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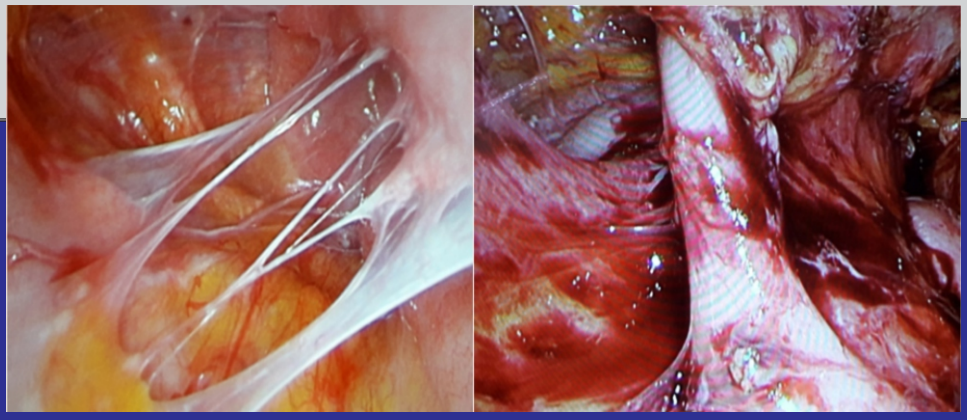

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- Coeliomesenteric trunk
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A centre dedicated for men's health and wellbeing for the first time in Sri Lanka - End your suffering with an effective treatment for Erectile Dysfunction

Lanka Hospitals PLC, a premier health care provider in Sri Lanka, announces its latest addition to the Centres of Excellence- the Male Wellness Centre (MWC) – in a bid to offer services to improve health and wellbeing of men. It's also significant that a fully-fledged wellness centre dedicated solely for men has been established for the first time in Sri Lanka.

The MWC caters to a host of services including Personnel fitness scheduling and programming, Sport health and injury management, Dietary & Nutritional advices, Pre-marital counseling and health screening, Management of premature ejaculation, Management of Erectile dysfunction, Cosmetic surgeries (Bariatric / Ocular / Dental). In addition to the General health screening, patients can obtain screening for Liver, Kidney, Respiratory, Cardiac, Diabetic, Endocrine-Hormonal, Cancer and Sexually Transmitted Diseases in addition to Substances and Alcohol abuses. Furthermore, apart from leading physicians MWC offers the service of competent consultant specialists such as Cardiologist, Endocrinologist, Diabetologist, Venerologist, Urologist, Nephrologist, Oncologist, Surgeon, Vascular Surgeon, Psychiatrist as well as Counsellor.

Erectile Dysfunction (Impotence) is a common health issue suffered by men, defined by the difficulty in achieving and maintaining a penile erection during sexual intercourse. In the Sri Lankan context, the issue is hardly brought into light especially by those who suffer and often show reluctance to seeking proper medical attention. Often, incorrect and misleading advice not only aggravates the issue, but also lead them to face unwanted complications. A special Shock Wave Therapy unit was established within the Male Wellness Centre by the Lanka Hospitals to specifically treat impotence.

The Centre conducts in-depth studies and comprehensive medical analysis to precisely identify the causes for impotence such as Vascular, Psychogenic, Neurological, Hormonal, Structural and others. Being a newer and less invasive way to treat this common sexual challenge shock wave therapy has proven to be effective even when oral medication has failed. Also known as penile extracorporeal low-intensity shockwave therapy, this method involves the use of low intensity acoustic pulse waves that lead to release of factors which promote growth of new blood vessels in the penis Therapy compromises of a handheld device being angled towards the shaft of the penis. One of the main advantages of this treatment method is that it has no clinically relevant side effects. Each treatment session can last approximately 20 minutes.

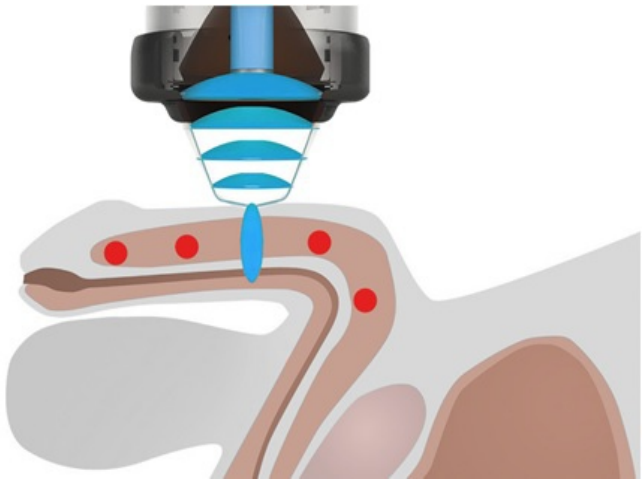

Figure 1. Shock wave therapy

Shock wave treatment is a completely painless way to treat what can be a life altering condition and a regular course of treatment usually comprises of six sessions. The frequency of these session can be tailor made as below and would be decided by the consultant:

1) Every day for 6 days
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3) Twice a week for 3 weeks

The outcomes include gaining of more frequent erections, more rigid erections, ability to maintain an erection and perform entire act of sexual intercourse and freedom to reduce or omit medication. Therefore the use of a treatment which researchers claim is “really a breakthrough” could be good news for men who have erectile dysfunction.

As a hospital staying abreast with latest medical technology, Lanka Hospitals established Male Wellness Centre in a bid to provide world class health care services to Sri Lankan as well as International patients. Moreover, when catering to health issues and conditions that are highly sensitive and personal, Lanka Hospitals delivers complete confidentiality to its patients with the assistance of its specially trained staff.

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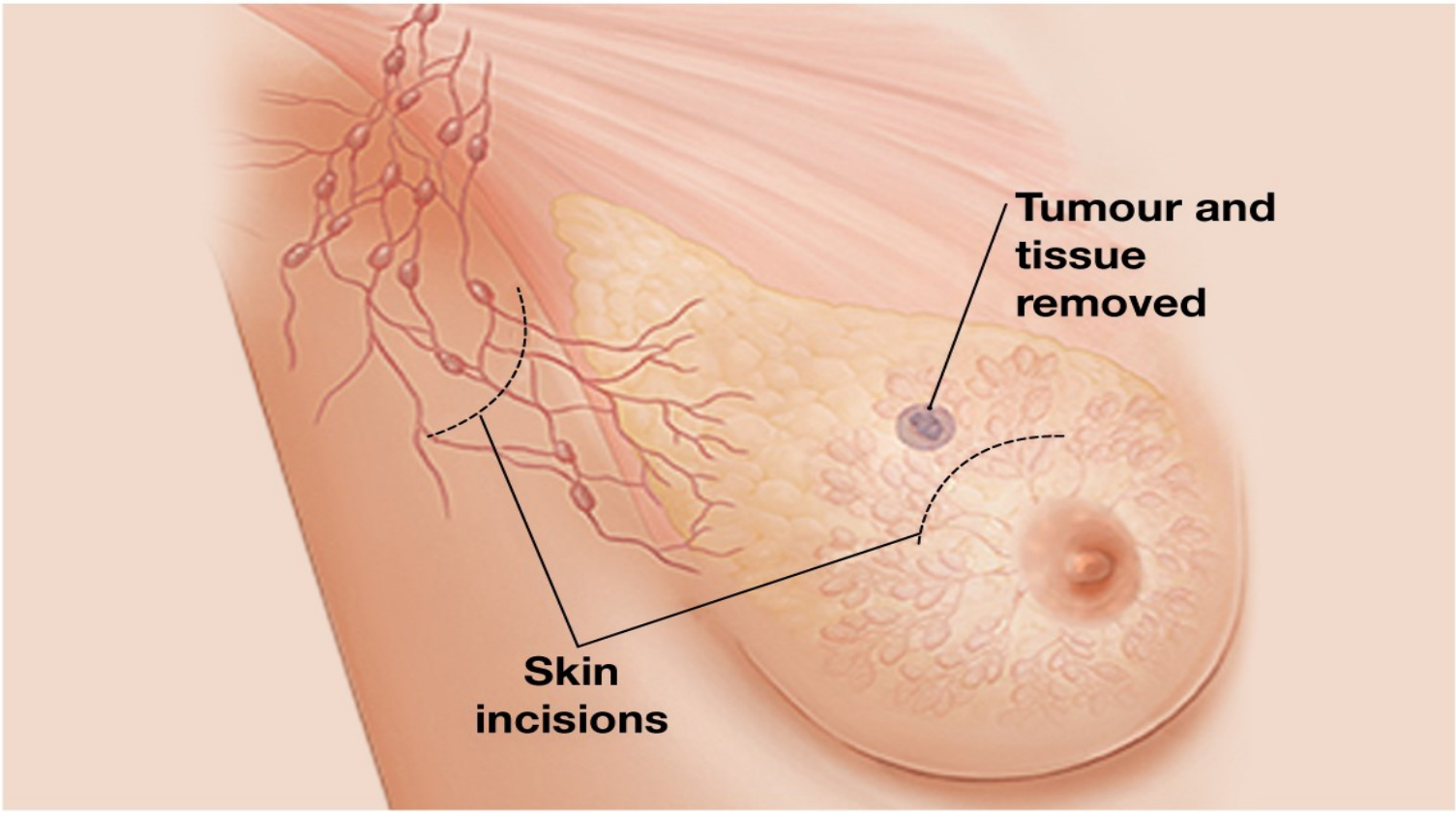

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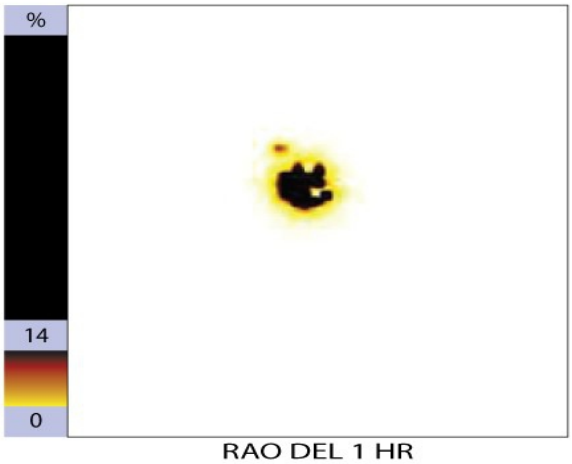

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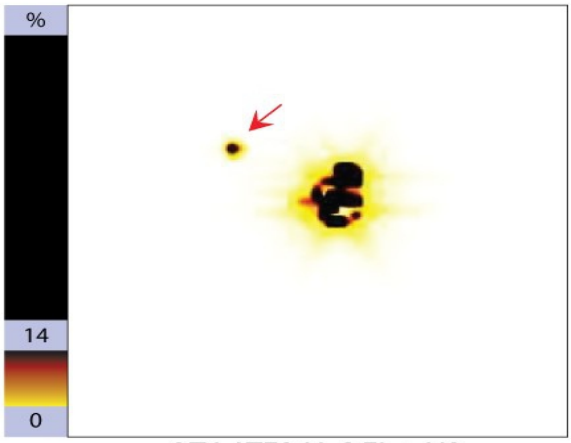

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Contents

CASE SERIES

Management of primary neuroendocrine tumour of the breast

Dahiya D, Yadav B S, Kaman L, Vaiphei K
Post Graduate Institute of Medical Education and Research (PGIMER),
Chandigarh, India

Keywords: Neuroendocrine tumor; breast; endocrine; carcinoma; hormone therapy

Introduction

Primary neuroendocrine tumour (NET) of the breast is a rare entity and constitutes less than 1% of all breast cancers [1]. The World Health Organization (WHO) defined mammary neuroendocrine carcinoma (NEC) as a separate entity in 2003 and revised the term NEC in 2012 to carcinoma with neuroendocrine differentiation [2]. Unlike infiltrating duct carcinoma (IDC), clinical features, and biological behaviour of NET of the breast is not well understood. In the absence of any large series, the optimal treatment is uncertain and they are treated as other invasive tumours of the breast. Therefore, this study aimed to analyze the outcome of surgery among patients with NET of breast.

