

TOPIC: RARE AND SPECIAL CASES, THE REAL “STRANGE CASES”

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VS:56

LAPAROSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA WITH BIOLOGICAL MESH

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This is a video submission for an interesting case

A 66 year-old lady was previously repeatedly admitted for vomiting and aspiration pneumonia. EGD showed a suspected hiatal hernia with gastric volvulus. Endoscopic reduction was performed and the patient was scheduled for operation. Intra-operatively, it was noted that there were no hiatal hernia but a left diaphragmatic hernia was present. The hernial contents were reduced and the sac excised. The diaphragmatic defect was then closed primarily and reinforced with a 10 x 10cm biological mesh. An anterior partial fundoplication was also performed and the hiatus was closed.

VS:57

LAPAROSCOPIC REPAIR OF TRAUMATIC ABDOMINAL WALL HERNIA AS AN INCISIONAL HERNIA

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Traumatic abdominal wall hernia (TAWH) is a hernia that appears through disrupted muscle and fascia immediately after blunt abdominal trauma with an intact skin. It occurs most commonly due to a handle bar injury and is mostly found in the lower abdomen especially in children. It is uncommon and seen 1 in 10,000 hernia cases.

When the diagnosis is TAWH, we have 3 treatment options in hand. We may choose conservative way with delayed surgery or two other urgent surgical intervention options; laparotomy or laparoscopy. Exploratory laparoscopy and laparoscopic repair of a traumatic abdominal wall defect is feasible and safe. Once we diagnosed as traumatic abdominal wall hernia we should be sure that there is no intra-abdominal organ injury. If there is intra-abdominal bowel injury, urgent laparotomy is needed. In case of only abdominal wall defect, we had better to wait for a few weeks in order to let the tissue to demarcate itself after injury. Laparoscopic exploration gives us more accurate information about orientation and size of the defect, and also chance to repair in laparoscopic way with principles as it is in incisional hernia repair.

Our video presentation contains operation details of a 19-year-old boy with traumatic abdominal wall hernia who admitted to our hospital with abdominal pain and localized swelling in right lower quadrant of his abdomen. MR imaging revealed abdominal wall defect with hernia sac. We performed laparoscopic hernia repair with IPOM mesh and now one year after operation he does not have any complaint.

VS:58

NOVEL APPROACH TO REPAIR LUMBAR HERNIAS

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Introduction: The Lumbar hernia are rare varieties of abdominal hernia compared to other groups accounting for less than 1.5% of all abdominal hernias. About 25% of all lumbar hernias have a traumatic etiology. The goal of hernia repair is to eliminate the defect and to construct an elastic and firm abdominal wall. There are two possible surgical approaches: the anterior approach with lumbar incision and the laparoscopic (transabdominal or totally extraperitoneal) approach.

Methods: We present a series of fifteen surgical procedures within last ten years for primary lumbar hernia and all were Petit's inferior triangle hernias. All were repaired by laparoscopic transabdominal preperitoneal approach using polypropylene mesh.

Results: Results were extremely satisfactory and comparable to that of open approach. Post operative pain, post operative hospital stay were significantly less. No complications and no Recurrence is observed in five years follow up.

Conclusion: Lumbar hernias are rare varieties of abdominal hernias which can be managed laparoscopically with extremely satisfactory results in comparison to conventional open approach.

VS:59

TEP IN IRREDUCIBLE INGUINAL HERNIA

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The laparoscopic approach was considered relatively contraindicated for incarcerated groin hernia. Recent data suggest that the laparoscopic approach is a feasible option for the management of incarcerated groin hernia. Both TEP and TAPP are now considered feasible and safe surgical techniques for the management of irreducible inguinal hernia. Especially TAPP is chosen mostly. Dissection of hernia sac content under direct vision is advantage of TAPP to TEP. And the laparoscopic exploration in TEP may not be possible due to limited area filled by hernia sac with irreducible content. But our video presentation in an laparoscopic repair (TEP) of indirect hernia with irreducible hernia content (omentum). The hernia sac was 8-10 cm in diameter. The operation took about 45 minutes. During and after operation there was no complication.

