Japan was comfortable. This journey is something I will remember for a long time.

My fellowship in Japan not only gave me new knowledge and experiences; I made many new friends too. There are so many reasons that I would come back to Japan, just to visit my wonderful friends in Kawasaki Medical School hospital. As much as the words of appreciation can be uttered repeatedly; my sincere gratitude will be fulfilled only if I use this knowledge to educate my junior doctors in Malaysia and show that I have gained something and will live by it.



Thank you MSGH, Thank you Japan.

Where Is The Portal Vein?

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Abstract

Preduodenal portal vein commonly present in neonate. Delayed presentation in adulthood is rarely reported. We presented a case of preduodenal portal vein in a man who presented with obstructive jaundice. The embryological basis of the abnormality is discussed. Surgical importances of this congenital abnormality are highlighted.

Keywords

preduodenal portal vein, portal vein anomaly

Case report

42 years old Malay gentleman presented with jaundice, fever and upper abdominal pain for one week. Further history he claimed having tea colored urine but no pale colored stool. He denies of any history alcoholic intake or travelling. This is the first presentation to the hospital. Upon examination he was jaundice with temperature of 37.5 degrees. The hydration status was fair and vital signs were stable. Per abdomen, there was no palpable mass and the abdomen was soft. Other system examinations were unremarkable.

Blood investigations showed a raised white cell count of $11.2 \times 10^9/L$. The liver function test was deranged with a bilirubin level of 197 μ mol/L, alkaline phosphates of 205U/L and alanine transferase of 3027U/L. He was treated as ascending cholangitis. An ultrasound of the biliary system demonstrated gallbladder stone with dilated left intrahepatic ducts. The right hepatic duct and common bile duct were spared. ERCP revealed a small common bile duct and intrahepatic duct with distortion of the ampulla (Fig. 1). Since the anatomy of the biliary system was abnormal, hence a computed tomography of the abdomen and magnetic resonance cholangio-pancreatography was ordered. CT abdomen shows malrotation of the gut (Fig. 2) with preduodenal portal vein (Fig. 3) and abnormality of the intrahepatic inferior vena cava (Fig. 4). MRCP showed a normal caliber of biliary tree except for a small abrupt tapering at the common channel (Fig. 5). Otherwise the anatomical location of pancreatic duct is normal.

Upon reviewing the radiographic findings, further history of the patient never had any episodes of chronic abdominal pain. This is the first hospitalization. Patient was treated conservatively with antibiotics. He was discharged after five days of hospitalization. Upon follow up, the liver function test normalized. He was counseled for further workup and intervention of the patent ductus venosus and malrotation but he declined.

Discussion

Congenital abnormality of the gastrointestinal system usually presented early in life or pediatric age group, and very rarely presented later in adulthood. Approximately 85% cases of malrotation present in the first 2 weeks of life. However, in adult life, it may cause chronic subtle symptoms that are often misdiagnosed.

In fetal life, ductus venosus connects the umbilical vein to the inferior vena cava. Within few minutes after birth there will be physiological closure of the shunt, and the anatomical closure will usually occur between day 3 to 20 after birth. Finally it will be obliterated and formed ligamentum venosum which connect with ligamentum teres to the liver. The occurrence of patent ductus venosus is rare. To our knowledge, the coincidence of a gut malrotation with patent ductus venosus has not been described in any literature before.

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1. Malrotation

The knowledge of embryology is vital, in order to understand the pathology of intestinal malrotations and its associated anomalies. At fourth week of life, the gut is in the form of a straight tube. A vascular pedicle will then develop during the fifth week, dividing the gut into foregut, midgut and hindgut. Intestinal rotation primarily involves the midgut. The rotation of intestinal development has been divided into 3 stages.ⁱ Stage I occurs in weeks 5 to 10. It includes extrusion of the midgut into the extraembryonic cavity, a 90° counterclockwise rotation, and return of the midgut into the fetal abdomen. Stage II occurs in week 11 and involves further counterclockwise rotation within the abdominal cavity completing a 270° rotation. This rotation brings the duodenal "c" loop behind the superior mesenteric artery with the ascending colon to the right, the transverse colon above, and descending colon to the left. Stage III involves fusion and anchoring of the mesentery. The cecum descends, and the ascending and descending colon attach to the posterior abdomen. Intestinal anomalies can be categorized by the stage of their occurrence. Stage I anomalies include omphaloceles caused by failure of the gut to return to the abdomen. Stage II anomalies include nonrotation, malrotation, and reversed rotation. Stage III anomalies include an unattached duodenum, mobile cecum, and an unattached small bowel mesentery.ⁱⁱ

Clinical presentation of patients with malrotation of the gut varies according to the age. A small proportion of them may live asymptomatic and only detectable during autopsy. Invariably patients may present with nonbilious vomiting, intermittent or acute abdominal pain, diarrhea, constipation, or hematochezia. Presentation with an "acute abdomen" or shock is rare and portends a poor prognosis as gut ischemia is usually present. Symptoms may occasionally be insidious, with chronic pain, intermittent vomiting, or failure to thrive. Not infrequently, the diagnosis of malrotation is made incidentally in an older child or adult who is seemingly asymptomatic relative to the defect. Similarly for this patient, the malrotation was an incidental finding for further investigation of abnormal anatomical biliary tree.