Methods

We retrospectively analysed patients with breast carcinoma who received treatment between January 2012 to December 2018 in the Departments of Surgery (unit III) and Radiation Oncology at Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh. Four female and one male patients were diagnosed and treated as primary NET of the breast. Records of patients with primary NET of breast were analysed (Table 1). Patients presenting to surgery OPD with complaints of unilateral painless gradually increasing breast lump and were investigated with bilateral sonomammography and fine-needle aspiration cytology (FNAC). NET was missed on pre-operative FNAC in four cases and they were diagnosed to have NEC on final histopathology after mastectomy. Positron emission tomography (PET) scan was done using 150 MBq of 68 Ga-DOTATATE for patients once the histological diagnosis came as NET of the breast to rule out the presence of primary elsewhere in the body.

On suspicion of the neuroendocrine tumour on histopathology, immunohistochemical markers were studied. Patients were diagnosed to have NET of the breast based upon WHO criteria. Immunohistochemical analysis for estrogen receptors (ER), progesterone receptors (PR), HER 2 neu was also performed (Figure 1). All patients received six cycles of chemotherapy (Cisplatin and Etoposide for 3 days, every 21 days).

Radiotherapy was given in doses of 35Gy/15#/3wks to the chest wall and 40 Gy to the supraclavicular fossa in similar fractions. Patients who were hormone receptor-positive were administered tamoxifen 20 mg or letrozole 2.5 mg once a day based on their menopausal status. Patients were followed up 3 monthly in an outpatient clinic as per department protocol.

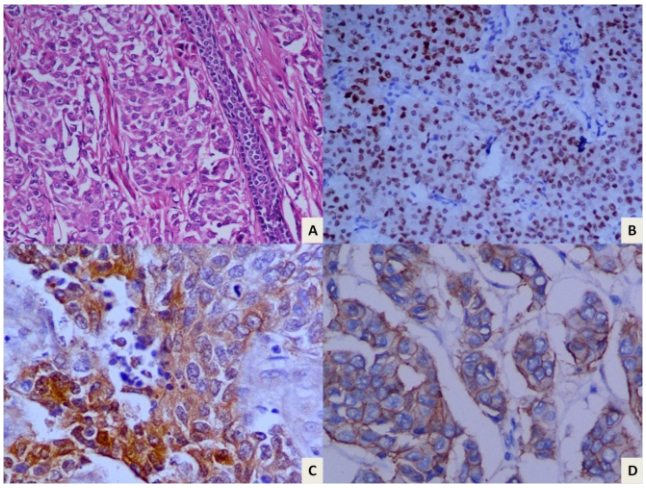

Figure 1 A: photomicrograph of the tumour showing round to oval tumour cells with monomorphic nuclei moderate amount pale eosinophilic cytoplasm. Tumour cells are arranged in clusters separated by fine fibrous septa. A benign duct is seen entrapped by the tumour cells. (H &E, X250).

Figures B, C and D. Panel of photomicrographs showing Positive immuno-histochemistry staining.

Figure 1B. Nuclear estrogen receptor positive cells.

Figure 1C. Cytoplasmic positivity for neuron specific enolase**.**

Figure 1D. Cytoplasmic membrane positivity for e cadherin. (Peroxidase anti-peroxidase).

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Table 1. Characteristics of patients with neuroendocrine tumour of the breast

Age/gender	Preoperative diagnosis	Postoperative diagnosis	Surgery	Chemo therapy	Radio therapy	Hormone Treatment	DFS (months)	OS (months)
35 / F	IDC	NET	TMAC	PE	Yes	Yes	30	30
61/ F	IDC	NET	TMAC	PE	Yes	Yes	39	39
61 / F	NET	NET	L+AC	PE	Yes	Yes	9	9
35/ F	IDC	NET	TMAC	PE	Yes	No	59	59
55/M	IDC	NET	TMAC	PE	Yes	Yes	45	45

[IDC= infiltrating ductal carcinoma, NET= neuroendocrine tumour, TMAC=total mastectomy axillary clearance, L+AC=lumpectomy and axillary clearance, P=Cisplatin, E= Etoposide, DFS=disease free survival, OS=overall survival]

Table 2. Pathological characteristics

Patients	Tumour Size (cm)	LN metastasis	Bone metastasis	ER (%)	PR (%)	Her 2neu	Ki 67 (%)	Neuroendocrine markers
35 F	2.5x2	Yes	Yes	+	+	-	20	Chromogranin, E-Cadherin
61 F	3x2	Yes	No	+	+	-	-	NSE and E-cadherin
61 F	2x2	Yes	No	+	+	-	-	Chromogranin, E-Cadherin
35/F	6x5	No	No	-	-	-	-	NSE and E-cadherin
55/M	3x3	Yes	No	+	+	_	30	NSE and E-cadherin

[NSE= neuron specific enolase, ER= estrogen receptor, PR= progesterone receptor, LN=lymph node]

Results

NET was diagnosed in four female (three pre and one postmenopausal) and one male patients. All patients underwent surgery and had high-grade NET on histopathology. Tumour details of the pathological examination are mentioned in Table 2. Presence of lymph node metastasis and ER, PR positivity was seen in 4 patients and all five patients were HER 2-neu negative.

On PET scan, there was no definite evidence of abnormal somatostatin receptor (SSTR) expressing lesion anywhere in the body in three patients. One patient had FDG avid lytic skeletal lesions in D8 and D 11 (SUV 3.7). Bone metastasis was confirmed by whole-body bone scan using Tc-99m MDP. PET was not performed in one patient.

Follow up

Follow up time range was from 9 to 59 months. A patient who presented with bone metastasis is having stable disease. DOTA-PET scan at 2 years was negative for any recurrent disease. She is now 39 months postoperative and doing well on follow up with no further progression of her bone lesions on follow up scan.

Discussion

Diagnosis of primary NET of the breast requires exclusion of NET at non-mammary sites and the presence of histological evidence of intraductal or in situ component [3]. It is a rare entity with a reported incidence of < 1% in postmenopausal females (97%) in the 6th-7th decade of life [1,4,5]. However, Bogina *et al* have reported neuroendocrine differentiation in 10.4% of breast carcinoma patients in a retrospective analysis of 1232 patients of breast cancer when immunohisto-chemistry staining was performed with synaptophysin and chromogranin A [6]. Therefore, true incidence of this disease is questionable as immunochemistry with neuroendocrine markers is not a routine for histopathological diagnosis of breast cancer. The incidence in males is even less as there are only a few case reports or small series in the literature due to the rarity of this condition.

Clinical presentation and radiological findings are similar to those of other IBC. Diagnosis of NET requires the expression of neuroendocrine markers (synaptophysin, chromogranin A). Authors suggest these markers should be checked customarily in carcinoma breast especially in mucinous and

solid papillary carcinoma to decrease the incidence of missing NET of the breast. Most NEC is estrogen and progesterone receptor-positive (92% and 69% respectively) and HER 2 neu negative (91%) [4, 5].

Tumour biology of this entity has not been studied in detail because of infrequent occurrence. Lymph node metastasis was observed in 43% and distant metastasis (liver, bones, lungs, brain and pancreas) was present in 8% [4, 5]. It is recommended that surgical management be based on tumour location and stage. The choice of chemotherapy should be based on the stage of tumour and histological differentiation. It is suggested that well-differentiated NEC should receive anthracycline and taxane-based regimens similar to conventional breast cancer, and poorly differentiated NET should receive platinum compounds and etoposide as small cell carcinoma of the lung. As the majority of these tumours are ER/PR positive; there is a definite role of endocrine treatment. Patients who received endocrine treatment had a better prognosis and longer overall survival than who did not (156 vs 50 months) [2]. Although the role of radiotherapy in this entity is questionable it was reported that patients who received radiotherapy had better results than chemotherapy although this did not reach statistical significance [4].

Neuroendocrine differentiation was an independent adverse prognostic factor for both overall and disease-specific survival ($p < 0.0001$) in a population-based study [5]. Differentiated tumours have a better prognosis than small and large cell variant which are poorly differentiated.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Primary neuroendocrine tumour (NET) of the breast is a rare entity and diagnosis requires exclusion of NET at non-mammary sites and the presence of histological evidence of intraductal or breast in situ component.
- NET is commonly observed in postmenopausal females during the 6th-7th decade of life.
- Majority of NET are estrogen and progesterone receptor-positive and HER 2 neu negative.
- Surgery with adjuvant chemo-radiotherapy and hormone treatment appears as an acceptable treatment option with satisfactory survival.

CASE REPORT

A rare surgical emergency - trans anal evisceration of small intestine

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[2]District hospital Mullaitivu, Sri Lanka

Key words: Trans anal; laparotomy; evisceration

Introduction

A trans anal evisceration of the small intestine through the anus is a rare surgical emergency [1, 2]. This surgical condition may occur spontaneously or associate with rectal injuries [1]. According to the literature, blunt abdominal or pelvic trauma is the main cause for the transanal small bowel evisceration in young patients [1].

There were several case reports in the journals indicating the association between the rectal prolapse and trans anal evisceration of the small bowel as in this patient [2, 3]. This case report, it illustrates aetiology, management and complications of trans anal evisceration of the small intestine.

Presentation

A 72-year-old woman transferred from District General Hospital Mullaitivu after an emergency laparotomy to teaching Hospital Jaffna for further management.

This patient was admitted to Mullaithevu District General Hospital with the history of the evisceration of the small intestinal loop through the anus for the last 2 hours. She had no history of recent trauma to abdomen. But she admitted that she had prolapsed rectum and reduction done one year ago at Mullaithevu District General Hospital.

Her bowel habits were normal but there is a history of rectal prolapse 1 year before this admission and reduction done at District General Hospital Mullaithevu. There is no history suggestive of inflammatory bowel disease or colorectal malignancy. The emergency laparotomy was performed at D.G.H Mullaithevu after optimized the patient. The emergency laparotomy revealed there was a laceration in the anterior rectal wall and small intestinal herniation through this defect. The adhesions have been noted between small bowel loops and edges of rectal wall defect. Adhesions were separated and accidental damage to the small intestinal loop was noted during the reduction of herniated small bowel loop. The resection and anastomosis of the small intestine were carried out. The anterior rectal wall defect was repaired and sigmoid colostomy (Double Barrel] was done. Routine closure of the abdomen with intraperitoneal drainage tube was done. Then she was transferred to the Teaching Hospital Jaffna on the 5th post-operative day for the management of sepsis. The CRP and Full Blood Count suggested sepsis. The ultrasound scan of abdomen and pelvis revealed a small amount of fluid collection in the pelvic cavity.