VS:60**A RARE CLINICAL SCENARIO:
POST-TRAUMATIC BLADDER HERNIA.
REPAIR WITH BIOLOGICAL MESH**

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Introduction: Post-traumatic hernia is an uncommon clinical condition resulting from trauma. It can occur through open fracture or direct tissue laceration.

Methods: We herein report the surgical repair of bladder hernia secondary a post-traumatic pubic defect many years after the trauma.

Results: A 59-year-old man was referred for the recent appearance in the right inguinal region of an expanding swelling accounted as an inguinal hernia. Sixteen years earlier he had had a severe crash during a kart race with a complex pelvis trauma. He was admitted into intensive care unit with a bilateral fracture of upper and lower branch of pubic bone. On the right side he had bony segments dislocation of the ischial-pubic ramus and iliac-pubic ramus. Extrarotation of the hip, right femoral vascular and nervous bundle display and right scrotal trauma with testicle exposure were present. He underwent to osteosynthesis with external fixators and the testicle was repositioned in the inguinal canal. Subsequently he complained of recurrent cystitis and an inguinal lump. CT scan was performed and showed a stabilised fracture of right iliac and ischial-pubic ramus with a large bone defect where the bladder was protruding; immediately below it, more superficially, the retained testis was visible. The presence of a small fat hernia within the inguinal canal was also highlighted. Since the patient was suffering from recurrent cystitis, it was felt that the symptomatology was secondary to the bladder hernia. The patient underwent laparoscopic trans-abdominal preperitoneal hernia repair (TAPP) with biologic mesh. We performed the usual TAPP procedure for inguinal hernia except for the placement of a 3-way Foley catheter to allow bladder filling during the procedure. Indirect and direct right inguinal hernias were detected. The pre-peritoneal space was then entered by incising the peritoneum transversely, from the lateral to the medial aspect starting at the level of superior iliac spine ending beyond the mid-line sectioning both the medial and median umbilical ligament. A peritoneal flap was then developed, the preperitoneal space is bluntly dissected, and the cord was parietalized. The direct hernia sac was fully reduced while the larger indirect sac was peeled off the cord structures and then incised leaving the distal part in situ. Medially the dissection was carried beyond to the symphysis pubis in the Retzius space. At this stage the bladder was filled with saline solution irrigation through the 3-way foley catheter and was progressively isolated from surrounding bone structures and soft tissues. The bone gap between right iliac and ischial-pubic ramus was identified and the bladder part herniated was reduced. The retained testis was never identified. A Permacol mesh (15 x 20 cm) was placed in the preperitoneal space overlaying the bone defect, inguinal and femoral rings and obturator foramen. Once the mesh was satisfactorily placed, it was stapled with helical tacks fired by ProTack fixation device. Finally the mesh was excluded from the abdominal cavity with the peritoneal flap stitched with V-Loc barbed suture. Recovery was uneventful. The patient had a follow up CT scan five months later that no longer appreciated the inguinal hernia and the bladder hernia through the bone gap.

Conclusion: To our knowledge this is the first report of post-traumatic inguinal bladder hernia treated laparoscopically. This case is exceptional for many reasons: first for its rarity, location and post traumatic origin; then because of a laparoscopic approach was adopted with a biologic implant inserted. In this particular case we believed that a laparoscopic approach and the use of a biological implant were safer.

VS:61**LAPAROSCOPIC REPAIR OF EVENTERATION
OF LEFT HEMIDIAPHRAGM - A SURGICAL
CHALLENGE**

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Background: Eventration of diaphragm is abnormal elevation of an intact diaphragm. It may be asymptomatic or cause recurrent infection by changing pulmonary inflation. Unilateral diaphragm eventration is a frequent event in which more than half of the cases are diagnosed incidentally. Dyspnoea on exertion is the most common symptom.

Objective: We report our experience with laparoscopic plication of a eventrated hemidiaphragm. The laparoscopic approach is an attractive surgical alternative for the treatment of diaphragmatic eventration. This technique combines the advantage of an excellent field of vision during surgery with a fast postoperative recovery and early discharge from hospital.