The difficulty in diagnosis arises as there are no specific signs and low frequency among adults. Symptoms in adult are often mistaken for irritable bowel syndrome, peptic ulcer disease, biliary and pancreatic disease, and psychiatric disorders.

Diagnosis is often made through imaging. A plain abdominal radiograph may have raised suspicion as it may show absence of caecal gas or presence of small bowel shadow in the right side of the abdomen. A standard contrasted upper gastrointestinal series may show a vertical duodenum and it gives 80% accuracy of diagnosis. Computed radiography may show anatomical abnormality of right sided small bowel, left sided large bowel, different position of the superior mesenteric vein and artery.^{iv}

Surgery has been the mainstay of treatment for malrotation of the gut especially in symptomatic patients. Ladd's procedure; which includes derotation of the bowel if torsion is present, division of the peritoneal attachments lying across the duodenum from cecum to right upper quadrant, taking down of the ligament of Treitz and moving the duodenum to the right, separation of any adhesions between bowel loops, and, finally, returning the bowel to a position of nonrotation with the cecum placed into the left upper quadrant and appendectomy.³ There are reported a series of malrotation patients managed successfully with laparoscopic intervention.^{3,v}

2. Preduodenal Portal Vein (PDPV)

PDPV is a rare congenital anomaly of the portal vein, usually incidentally detected during preoperative imaging in adulthood.^{vi} The anteriorly placed portal vein is the outcome of embryonic maldevelopment of the portal venous system.^{vii} This abnormality was first described by Knight in 1921.^{viii} PDPV is often associated with other multiple anomalies. Yi et al. reviewed multiple associated anomalies in 323 cases of PDPV, including intestinal malrotation (64%), situs inversus (26%), duodenal anomalies (26%), pancreatic anomalies (22%), and splenic anomalies (15%).^{ix} Surgical recommendation in patients with intestinal obstruction secondary to PDPV includes, gastroduodenostomy or duodeno-duodenostomy.^x

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Conclusion

Although embryological anomalies such as PDPV, intestinal malrotation, and interruption of the IVC are rarely encountered in abdominal surgery, surgeons must be prepared to preoperatively confirm the presence of any such abnormalities and be watchful during surgery, to avoid major intraoperative injuries.

Figures



Fig. 1 : A small common bile duct and intrahepatic duct with distortion of the ampulla

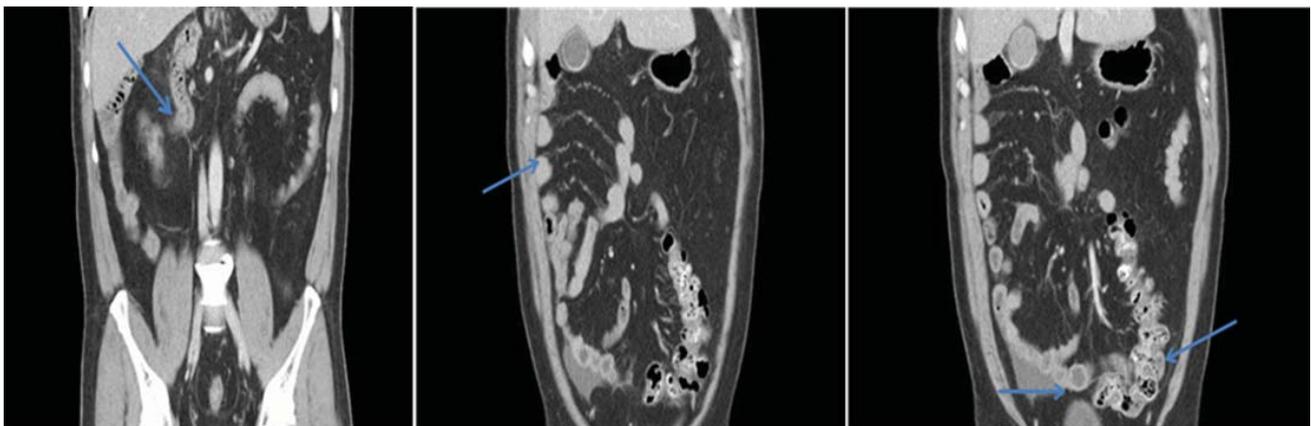


Fig. 2 : There is malrotation of the gut as evidence by the duodenojejunal junction situated to the right side of the vertebral body. The whole small bowel is situated on the right side of the abdomen. The caecum, ileocecal junction and the ascending, transverse, and descending colon is at the left side of the abdomen