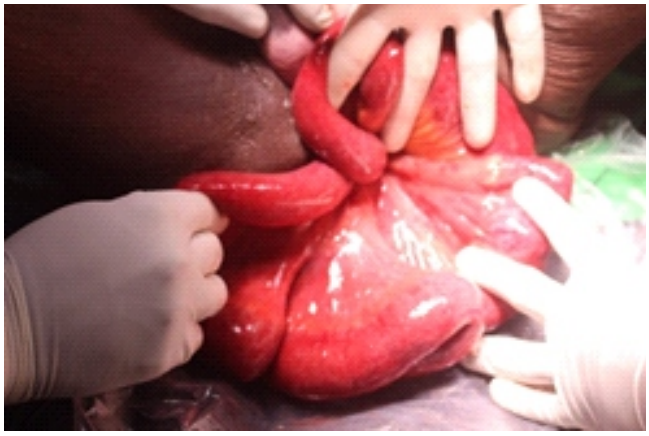

Figure 1. Eviscerated part of small intestine with mesentery.

The contrast-enhanced CT of the abdomen and pelvis revealed there was no anastomotic leakage from the anastomotic site or elsewhere but a small amount of fluid collection in the pelvic cavity. The patient died on 10th post-op day due to multi-organ failure due to sepsis.

Discussion

The transanal evisceration of the small bowel is an extremely rare complication [1, 2]. This may occur either due to Abdominal and Pelvic trauma especially in young patients or as a result of chronic prolapse of rectum [1, 2]. This surgical emergency occurs as a result of herniation of small bowel through the breach in the rectal wall. Less than 70 similar cases have been reported in various literature [1]. The first recorded case is in 1827 by Brodie. Since then very few cases have been reported up to now.

Majority of the cases reported in the literature occur as a spontaneous event following a chronic rectal prolapse, especially in elderly patients as in our patient [1]. Less than 20 cases have been documented as a result of rectal traumatic

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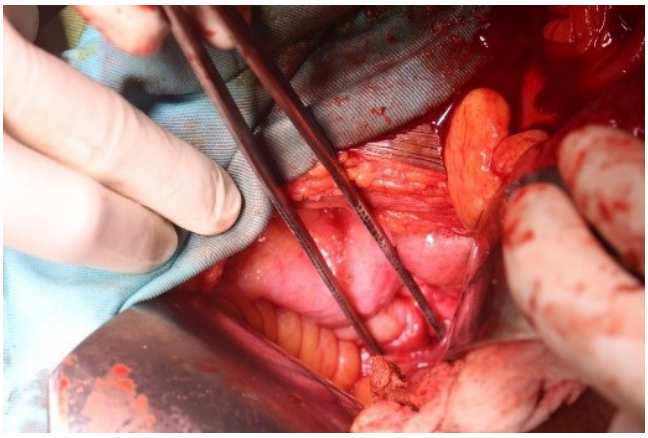

Figure 2. Evisceration occurred through Anal orifice.

injuries in young patients [1]. Wroblesk DE, Duley TH reported that mainly two factors predispose for this unusual clinical scenario [4]. More than 75% of these cases were due to the chronic prolapse of rectum and an event of sudden increase intraabdominal pressure result in a spontaneous rupture which commonly occurs in the anterior rectal wall as in this patient [3].

Broden B, Snellman B with cine radiographic studies explained that the basis of prolapse rectum is due to the Sliding Hernia of small bowel into the pouch of Douglas which forms a hernial sac with its contents invaginate the anterior wall of the rectum. Invaginating of the rectal anterior wall by hernial sac with its content lead to ischemia of the rectal anterior wall and makes the anterior wall the weakest point. Finally, the anterior wall of the rectum becomes more vulnerable for perforation allowing the small bowel to herniate and eviscerate through the anal canal. The other causes for the transanal evisceration of bowel without pre-existing chronic rectal prolapse have been reported secondary due to blunt abdominal wall injury or iatrogenic injury or due to suction injuries mainly in children [4].

The management of both types of trans anal evisceration of bowel depends on viability, perforation and contamination of herniated bowel [1]. Eviscerated bowel should be cleaned with warm saline and gentle reduction into the peritoneal cavity attempted under the general anaesthesia but however is rarely possible..

This can cause higher mortality. Attempts to reduce the bowel through the anal canal without a laparotomy is unsuccessful most of the time and can cause perforation of eviscerated bowel as in this patient [4].

Laparotomy with careful reduction of eviscerated bowel reduces the mortality. The gangrenous or perforated bowel may need resection and anastomosis similar to this patient. A rectal tear may need primary repair with proximal loop colostomy. The primary treatment such as Rectopexy or sigmoid colectomy to be considered. Hysterectomy should be considered when the trans anal evisceration of the small bowel is associated with uterine prolapse to prevent further recurrence [5].

Conclusion

The transanal evisceration of the small intestine is a rare presentation. It may occur as a result of chronic rectal prolapse or rectal injuries. A clear understanding of the pathophysiology of this condition would help in efficient and prompt response in an emergency.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- The basic pathology of this emergency rare surgical condition is an important factor in the management.
- Even though it's a rare condition the principle of management is necessary to overcome this emergency.

CASE REPORT

Acute compartment syndrome following sodium tetradecyl sulphate (STD) injection as a treatment modality for varicose veins

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Key words: Acute compartment syndrome; STD sclerotherapy; fasciotomy

Introduction

Varicose veins are a common condition, presenting mainly in the middle-aged population, which presents as enlarged, dilated and tortuous veins. Patients present with pain on prolonged standing, ankle oedema usually in the evening, bleeding, venous eczema, stasis dermatitis, lipodermato-sclerosis, and appearance of telangiectasia in the affected limbs. Due to increased venous stasis within incompetent valves, severe varicosities may lead to various complications. Etiology for primary varicose veins sums up to obesity, reduced physical activity, history of trauma, pregnancy and family history of chronic venous insufficiency.

In the absence of deep venous thrombosis, peripheral arterial diseases, hypersensitivity and immobility, sclerotherapy is considered to be one of the treatment methods for varicose veins. Complete sclerosis of the vein walls is achieved by injecting a sclerosant by Fegan's technique. This cheap, technically easy OPD procedure is known to cause headache, thrombophlebitis, pigmentation and pain over the injected site as minor complications. Acute compartment syndrome following this procedure is a much rare complication.

Acute compartment syndrome is a medical emergency which can give rise to limb amputation and even death if not intervened earlier. When the fascia surrounding the compartment limits oedema, the pressure within the compartment exceeds the perfusion pressure, it gives rise to muscle and nerve ischemia. Urgent fasciotomy is needed to relieve the pressure within the compartment [1].

Case presentation

A 43-year-old male who had no medical comorbidities had right lower limb sapheno-popliteal and perforator incompetence for which he underwent Sapheno-popliteal disconnection under spinal anaesthesia and below knee sclerotherapy under ultra sound guidance. With a ratio of 1:4 with a mixture of air, 2 ml of 3% sodium tetradecyl sulphate sclerosant was injected to right leg, the total volume being 8ml followed by immediate application of compression bandage and Tubigrip stocking. He was given 40mg of subcutaneous Enoxaparin preoperatively to prevent DVT.

The patient was transferred to the ward after the procedure as he had no complications and the procedure was uneventful. Six hours after the procedure, the patient presented with excruciating pain in the right calf. Acute compartment syndrome was suspected upon the clinical evaluation.

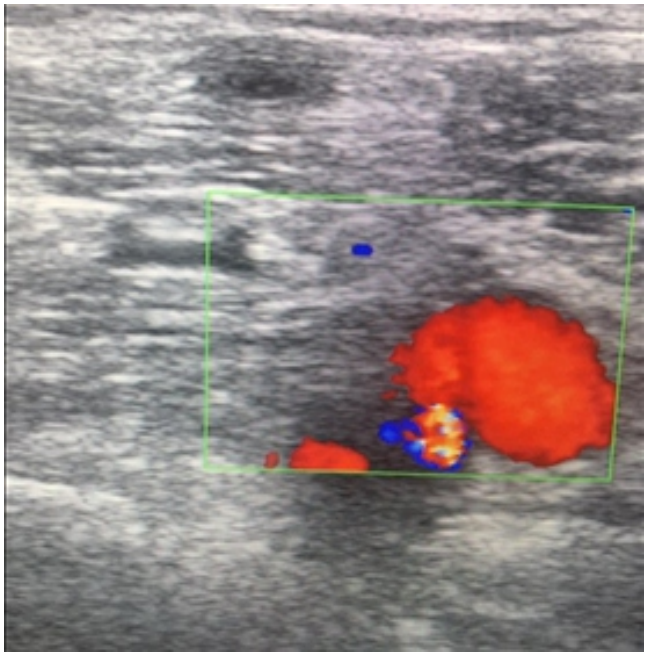

Figure 1. Duplex venous study showing cross section of popliteal vein absence of DVT

Investigations

The urgent venous duplex scan was performed upon the clinical presentation. There was no evidence of deep vein thrombosis in Femoral, Popliteal, and Tibial veins.

Treatment

In the review of rapidly progressive history of the patient, urgent two-incision fasciotomy was done under general anaesthesia, on the medial and lateral sides of the leg relieving all four compartments.

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Figure 2. Lateral fasciotomy wounds day 3 post-operation

Following fasciotomy, pressure in the compartment of the leg was relieved and the patient's symptoms improved subsequently. Patient's leg kept elevated and allowed oedema to subside. On day eight patient had successful primary closure of the wound both on medial and lateral skin. He was discharged on day fifteen with no residual symptoms.

Outcome/ Follow up

With regular clinic visits and physiotherapy, the patient recovered well. Follow up scan revealed no residual symptoms.

According to a theory proposed in the 1970s, ACS leads to a reduction in arterio-venous pressure gradient and reduction in venous drainage which further results in the presentation of symptoms of the patients such as pain on passive flexion, tightness of the limbs and oedema [2]. Acute compartment syndrome is a surgical emergency where the pressure within the compartment increases out of proportion which ultimately leads to ischemia and eventually necrosis if not diagnosed early [3].

A conscious patient who can communicate well will present with symptoms such as oedema, tightness of lower limbs and pain on passive flexion. In sedated or unconscious patients, measurement of intra-compartment pressure which is above 30mmHg is considered critical compartment pressure [2].

Our conscious and rational patient experienced excruciating pain in the right lower limb after 6 hours, for which the surgical team intervened and took necessary actions to relieve the compartment pressure. The research suggests, if intervened after 12 hours, acute compartment syndrome damage could be irreversible. Acute compartment syndrome following injection of sclerotherapy is a phenomenon that many are unheard of. The diagnosis of ACS is clinical which can be subjective or objective, the subjective diagnosis depends solely on the clinical expertise. Progressive, persistent muscle pain which is aggravated by passive muscle stretching was the diagnostic feature of our patient. We think the dire reason behind developing ACS could be due to the microvascular impedance of the flow despite the absence of evidence of microvascular thrombi. Poor outcome in patients has been linked to delayed intervention.