Material and method: In symptomatic patients with unilateral diaphragm paralysis and dyspnea disproportionate to the degree of physical activity, diaphragm plication is the treatment of choice to relieve dyspnea. We present a case of left side diaphragmatic eventration in a 59 yr old male who presented with recent onset of dyspnoea on exertion. On evaluation he was found to have elevated left hemidiaphragm with lung collapse and splenomegaly. Patient evaluated and taken for repair, but due to huge spleen, which was adherent to diaphragm, and cannot be brought down the procedure was deferred. Patient again evaluated for splenomegaly and taken for laparoscopic repair of diaphragm with splenectomy. Splenectomy with plication and meshplasty of left hemidiaphragm done laparoscopically with chest tube drainage of left pleural cavity.

Result: Patient did well, post operative chest x-ray showed good lung expansion, and patient was discharged on POD 5 with advice of chest physiotherapy.

Conclusion: Laparoscopic repair is feasible, effective, and reliable. It could become the gold standard in the near future. Although laparoscopic and thoracoscopic approaches are comparable, the laparoscopic approach seems to have certain distinct advantages.

VS:62**LAPAROSCOPIC REPAIR OF AN INTERCOSTAL
HERNIA WITH IMPLANTATION OF A MESH**

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Introduction: Abdominal wall hernias in uncommonly regions can be a challenge for all surgeons operating on hernias. Intercostal hernias are a rare finding and in most cases trauma is proposed as the cause of this rare entity of hernias.

Methods: Our video shows the laparoscopic repair of an intercostal hernia of a 47-year old male. A few years ago he had been involved in a snowmobile accident that was suspected to be the cause of his intercostal hernia.

Results: Our video shows how an intercostal hernia between rib 11 and 12 is visualized during the laparoscopic repair. After incision of the peritoneum, preperitoneal fat, prolapsing into the hernia defect can be seen. This fat is retracted after which the hernia defect can be visualized. The implantation of a round polypropylene mesh and its fixation with glue is used to cover this intercostal hernia. The peritoneum was sewed together to finish this laparoscopic repair. 2 months after the surgical procedure the

patient, who is a very active bodybuilder, had no remaining pain problems and had already begun to train without restrictions in the gym.

Conclusion: Intercostal hernias are very uncommon. A differentiation between lumbar hernias and intercostal hernias may not always be easy clinically, CT-scans help the surgeon in planning the intended procedure. The intercostal hernia may not be seen during a diagnostic laparoscopy, but after having opened the preperitoneal space the defect can easily be visualized. The implantation of a polypropylene mesh in the preperitoneal space seems to be the appropriate area in which to implant a mesh in such hernias. Very active patients can by this kind of procedure return to full physically activity already after a few weeks.

VS:63

GASTRIC CANCER IMPLANTS IN THE HERNIA SAC: LAPAROSCOPIC APPROACH

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Introduction: Hernia repair is sometimes unavoidable and is needed to sustain social life of patients with carcinomatosis of the peritoneum.

Methods: In this video, TEP repair are presented 72 years old patient undergoing chemotherapy for esophageal cancer. Carcinomatosis and ascites were available at the patient. He has been suffering pain and walking problems of the developing scrotal hernia on his right groin for one years. Right irreducible scrotal hernia was diagnosed after physical examination.

Results: His hernia repaired with TEP, and no complaint from hernia repair after one year follow up. He is still undergoing chemotherapy on an outpatient basis.

Conclusion: Acid leakage from the incision line after open surgery due to high pressure can cause problems in the post-operative period particularly in patients with ascites. TEP repair is an advantage in such patients. However, TAPP method can be considered as an alternative in patients with intraperitoneal carcinomatosis but difficulty to work in intraabdominal cavity, so the TEP technique is most appropriate.

Management of groin hernias in patients with ascites. Hurst RD1, Butler BN, Soybel DI, Wright HK. *Ann Surg.* 1992 Dec;216(6):696-700.

Laparoscopic treatment of a carcinoma of the cecum incarcerated in a right groin hernia: report of a case. Pernazza G1, Monsellato I, Alfano G, Bascone B, Felicioni F, Ferrari R, D'Annibale A. *Surg Today.* 2011 Mar;41(3):422-5.