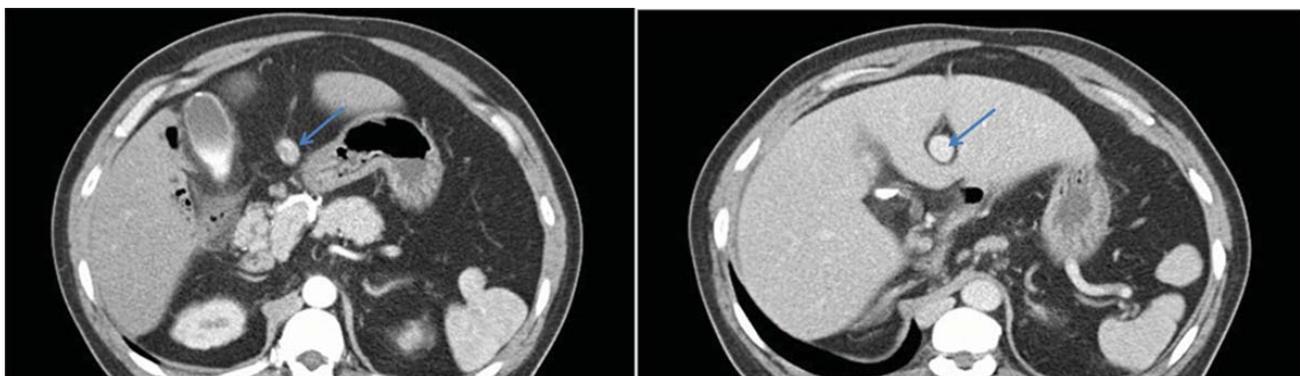


Fig. 3 : Portal vein is located anterior to the duodenum and enters the liver through the falciform ligament

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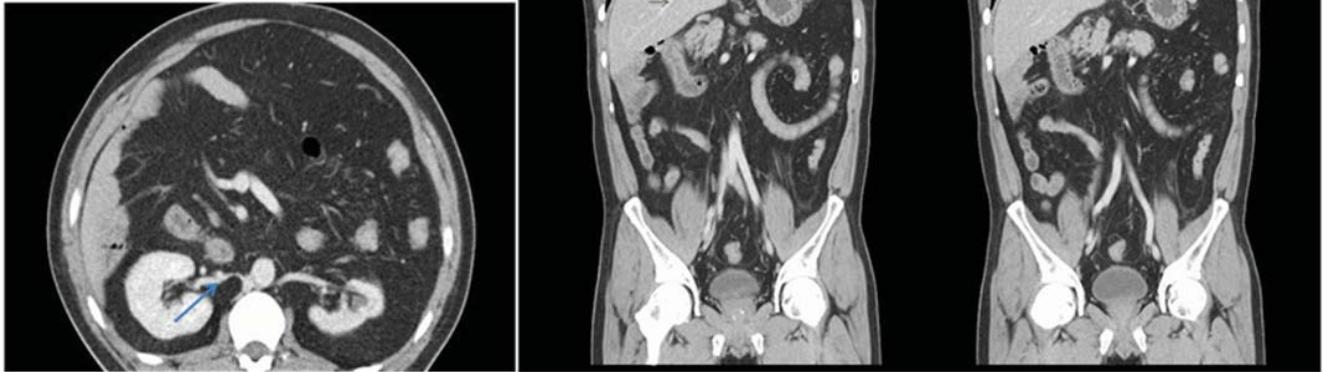


Fig. 4 : The inferior vena cava moves retrocrurally superior to the level of the right renal vein and becomes small in caliber. The hepatic veins form the intrahepatic inferior vena cava and enters directly into the right atrium separated from the inferior vena cava.

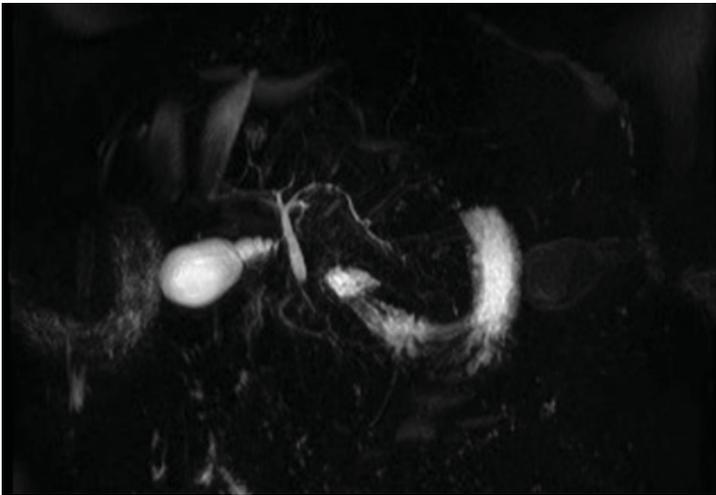


Fig. 5: A normal caliber of biliary tree except for a small abrupt tapering at the common channel. Otherwise the anatomical location of pancreatic duct is normal.

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