The aforementioned patient's right lower limb was salvageable since the surgical team intervened immediately when the patient presented with pain. The rarity of the occurrence of ACS following sclerotherapy makes it difficult to come up with definite gold standard treatment option but, optimal outcomes were yielded when acute compartment syndrome was treated with fasciotomy as an individual entity regardless of the etiology.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Precautions need to be taken when using STD sclerotherapy after spinal anaesthesia because of the risk of DVT.
- Diagnose and intervene immediately when there is a high index of suspicion of acute compartment syndrome.

CASE REPORT

Coeliomesenteric trunk - a rare variation to be aware of

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Key words: Coeliomesenteric trunk; coelio mesenteric trunk embryology; coeliac axis superior mesenteric artery variations; abdominal aorta branches; aorta branch variations

Introduction

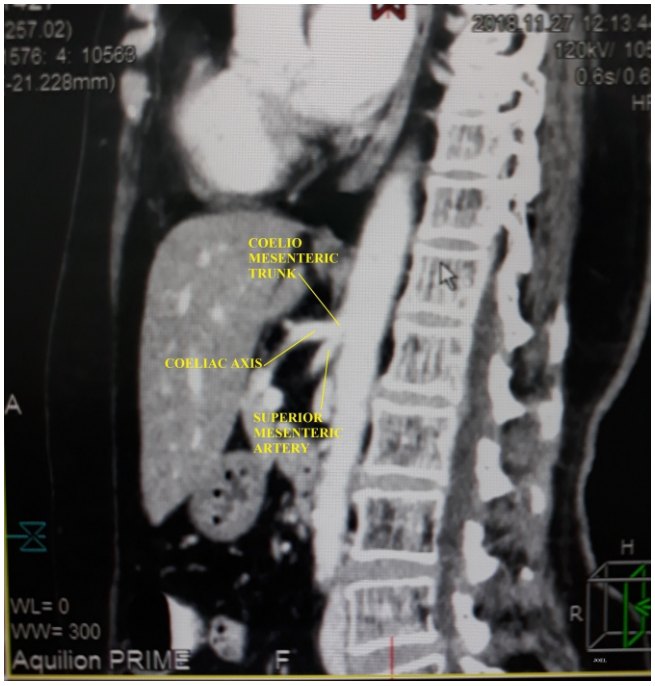
The Coelic axis (CA) and the Superior Mesenteric Artery (SMA) are the anterior visceral arteries of the Abdominal Aorta. CA arises at the level of lower 12th thoracic vertebra while SMA arises at the first Lumbar vertebral level. Normally CA divides into Common Hepatic (CHA), Left Gastric (LG) and Splenic Arteries (SA). These branches supply liver, spleen stomach, upper duodenum and pancreas. The SMA supplies the small intestine. Rarely these two arteries have a common origin due to variations in the embryological development i.e. Coeliomesenteric Trunk (CMT) [1, 2]. It is important to be aware and detect such variation to avoid complications during interventions.

Case presentation

A 71-year-old female underwent contrast-enhanced Computed Tomography (CT) for non-specific abdominal pain at the Teaching Hospital Anuradhapura, Sri Lanka. CT was done with Multidetector Toshiba Aquilion Prime CT machine with 60 ml of Omnipaque 300 (iohexol) contrast agent and arterial images were obtained after a delay of about 25 seconds. Images were interpreted after 3D reconstruction in the console. There was an incidental finding of CMT arising at the first lumbar vertebral level. The CMT divided into CA and SMA. The CA divided further into CHA, LG and SA (figure 1, 2). There were no other abnormalities detected.

Discussion and conclusion

The reported incidence of CMT is about 2.7% to 5.4% [2,3]. CA and SMA develop by a series of ventral branches (Omphalo Mesenteric Arteries –OMA) form the dorsal aorta which appears during the embryological period (figure 3). A longitudinal vessel connects the OMA [1]. First OMA develops into CA while the fourth develops into SMA. CHA,



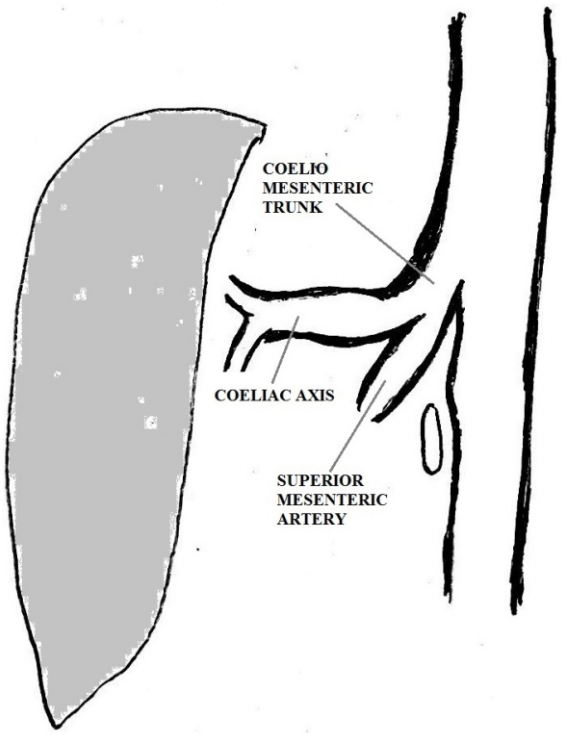


Figure 1 & 2. Coelio mesenteric trunk

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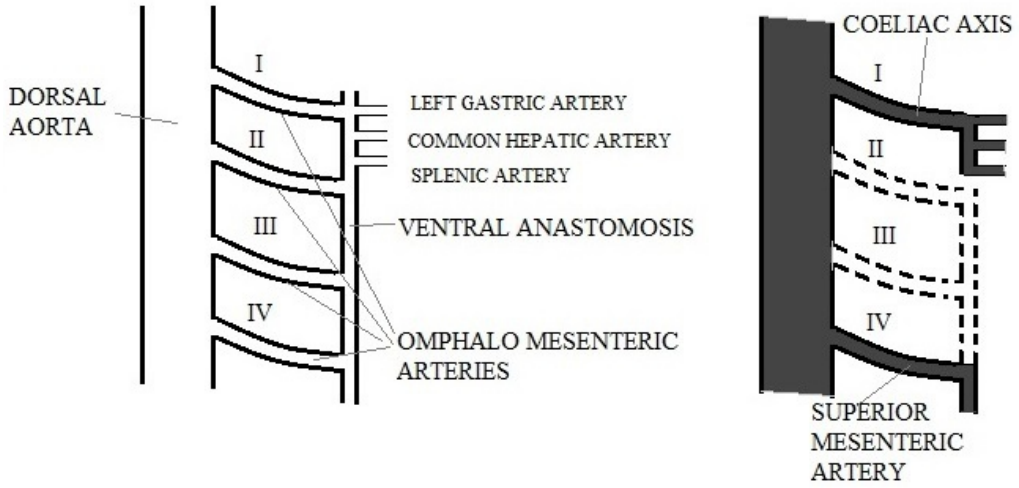

Figure 3. Coelio mesenteric trunk development

LG and SA develop from this longitudinal anastomosis. The part of the longitudinal anastomosis distal to these branches and the second, third OMA disappear thus separating CA and SMA. If the First or the fourth OMA disappear CMT develops [1]. Awareness of this variation is important to plan surgeries, interventional procedures and to avoid complications.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Coeliomesenteric trunk is a rare variation.
- Awareness of this will prevent potential disasters.

CASE REPORT

Laparoscopic approach to surgical management of enterocutaneous fistula

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Keywords: Enterocutaneous fistula; high output fistula; laparoscopic surgery

Introduction

Surgical interventions are required for Enterocutaneous fistula (ECF) which fails to resolve after a period of conservative management. However, surgery in this situation is usually difficult and hazardous as most of these patients have already undergone multiple surgical procedures. Furthermore, it may lead to inadvertent bowel injury during the mobilization. Possibility of laparoscopic-assisted surgery for ECF had been explored and reported in the literature as an alternative to overcome the above complications. In this study, we describe our initial experience with laparoscopic-assisted ECF repair surgery.

Case presentation

A 40-year-old male was referred from a local hospital for further management of a high output enterocutaneous fistula (ECF). The patient has undergone emergency laparotomy for a penetrating injury to the abdomen with repair of a distal ileal perforation. Subsequently, a low output ECF has developed on 16 days post-op.

A second laparotomy had been performed and a fistula tract was identified proximal to the previous anastomosis. The fistulous segment had been resected with an ileo-ileal anastomosis. On post-op day 08 patient has developed a high output ECF through the laparotomy incision and was referred for further management [Figure 1a]. On admission, the patient was moderately dehydrated and the fistula output was 800-1000 ml per day. He was febrile and inflammatory markers were elevated.

Patient was resuscitated and empirical antibiotics administered. Intra-abdominal collections were excluded by an ultrasound scan. The patient kept nil oral with total parenteral nutrition and stoma care provided to minimize skin related complications. Fistula output gradually reduced to 400ml/day over the next six weeks and remained static thereafter. Laparoscopic exploration and repair were performed eight weeks after the onset of fistula.

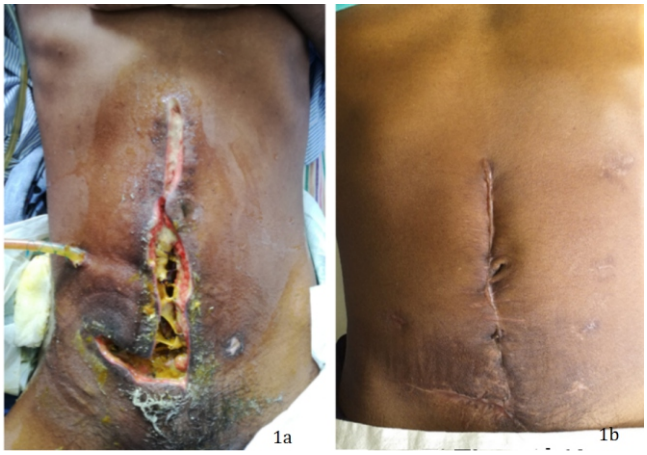

Figure 1a. ECF through the laparotomy incision

Figure 1b. Completely healed ECF

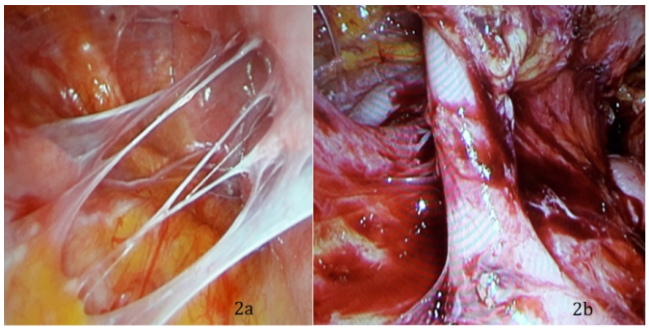

Figure 2a. Multiple adhesions seen during laparoscopic exploration

Figure 2b. Ileal segment adhering to the surgical scar

Surgical technique

The camera port was inserted by open technique at Palmer's point and pneumoperitoneum created. The adhesions were separated by using the camera to create space for the insertion of the working ports [Figure 2a]. Ileum and transverse colon were identified adherent to the site of previous scar [Figure 2b]. Bowel loops were mobilized with sharp and blunt dissection and fistulous bowel loop was isolated. Thereafter, a skin incision was made around the fistula opening and the bowel along with the fistulous tract was delivered. The bowel segment containing the fistula was excised and an end to end single layer hand-sawn anastomosis performed. Total

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duration was 3.5 hours with blood loss less than 50ml.The patient developed a low output (200ml/day) enterocutaneous fistula through the abdominal wound which was managed conservatively. Fistula completely healed within another week. Finally, the patient was discharged after three and a half months from initial injury [Figure 1b].