VS:64

LAPAROSCOPIC REPAIR OF A NON-REDUCIBLE HUGE GROIN HERNIA INVOLVING THE BLADDER

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Introduction: The bladder hernia represents approximately 1-3% of all inguinal hernias, where patients aged more than 50 years have a higher incidence (10%).

Many factors contribute to the development of a bladder hernia, including the presence of a urinary outlet obstruction causing chronic bladder distention, the loss of bladder tone, pericystitis, the perivesical bladder fat protrusion and the obesity.

Methods: We present a case of a 65 y.o. man (BMI 30) with a huge right scrotal mass appeared 12 months before.

The patient reported irritative lower urinary tract symptoms (LUTS) with bladder outlet obstruction, and the International Prostate Symptom Score (IPSS) was 15.

The scrotal examination revealed a soft scrotal mass with a variable size linked to voiding.

The patient did not report any significant medical/surgical history.

Urinalysis, renal function tests and serum chemistry parameters were normal.

A scrotal sonography detected a hypoechoic lesion in the scrotum, which stretched proximally to the intra-abdominal portion of the bladder.

A cystography showed a herniation of the bladder into the right emi-scrotum.

Results: The patient was submitted to a transperitoneal laparoscopic bladder hernia repair with a mesh plug fixation.

The portion of bladder with the contiguous peritoneum was found in the right deep inguinal canal. A synthetic mesh was positioned with a plug in order to repair the deep inguinal ring. The bladder did not present any leakage.

The operative time was 150 minutes and the estimated blood loss was about 100 mL. The patient was discharged within 72 hours.

The cystography, performed two weeks after surgery, showed the orthotopic bladder location into the pelvis and no hernia recurrences, as confirmed by the scrotal ultrasound.

At 3 months follow-up post voiding residual was not significant at the bladder ultrasound evaluation as well as irritative and obstructive symptoms decreased (IPSS score = 7).

Conclusion: The involvement of the bladder in inguinal hernias is often not recognized before surgery and less than 7% are diagnosed preoperatively; approximately 16% of bladder hernias are diagnosed postoperatively owing to complications whereas the remainders are diagnosed perioperatively.

Conservative therapy may occasionally be selected and may include watchful waiting or intermittent urethral catheterization to reduce the size of the herniated bladder.

Up to now the surgical hernia repair has been the treatment of choice but nowadays, as confirmed by our successful case, laparoscopic or robotic-assisted surgical techniques are highly feasible.

VS:65

DOUBLE MESH POSTERIOR COMPONENT SEPARATION REPAIR FOR GIANT TRAUMATIC LUMBAR HERNIA

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Purpose: Traumatic lumbar hernia (TLH) is only a small percentage among acquired hernias with a few cases described in English literature. Surgical treatment is especially challenging due to difficulties of lateral hernias: boundaries close to bones (ribs, iliac crest), the lack of adequate overlap, the weakness of the surrounding tissues and the size of hernias. In this video, we will show the surgical technique of a case of giant TLH treated at our institution.

Methods: A 67-year female housewife was run over by a car. She remained injured with unstable pelvic fracture, multiple bilateral costal

fractures, pulmonary contusion and complex fracture of her left humerus and clavicle. A TLH developed with complete lateral avulsion of abdominal wall muscles. A initial CT scan confirmed the clinical suspicion. The patient underwent surgical repair of bony fractures with 30 days of intensive care stay. After recovery from trauma and a period of rehabilitation the patient was referred to us complaining of invalidating pain and worsening of her quality of life. A new CT scan confirmed the presence of right TLH containing the ascending colon and great part of small bowel. The patient was then scheduled for open surgical repair by a retromuscular repair with posterior component separation.