Discussion

ECF is defined as an abnormal communication between the gastrointestinal tract and the skin. It is considered primary when it occurs in diseased bowel such as Crohn's disease or malignancy which accounts for 25% of ECF. In contrast, secondary ECF occurs in healthy bowel following trauma or surgery. Anastomotic leaks account for 50% of the ECF following abdominal surgery and the rest is associated with inadvertent bowel injuries [1]. High output ECF (fistula output >500ml/Day) are associated with high morbidity and mortality despite advances in medical care with a reported mortality of 5-20% [2]. With the supportive measures alone one-third of the ECF will heal within five to six weeks [1].

Timing of the exploration is perhaps the most important factor in successful ECF surgery. Delaying definitive surgery more than 6 weeks found to reduce morbidity from 20% to 11% [2]. This is because; dense vascular adhesions formed during the initial inflammatory phase take at least 6 weeks to mature enough for a safer dissection. The main aim of the surgery is resection of the involved segment and re-establishment of gut continuity and releases of all possible adhesions which may give rise to intestinal obstruction. Following surgery, ECF has a recurrence rate of 14 to 34% [2]. Over-sewing of the fistula site reported a higher recurrence of 36% when compared with 17% recurrence in resection and anastomosis [3]. Our patient also developed a recurrence following final repair which was probably due to anastomotic dehiscence.

The traditional open approach in fistula surgery required a re-laparotomy which is difficult due to multiple adhesions, especially to the previous abdominal scar. Inadvertent injury to these bowel segments during mobilization may lead to formation of new fistulae. On the other hand, extending the previous incision to a virgin area of the abdomen in the intention of safe entry increases the risk of short and long term scar related complications, such as wound dehiscence, incisional hernia and increased post-op pain. Laparoscopic approach in this background has several important advantages such as avoiding large incisions and provision of magnification for a better view. Additionally, pneumo-peritoneum itself contributes to adhesiolysis by penetration of gas along tissue planes. Few studies have been published on laparoscopic surgery in ECF repair. Firstly, Kazantsev GB, et al in 2000 published a case of ECF successfully manage laparoscopically with early recovery and early return to work [4]. In 2004 Gracia GD et al published 2 cases of successfully managed, ECF with laparoscopic-assisted surgery with follow up at 1 year without major complications [5]. However, the laparoscopic approach is not without limitations. It demands expertise in advanced laparoscopic surgery. Furthermore, initial port entry related injury can be minimized by adopting port insertion under direct vision at the left subcostal region. According to our experience, converting to a mini-laparotomy to perform resection and anastomosis is suggested following laparoscopic adhesiolysis and mobilization of the fistulous loop.

Conclusion

Laparoscopic surgery has several advantages when compared to conventional surgery in the surgical repair of ECF. Delaying definitive surgery for 6-8 weeks, especially in low output ECF may improve the outcome.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Laparoscopic-assisted fistula surgery is an alternative to conventional open surgery.
- Laparoscopic surgery may ensure safe entry into the peritoneum.
- A better view may make the adhesiolysis and the dissection of the affected bowel segments easier during laparoscopic surgery.

CASE REPORT

Rare cancer of the oesophagus - leiomyosarcoma

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Keywords: Leiomyosarcoma; oesophagectomy; enterocutaneous fistula; sepsis

Introduction

Leiomyosarcoma of the oesophagus is a rare, malignant tumour of smooth muscle origin. The reported incidence is less than 1% of all oesophageal malignancies [1].

Case presentation

A 62-year-old female presented with progressive dysphagia for solid diet for the four-month duration. Her clinical examination was unremarkable. Upper GI endoscopy revealed an extra mucosal bulge with normal overlying mucosa in the oesophagus at 29cm from incisor teeth (figure-1) and benign-looking small pre-pyloric peptic ulcer. Endoscopic ultrasound scan (EUS) was done and it shows a hyper-echoic lesion arising from the muscularis propria of the oesophagus with no surrounding invasion, most likely to be a leiomyoma. Contrast-enhanced tomography of chest (Figure-2) reveals a mid-oesophageal, well-defined lesion, further in favour of a benign leiomyoma.

An oesophageal gastrointestinal stromal tumour (GIST), neurofibroma and fibrovascular polyp were the other differential diagnosis. With the background of a benign tumour, the patient underwent a thoracoscopic enucleation of the tumour. The patient had an uneventful recovery postoperatively. Histology reveals a leiomyosarcoma of the oesophagus (Smooth muscle actin & Desmin positive immunohistochemistry with high mitotic count) and after discussing at a multi-disciplinary oncology meeting, the patient underwent thoraco-laparoscopic oesophagectomy. Early postoperative period was complicated with gram-negative septicaemia and patient develop an enterocutaneous fistula after two weeks of surgery, which is confirmed by contrast studies.

Subsequent upper GI endoscopy revealed a perforated peptic ulcer along the lesser curve of the stomach tube, with healed, intact gastro-oesophageal anastomosis. Several attempts of 'over the scope clipping' of the perforated site failed and the patient died due to myocardial infarction and multi-organ failure by the third week from surgery.

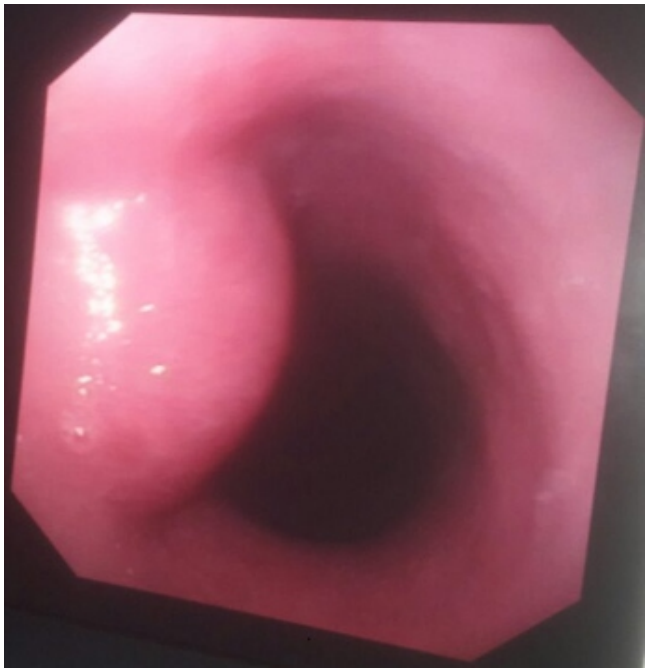

Figure 1. Endoscopy picture

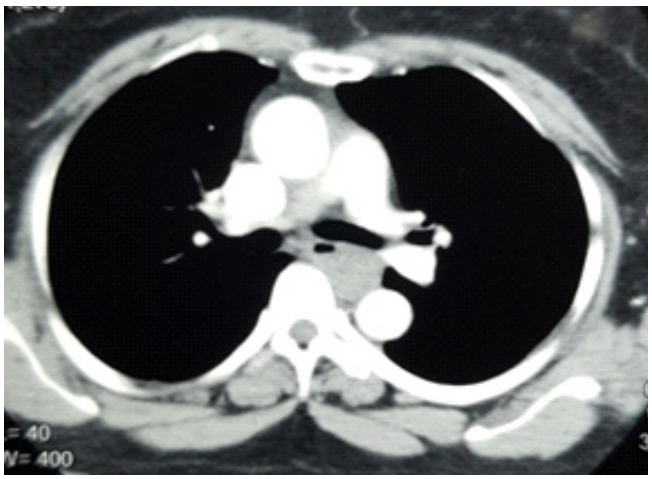

Figure 2. CT image of the tumour

Discussion

Dysphagia is the common clinical presentation in patients suffering from an oesophageal leiomyosarcoma [1]. Upper gastrointestinal endoscopy (UGIE) is the investigation of

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choice to evaluate dysphagia, which might show an extra mucosal bulge as in this case. An endoscopic luminal biopsy may give a high false-negative rate especially when overlying mucosa remain intact [5]. Preoperatively, imaging studies should be done with an endoscopic ultrasound scan (EUS) with or without MRI to see the tissue plane of origin, depth of invasion and possible diagnosis. Contrast-enhanced CT chest and abdomen is indicated if any suspected malignant lesion. Even though with the imaging, it's very difficult to differentiate between leiomyoma and leiomyosarcoma of the oesophagus [2]. Preoperative misdiagnosis rates are as high as 82% in some case series (of the reported literature). Most of the cases were ultimately diagnosed by an oesophageal open biopsy and immunohistochemical analysis [4].

Recently endoscopic ultrasound-guided fine-needle biopsy (EUS-FNB), using 19 G franseen tip needle and immuno-histochemistry looking for smooth muscle actin (SMA), desmin is an accurate method for diagnosing leiomyosarcoma from other oesophageal tumours pre-operatively and may be used to guide treatment precisely [4]. The current treatment of choice for leiomyosarcoma of the oesophagus is radical oesophagectomy [5]. Prognosis of leiomyosarcoma is comparatively superior to squamous cell carcinoma of the oesophagus if resected completely at surgery [3]. The place for adjuvant radiotherapy and chemotherapy is controversial [5]. Even though leiomyosarcoma has poor sensitivity to radiation, the tumour can be effectively controlled by increasing the radiation dose appropriately, which provide acceptable survival rates in patients who are unfit for surgery and metastatic disease [4].

In this case report the patient had dysphagia with extra mucosal tumour of oesophagus found in endoscopy, she was subjected to imaging studies with EUS, which revealed a lesion in muscularis propria, but was not subjected to EUS-FNB to confirm the diagnosis at the early stage and because of that she was underwent two major surgeries subsequently with lethal postoperative complications, which has lead into end of her life.

Conclusion

Leiomyosarcoma of the oesophagus is a rare malignant tumour. EUS-FNB is a gold standard investigation, which helps to diagnose at the initial stage. At current practice, radical oesophagectomy is the treatment of choice. High dose radiotherapy can be reserved for patients with advanced cancer and who are unfit for surgery.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Early diagnosis of leiomyosarcoma of oesophagus can be achieved by USS-FNB, which is the gold standard investigation in current practice.
- Radical oesophagectomy is the treatment of choice with good prognostic outcome than other common oesophageal malignancies.
- There is a place for high dose radiotherapy in patients with advance tumor and who are unfit for surgery.

CASE STUDY

A deadly villain tamed – two cases of spontaneous gas gangrene

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Armed Forces Medical College, Pune, India

Keywords: Spontaneous gas gangrene; debridement

Introduction

Gas gangrene is defined as the fulminant necrotizing infection caused by a bacterium of the genus Clostridium. This condition is extremely dangerous and fatal if not identified and treated immediately. In 1892 Welch and Nuttal were the first to describe accurately the clinical, bacteriological and pathological aspect of gas gangrene. In 1871 Bottini established the bacterial origin. Louis Pasteur was the first to describe Clostridia. Classically the disease was seen in war wounds and roadside contaminated wounds with crush element. The incubation period is hours to days. Reports of non-traumatic or spontaneous gas gangrene were observed after deep intramuscular injections in earlier parts of the twentieth century in continental Europe, the United Kingdom, and Brazil. However, no studies were published due to fear of litigation [1]. Here we are reporting two cases of spontaneous gas gangrene [SGG].

Case study 1

A32-year-old male admitted with a fever of two days duration. Fever was mild to moderately high grade associated with chills and rigors. There was a positive history of lower abdominal pain which was dull aching and associated with constipation. On clinical examination, the abdomen was soft with no signs of peritonitis. Laboratory investigation revealed Polymorphonuclear Leucocytosis with the presence of toxic granules. His condition deteriorated rapidly over the next few hours. An urgent Contrast-Enhanced CT Scan abdomen revealed extensive anterior abdomen wall fascial plane gas infiltration with large fluid and gas collection in the preperitoneal space. A provisional diagnosis of Gas Gangrene / Hollow viscous Perforation with peritonitis was made. Emergency exploratory laparotomy was done which revealed a collection of whitish purulent fluid with gas bubbles in the extra-peritoneal area. Thorough lavage was done with saline and betadine. The abdomen was kept open over laprostoma bag. Intravenous Meropenem 1 gram thrice daily and

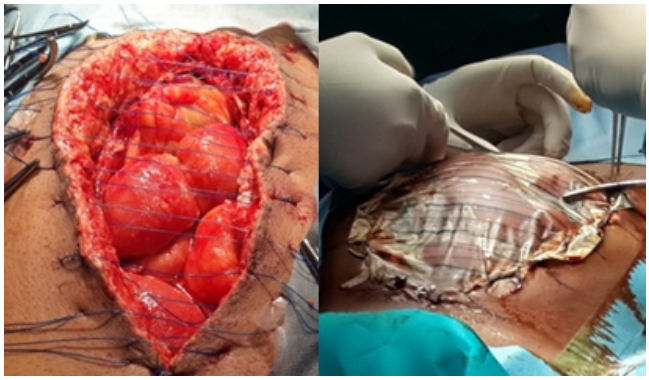

Figure 1. Exposed gut and temp closure with laparostoma bag

Intravenous Clindamycin 600 mg thrice daily were started empirically. Over the next twenty, four hours patient's general condition worsened. He was placed on the ventilator and inotropic support. Pus sent to the microbiology laboratory for culture and antibiotic sensitivity revealed Gram-positive bacillus Clostridium perfringens. Over the next two weeks, the patient further underwent eight revision surgeries with abdominal cavity lavage. He was continued on broad-spectrum injectable antibiotics and supportive management. Total Parenteral nutrition was started for nutritional support. After three weeks, once the prevesical space and the anterior abdominal wall were healthy, the abdomen was closed over interrupted prolene suture. Patient's general condition improved and he recovered. Tissue excised from the preperitoneal space sent for culture and histopathology revealed Gram-positive bacilli in a background of coagulative necrosis and liquefaction of muscle fibres with the peripheral zone of leukocytic infiltration and vascular thrombosis. Colony morphology on Blood agar culture showed areas of target haemolysis [Fig 1].

Case study 2

A 21-year-old male presented with fever of two days duration and pain in the left gluteal region of one-day duration following intramuscular injection of Diclofenac sodium. Fever was mild to moderately high grade. On clinical examination, he was found to have tachycardia, tenderness elicited in the left gluteal region. Laboratory investigations revealed polymorphonuclear leucocytosis. However, USG gluteal region revealed no abscess. The patient was started on Intravenous Augmentin (Amoxicillin 1000 mg and

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Clavulanate potassium 200 mg) 1200 mg twice daily and Intravenous Metronidazole 500 mg thrice daily. Follow up clinical examination after six hours of admission, revealed left the gluteal region as toxic looking associated with variegated skin discolouration. Deep palpation elicited severe tenderness and crepitation. Subsequently, he developed jaundice. Emergency debridement revealed myonecrotic gangrene of the gluteal maximums and medius muscles of the left side with foul-smelling gas bubbles. A thorough debridement and copious lavage with hydrogen peroxide, saline and betadine were done. He was started empirically on Intravenous Meropenem 1000 mg intravenous thrice daily and Intravenous Clindamycin 600 mg intravenous thrice daily. The patient had a stormy course during the next few days and was placed on a ventilator and inotropic support for the next twelve days. He was taken for daily debridement for next one week.

Tissue excised from debrided wound tissue and pus sent for culture and histopathology revealed Gram-positive bacilli in a background of coagulative necrosis and liquefaction of muscle fibres with the peripheral zone of leukocytic infiltration and thrombosis of capillary and veins. Colony morphology on Blood agar culture showed areas of target haemolysis which is in confirmation of Clostridium perfringens. After the initial recovery, he underwent Tensor Fascia Lata based flap reconstruction for the defect after one month of open dressings and debridement. After three months of hospital stay and care, he was discharged to lead a normal life. [Fig 2].

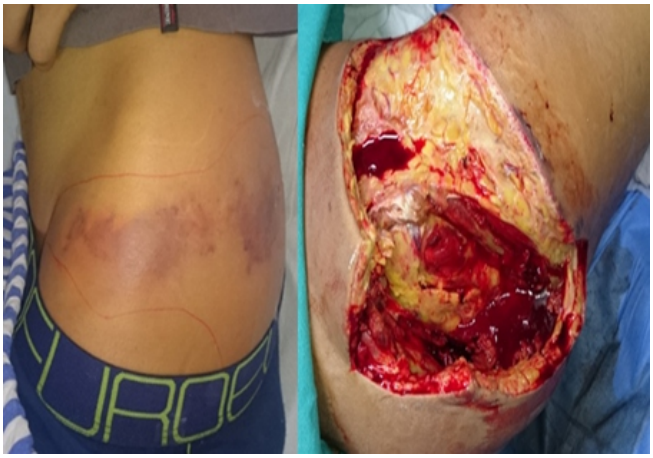

Figure 2. Rapidly Spreading gangrene and Post Extensive debridement

Discussion

Gas Gangrene is a fulminant and highly lethal infection. It spreads dangerously fast with multiorgan dysfunction in hours to days. In untreated cases, the mortality is 100 %. In cases admitted to the hospital with a critical care facility, the mortality is 20-30 % for extremity and 60 % for the trunk.

In SGG, the mortality is 67 % because of delayed diagnosis due to absence of trauma history [3]. In their landmark paper, Non-traumatic Gas Gangrene: 150 yrs. review by Vijaykumar et al, rapidly developing gas gangrene due to a simple puncture wound is aptly described [1]. SGG was also reported in colorectal diverticulitis, colonic adenocarcinoma, neutropenic patients, diabetics and many unknown causes. Gracia et al reported SGG in a 43 male with Non-Hodgkin's lymphoma [2]. Temple et al reported the first case of successful treatment of SGG in the 18-year-old boy of lymphoblastic lymphoma [4]. Wang et al landmark paper on earthquake victims of Wenchuan in China in 2008, highlighted the importance of early clinical suspicion and prompt surgical management. They were able to save all 67 suspected and 5 gram-positive cases which are indeed a great achievement [5]. It was the invention of antibiotics which significantly changed the direction of the losing battle and tilted the balance favourably for the patient. Today, the antibiotic of choice is Intravenous Penicillin G 20 million units per day intravenous divided into four to five doses and Intravenous Clindamycin 600-900 mg or 15 mg/kg intravenous thrice daily.

In case of doubtful diagnosis broad spectrum Intravenous antibiotic such as Intravenous Vancomycin 1000mg intravenous twice daily plus either Intravenous Piperacillin-Tazobactam 3375 mg four times a day or Intravenous Ampicillin-Sulbactam 1200 mg twice daily with or without a Carbapenem (Intravenous Meropenem 10-15 mg per kg body weight thrice daily) is recommended [3]. In our case series, the first case may have developed gastrointestinal contamination and in the second case, the infection may be due to inappropriate skin preparation before intramuscular injection. A high index of suspicion with prompt surgical debridement was critical in saving these patients. With adequate antibiotic cover and critical care in intensive care, we were able to prevent the worst outcome. The relatively younger age with no other co-morbidity also contributed heavily to the successful outcome.

Conclusion

SGG represents a true surgical emergency occurring in isolation. Early suspicion with prompt surgical intervention saves a life. The importance of early clinical suspicion, prompt diagnosis, urgent intervention is critical for the clinicians to save many lives.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Spontaneous gas gangrene needs a very high degree of suspicion as there is no obvious trauma involved.
- Contrary to prior case reports of occurrences in immune-challenged individuals our series prove that it can also affect a healthy fit young individual.
- Untreated it is nearly fatal; however, it can be cured if active aggressive management is started early.

CASE STUDY

Ulcerated juvenile giant fibroadenoma

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Keywords: Fibroadenoma; juvenile fibroadenoma; giant fibroadenoma; ulcerated breast lump

Introduction

Fibroadenoma is the most common benign breast lump in the age group of 20 to 35 years. Fibroadenomas more than 5 cm in diameter are labelled as giant fibroadenoma, and these constitute less than 4% of all fibroadenomas. Ulcerated giant fibroadenoma is a rare entity. The exact aetiology of giant fibroadenoma is unknown but may be due to an abnormal response to oestrogen, as these cases occur in increased frequency during puberty, pregnancy and oral contraceptive use. Fibroadenoma usually presents as an encapsulated, mobile, firm, non-tender breast lump but rarely these may present as ulcerated breast lump mimicking a more sinister pathology. Here we report a case which presented as a large, ulcerated breast lump.

Case presentation

A 12-year-old girl with a history of a lump in her left breast for 6 months presented at our outpatient department. She also complained of a sudden increase in size and development of ulceration over the last 1-2 week. The lump was 12x10cm in size and was primarily occupying the lower inner quadrant of her breast. It was firm, mobile and had ulceration of the overlying skin (Figure 1). Rest of the breast was normal except for few mobile, discreet lymph nodes were palpable in the ipsilateral axilla. Ultrasonography (USG) of the breast showed a large, homogenous, hyperechoic mass lesion in the left breast with increased vascularity and smooth margins.

There were few enlarged lymph nodes, the largest measuring 19.8 x 9.7 mm in the left axilla. FNAC from the left axillary node showed reactive lymphoid hyperplasia and incisional biopsy from left breast ulcerated mass showed benign breast tissue with non-specific mastitis. Simple excision of the breast lump was done preserving the normal breast tissue and nipple-areola complex using inframammary (Gaillard-Thomas) incision.