The patient was placed in 30° left lateral position. A surgical incision was performed over a previous McBurney scar and extended laterally. A huge peritoneal sac was found and opened for a better control of bowel content. The inguinal ligament was found completely disrupted with the fibers of transverse and internal oblique muscles that were shifted medially. The defect extended over the iliac crest laterally and up to the subcostal margin cranially. Fibers of external oblique muscle were found over the sac. Caudally the dissection of the Retzius' space exposed the Cooper's ligament and the pubis bone while medially was continued in the Rives' space up to the midline, detaching the posterior rectus sheath. Abdominal wall defect was 20 cm width and 25 cm long. A 20x30 cm absorbable mesh was placed as a first layer repair without any kind of fixation to create tissue reinforcement. A 50 x 50 cm mesh of medium-weight large pore polypropylene (PP) was then trimmed and placed as a second layer repair. PP prosthesis was bended over the lateral border of defect to lie on psoas and quadratus lumborum muscles. It was fixed to the Cooper's ligament, transcostal and to posterior rectus sheet. A running suture was also used to fix the mesh to the remnant of inguinal ligament and to the periostium of iliac crest. Near-total re-approximation of the lateral muscles over the meshes was finally performed. Two suction drains were left.

Results: The patient remained in the intensive care unit until 3rd postoperative (PO) day for the monitoring of respiratory function and intra-abdominal pressure. The further recovery was uneventful with control of pain and early mobilization. Drains were removed on 5th and 6th PO days respectively and the patient was discharged home on 7th PO day. The first evaluation as an outpatient occurred after 5 days: the patient complained of mild inconstant abdominal pain (VAS 5) and constipation. No systemic or wound complications were recorded. A follow up evaluation with TC scan was then scheduled after 1 month.

Conclusions: Due to the rarity of this kind of hernia, there is lack of consensus about the type of repair as well as the surgical approach. Although we strongly believe in the effectiveness of laparoscopic repair for lumbar hernia we think that retromuscular repair with posterior component separation should be considered the best option for such challenging cases.

VS:66

Bochdalek Hernia in adult patient: laparoscopic approach

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Background: Bochdalek hernias (BHs) are rare form of congenital diaphragmatic hernias, which usually affect infants during the neonatal period. Herniation of abdominal organs through the diaphragmatic wall can induce a serious cardio-pulmonary distress in newborns with high morbidity and mortality rates.

Despite BHs present more often during the neonatal period, some patients may remain asymptomatic until adulthood. BHs in adulthood are a very rare condition. A recent review of published case reports identified a total of 173 adult patients with BH since 1955.

Adult patients may seek for medical attention either for mild unexplained symptomatology, (for example thoracic pain, sensation of chest or abdominal pressure or sub-ileus) or for life-threatening conditions, especially in case of acute cardio-pulmonary distress, intestinal obstruction or a strangulated hernia.

Diagnosis of BH in adult patient is challenging because of its rarity and its variety of symptoms and misdiagnosis is common. Computed tomography (CT) is the gold standard for diagnosis because it clearly visualizes the focal defect in the diaphragm. BHs require surgical treatment. Despite there are no established indications for elective surgical repair, historically the surgical management of diaphragmatic defect has been performed via laparotomy or via thoracotomy. With the evolution of modern surgical technology both laparoscopic and a thoracoscopic approaches have been proposed.

Case report: the authors describe the case of a 54 year old man admitted to our Emergency Department (ED) complaining chest pain and change in bowel habit (subileus) on going for two months. His past medical history was remarkable for previous carotid stenting, arterial hypertension and dyslipidemia. He was on angiotensin II receptor antagonist therapy. On admission, ECG and troponin level were normal and acute cardiological issues were ruled out. On examination abdomen was soft and mildly distended in the upper quadrants with no tenderness or peritonism and bloods tests were within normal range. A Chest X-Ray was performed in the ED showing no evident abnormalities. A subsequent toracoabdominal CT scan showed an evident migration in the chest of the left transverse colon, pancreatic tail and accessory spleen through a diaphragmatic hernia of Bochdalek. The patient was eligible for laparoscopic surgical treatment with complete reduction of the viscera in the abdomen, closure of diaphragmatic defect with non-absorbable stitches and positioning of an intraperitoneal mesh (ETHICON PHYSIOMESH® Flexible Composite Mesh) secured with absorbable clips. The patient was discharged in 10th post-operative day with no related complications or morbidity.

Conclusion: laparoscopic repair can be a valuable surgical strategy to treat BHs in adult patients and can be performed safely, achieving short hospital stay and with minimal morbidity or mortality. Intraperitoneal composite mesh should be taken in account if feasible, in order to minimize post-operative visceral adhesions and to secure the diaphragmatic surgical repair.