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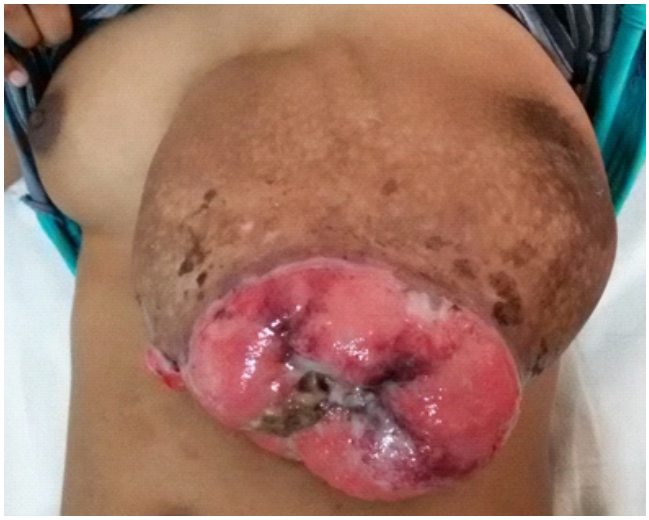

Figure 1. Giant ulcerated breast lump

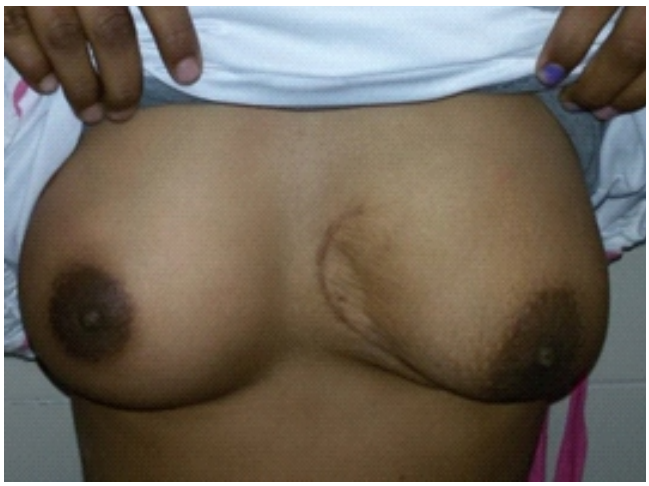

Figure 2. Postoperative photograph one year after surgery

Histopathological examination of the left breast lump showed features suggestive of giant fibroadenoma with ulceration and necrosis. There was no recurrence or any complications at one year of follow up (Figure 2).

Discussion

Fibroadenomas are the most common benign tumours of the breast found in pubertal females. They typically present as firm, freely mobile, painless, palpable breast lump. They are more common in the age group 20 to 35 years but may occur throughout the reproductive age. Fibroadenoma found in

children and adolescents are termed juvenile fibroadenoma [1]. Giant fibroadenoma is an uncommon tumour and it can lead to rapid and enormous enlargement of the breast in adolescents. The tumour can compress normal mammary tissue and stretch the overlying skin. Hormonal influences may be a contributory factor however a definitive aetiology is unknown. Pathophysiological processes during puberty such as excessive oestrogen stimulation and or receptor sensitivity, or decreased levels of antagonists have been postulated [2].

The majority of breast masses in the young arise from congenital malformations or could be benign neoplasms. The rapid growth, skin congestion, ulceration, seen in our patient raised doubts of a malignancy. Malignant tumours of the breast are rare in young females, though 2% of all primary malignant breast lesions occur under the age of 25 years [3]. The most important differential diagnosis that needs to consider is the phyllodes tumours, and in some cases, it might be very difficult to completely rule it out preoperatively [4].

The other issue in treating giant juvenile fibroadenomas pertain to the preservation of as much breast tissue as possible to obtain a cosmetically gratifying and a functionally intact breast. This can be achieved by breast-conserving surgery, supplemented with breast reconstruction when needed [5].

In our case, since the tumour was only involving the lower inner quadrant, we got away by doing a simple excision and the remaining breast tissue expanded quite well so that the patient achieved an acceptable cosmesis at one-year follow-up (Figure 2). Our patient was young hence we did not do any nipple centralization or volume displacement because that would have meant division of the mammary ducts, although the cosmesis could have been better.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Neglected fibroadenomas may present as ulcerated breast lumps.
- Most breast lumps in young age are benign, but a careful assessment should be done to establish the diagnosis of benignity.
- A confident diagnosis of fibroadenoma helps in preserving breast.
- Juvenile fibroadenomas should be treated by minimal resection of breast tissue and preservation of mammary ducts.

CASE STUDY

Isolated duodenal perforation associated with blunt abdominal trauma

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Keywords: Blunt trauma; abdominal injury; isolated duodenal injury

Introduction

The duodenal injury incidence is 11.2-26% in blunt trauma [1]. They are usually associated with one to four other abdominal organ injuries where an isolated injury is a rarity in surgical practice [2]. Isolated duodenal injury diagnosis and management is a clinical challenge for surgeons due to its anatomical location. Diagnosis is often delayed due to its low incidence and minimal clinical features and is associated with more extensive therapy and increased mortality and morbidity [3].

Case presentation

An 11 years old boy presented to casualty surgical ward with mild abdominal pain with nausea and vomiting following blunt trauma to the abdomen with bicycle handle. On examination, he was not pale and had a pulse rate of 90/min with a blood pressure of 110/70mmHg. There was mild right iliac fossa tenderness. Rest of the systemic examination was unremarkable. The FAST scan showed minimal small fluid collection around the right kidney and minimal free fluid in the pelvis. He was managed conservatively initially with analgesics and intravenous fluids. However, he complained of severe upper abdominal pain with nausea and vomiting next day morning. He was found to have a pulse rate of 120/min with a normal blood pressure of 110/80 mmHg. Repeated ultrasound scan of abdomen and pelvis showed the same findings.

The chest X rays did not reveal any gas under diaphragm. His full blood count showed leucocytosis [13,000/mm3] with predominant neutrophils [80%] with normal haemoglobin and platelet count. His renal, liver function tests and serum amylase were within the normal limits. The mechanism of injury and presence of severe abdominal pain with tachycardia, leucocytosis and fluid collection in the retroperitoneal region suggested possible retroperitoneal bowel injury. Unfortunately computed tomography of abdomen was not available at our hospital on that day. The emergency exploratory laparotomy was performed without

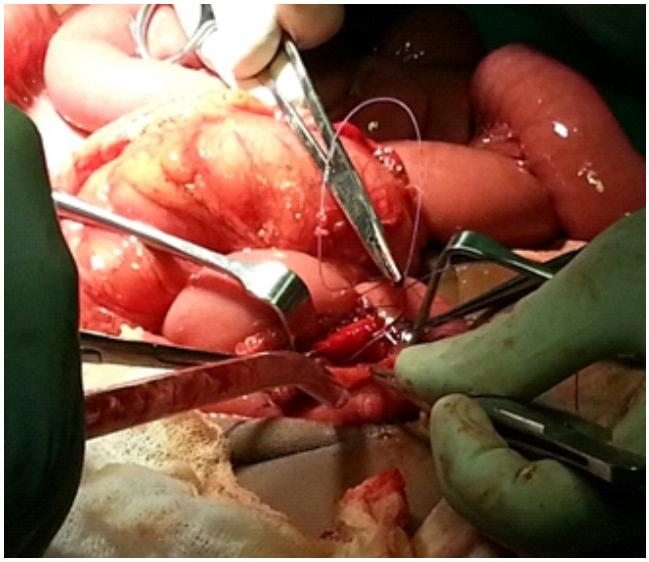

Figure 1. The anterior duodenal rupture was shown in the second part of the duodenum involving more than 70% of the circumference.

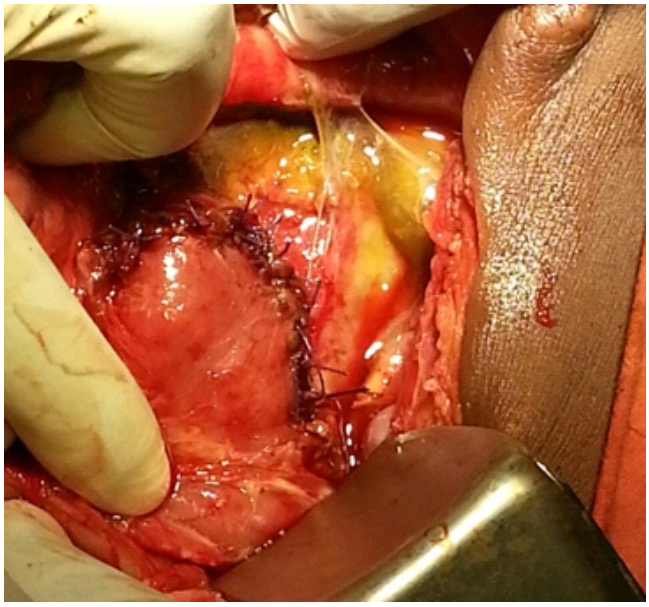

Figure 2. Following primary closure of duodenal rupture, duodenal diversion with gastrojejunostomy and pyloric exclusion.

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delay within 24 hours. Bile staining in the retroperitoneal area noted mainly in the paraduodenal area. We explored the area and did full kocherization of the duodenum and looked for other organ injuries. He was found to have a perforation in the anterior surface of the second part of the duodenum involving around 70% of the circumference proximal to the opening of the common bile duct [Figure 1]. He didn't have any other abdominal organ injuries. We closed the defect primarily and did duodenal diversion. Duodenal diversion was performed with gastrojejunostomy and pyloric exclusion [Figure 2]. He developed wound dehiscence postoperatively on day 10 which was managed surgically, subsequently recovered successfully.

Discussion

Duodenal injury in blunt trauma is often difficult to diagnose unless we suspect it during the initial assessment and tertiary survey of trauma patients [1]. Delay in the diagnosis and treatment results in high morbidity and mortality [3]. If the delay is more than 24 hours morbidity is 43% if it is less than 24 hours it is 29% [10]. Crushing or shearing forces on the abdomen resulting in duodenal injury. The injury mechanism, vomiting, upper abdominal tenderness with tachycardia and elevated temperature suggest further evaluation.

Peritoneal Fluid collection in the ultrasound scan is 86% sensitive but not specific for bowel injury [7]. Contrast-enhanced computed tomographic scan [CECT] of the abdomen with oral contrast is 88-93% sensitive to detect bowel injury following blunt abdominal trauma [8]. But no data available regarding CECT sensitivity in isolated duodenal injury since it's rare. Abdominal CECT is a sensitive indicator to detect trace amount of retroperitoneal air, duodenal contrast leak and paraduodenal hematoma [4]. Presences of retroperitoneal air, contrast leakage around duodenum in [CECT] of the abdomen with oral contrast is more evident in later stages of duodenal injury [4].

Our patient had a suggestive mechanism of injury, mild abdominal pain, nausea and vomiting initially. Subsequently, he was found to have worsening abdominal pain, persistent tachycardia and leucocytosis with fluid collection in the retroperitoneal region. This clinical picture suggested a possible underlying retroperitoneal bowel injury. We made a diagnosis of retroperitoneal bowel injury based on clinical ground. As there was no CT scan facility available on that day to confirm the diagnosis. Also, delay in the surgical management associated with high morbidity [If the delay is more than 24 hours morbidity is 43% if it is less than 24 hours it is 29% [10] so we decided to do an exploratory laparotomy.

It was confirmed during laparotomy with the findings of rupture of the second part of duodenum proximal to the opening of the common bile duct. Our patient belonged to Grade 3 duodenal injury according to the American Association for Surgery of Trauma [6].

There are several surgical methods available to deal with a duodenal injury, which is a simple primary repair to more complex surgeries like resection and anastomosis with duodenal diversion [Pyloric exclusion with gastro-jejunostomy] or pancreaticoduodenectomy [5]. Majority of the cases are adequately managed with primary repair with one or two layers or resection and anastomosis [5]. Some surgeons practice damage control surgery where initial drainage with a large hole drain followed by secondary closure in unstable and heavily contaminated patients.

Surgical technique should be decided on the following factors, early or late presentation, and degree of contamination, patient's hemodynamic status, surgeon's expertise and experience. He was successfully managed with primary closure of duodenal rupture and duodenal diversion with gastrojejunostomy and pyloric exclusion for additional safety [9].

Since of isolated duodenal injury following blunt abdominal trauma is rare most young general surgeon is not experienced in handling this. This case highlights the difficulties experienced during the diagnosis and management of traumatic duodenal injury in a peripheral hospital setting. Suspicion of duodenal injury should be there during blunt abdominal trauma patient assessment and trauma laparo-tomies for early diagnosis and management of duodenal injury.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Diagnosis of abdominal injuries after blunt abdominal trauma especially duodenal injury is a clinical challenge for surgeons.
- Clinical presentation is often not straightforward due to nonspecific presentation.
- We suggest a low admission threshold with abdominal pain after blunt trauma for 24 hours of observation.

CASE STUDY

Feasibility of laparoscopic surgery in the management of rare intrahepatic perforation of the gall bladder and liver abscess

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Keywords: Gall bladder perforation; intrahepatic gall bladder perforation; liver abscess

Introduction

Gall bladder perforation is an uncommon complication of acute cholecystitis in present time due to increased number of cholecystectomies being offered at an early disease stage and laparoscopic cholecystectomy being a straight forward and established gold standard procedure. Its association with cholecystohepatic communication and liver abscess is a rare complication. Opinions are divided amongst various authors regarding the classification and management of this entity. We report our experience in the management of this complication using minimally invasive surgical techniques and our opinion regarding classification and its optimal management.

Case presentation 1

A 45 year old gentleman presented with intermittent episodes of upper abdominal pain over 4 years which increased in severity in the last 2 weeks. He had fever for 8 days. It was also associated with loss of appetite. There was no history of jaundice. On examination the patient was afebrile. His abdomen was soft with mild tenderness in epigastrium. A CECT abdomen showed features of chronic cholelithiasis with intra hepatic extension of gall bladder with breech in posterior wall [Fig.1a] and abscess formation in segment 5 and 6 of liver[Fig. 1b]. The patient was offered laparoscopic cholecystectomy with drainage of liver abscess. Intra operatively a severely diseased thick walled gall bladder with frozen Calot's triangle was found. There was an impacted stone at the neck of gall bladder. The patient withstood the procedure well. He was discharged on post operative day 1 and his abdominal drain was removed on day3 as an out-patient.

Case presentation 2

A 55 year old gentleman was diagnosed with cholelithiasis and choledocholithiasis on routine work up for jaundice. He underwent therapeutic ERCP and CBD stenting and was advised to report back for definitive surgery after 8 weeks. Six weeks later he presented to the emergency department with abdominal pain fever with chills. On examination the patient had a temperature of 100.4˚F. He had an otherwise soft abdomen with tenderness in the right hypochondrium. A provisional diagnosis of cholangitis was made. Blood investigations showed haemoglobin-8.5 gm%, TLC- 8680 /3 mm, albumin- 2.6 g/dl, ALP- 141 u/l, calcium-6.9 mg/dl. The rest of the investigations were unremarkable. The US abdomen showed chronic cholecystitis and an abscess in right lobe of the liver. The CECT abdomen showed calculous cholecystitis with gall bladder fundus attached to the under surface of liver and colon and an abscess in segment 5 of the liver [Fig.2a]. The patient was optimised and a laparoscopic cholecystectomy and drainage of the liver abscess was done. Intra operatively a thick walled, gall bladder empyema with gangrenous changes was found. It was adherent to the duodenum and transverse colon. A large stone was found impacted at the neck of gall bladder [Fig. 2b]. Calot's triangle was severely inflamed and a perforation was found at the fundus which communicated with the liver abscess. The patient recovered well and the abdominal drain was removed on day 6. He was discharged in good condition on day12.

Discussion

Gall bladder perforation is an infrequent but serious complication of cholecystitis. Its prevalence has decreased over time from 2-15% in earlier case reports to 0.8% in recent literature [1]. It may be attributed to increased availability and simplicity of laparoscopic cholecystectomy and also due to availability of better antimicrobial and analgesic agents.

It may develop early in the course of acute or in chronic cholecystitis or it may occur as late as several weeks after onset. Predisposing factors for gall bladder perforation include cholelithiasis, infection, malignancy, trauma, corticosteroid therapy, diabetes mellitus, impaired vascular supply, old age and male sex [1].

Development of a gall bladder perforation involves a series of events starting from obstruction of the cystic duct by a calculus. It leads to biliary stasis and gall bladder distension. Such persistently raised intraluminal pressure leads to

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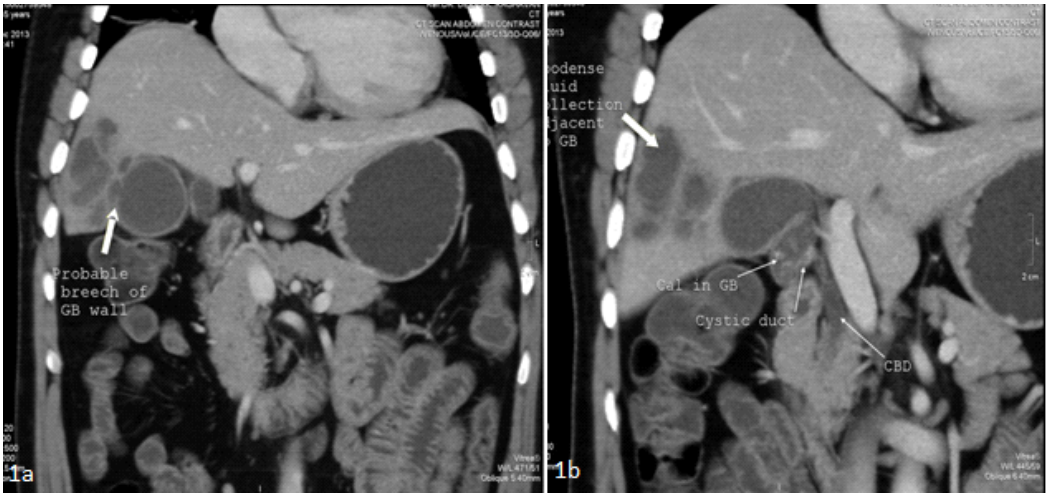

Figure 1a. CT scan showing breech in the posterior wall of the gall bladder.

Figure 1b. Intrahepatic gall bladder with changes of chronic cholelithiasis and abscess in segment 5 and 6 of liver.

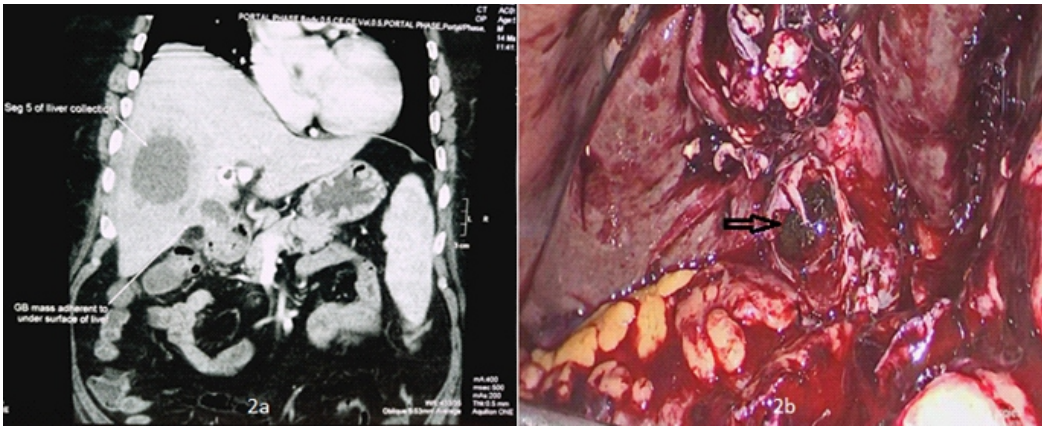

Figure 2a. CT scan showing intrahepatic gall bladder with abscess in segment 5 of liver.

Figure 2b. Intra operative image showing thick walled gall bladder with gangrenous changes in the fundal region and impacted stone in the neck of gall bladder (black arrow).

decreased venous and lymphatic drainage leading to eventual gall bladder wall necrosis and finally, a perforation. The most common site of a gall bladder perforation is the fundus because it is the most distal part of the gall bladder and has the lowest blood supply [2].

In 1952, Fletcher and Ravdin, while describing 44 cases of gall bladder perforation using Niemeier's method of classification, divided them as follows: type 1, acute free perforation into the peritoneal cavity; type 2, sub acute perforation with pericholecystic abscess; and type 3, chronic perforation with cholecystoenteric fistula [1].

There are no classical symptoms and signs associated with gall bladder perforations. Patients may present acutely or may have an insidious onset. Right upper quadrant pain, fever, palpable right upper quadrant mass and tenderness may herald an acute onset. In contrast, patients may present with weakness, malaise, anorexia and a palpable right upper quadrant mass, mimicking a malignant lesion. Elevated liver enzymes, especially alkaline phosphatase levels are commonly documented. A sudden decrease in pain intensity may occur at the time of perforation due to decompression of the high intra-cholecystic pressure. As the majority of these features are also present in acute cholecystitis, it is difficult to differentiate clinically between patients with perforated gall bladders and those with uncomplicated acute cholecystitis [1]. Ultrasonography may be suggestive, but most findings are not specific for perforation.

These could be distension of the gall bladder and increased wall thickness or oedema. Perforation can be demonstrated unequivocally only by a CT or MRI scan. These investigations are also useful in locating other intra-abdominal lesions. Since amoebic liver abscess is commonly encountered in India and other developing countries, these cases alert us to the possibility of the gallbladder being the primarily diseased organ, requiring cholecystectomy in addition to management of the abscess [3].

The treatment modality has not been fully established for gall bladder perforation with cholecystohepatic communication

leading to liver abscesses. Most of the reported case reports from India have resorted to open cholecystectomy and drainage of the abscess [2]. Kochar et al have also advocated using open cholecystectomy in the first instance because of dense adhesions and poor anatomical detailing [1]. They have also advocated the use of conservative management with percutaneous drainage followed by cholecystectomy at a later date [1].

Conclusion

Intrahepatic perforation of gall bladder leading to liver abscess is a rare complication with around 20- 25 such cases reported in world literature so far. If the operating team is well versed in dealing with difficult cholecystectomies, laparoscopic cholecystectomy is a feasible first line option. If successfully done it brings about cure in a single sitting which helps to cut down cost, hospital stay and morbidity to the patient. It also offers all other benefits that are inherent to minimal access surgery like cosmesis and less pain. Staged procedures should be offered only to those patients who are poor candidates for surgery.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- A comprehensive preoperative workup including a good history, clinical examination laboratory and radiological investigations are quintessential in making a correct diagnosis of such rare presentations.
- Laparoscopic cholecystectomy and drainage of liver abscess is a viable and robust modality in the management in experienced hands.
- Staged procedures should be offered only to those patients who are poor candidates for surgery.

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