FROM HERNIA TO SPORTS HERNIA

Eugene Kots
Meir Medical Center
Kfar Sava
HERNIA IS A PROTRUSION OF A PART OR STRUCTURE THROUGH THE TISSUES NORMALLY CONTAINING IT
Sonography of Inguinal Region Hernias
David A. Jamadar et al., AJR 2006
University of Michigan
HERNIAS

- Spigelian hernia
- Indirect hernia
- Direct hernia
- Femoral hernia
INDIRECT HERNIA
DIRECT HERNIA
FEMORAL HERNIA
SUMMARY 1

- US allows an accurate orientation in abdominal wall anatomy
- Based on the understanding of the static anatomic picture, dynamic US allows diagnosis of the abdominal wall hernias
- Do we really need it?!
- Is it clinically justified??!!
Inguinofemoral Hernia: Accuracy of Sonography in Patients with Indeterminate Clinical Features

Philip Robinson et al., AJR 2006
Leeds Teaching Hospital
MATERIAL AND METHODS

- 59 pts (m=47; f=12) – 64 sides
- History suggestive for hernia > 3 months
- Normal (n=52) or equivocal (n=12) clinical features
- All patients underwent sonography and herniography
- 18 pts were operated on 21 sides
RESULTS

- 18 pts were operated on 21 sides: hernia (n=20) and patulous posterior inguinal wall (n=1)
- Six of these hernias were on the original asymptomatic side!
RESULTS - SONOGRAPHY

- Correct detection of hernias in 19 of 20 sides
- Correct detection of patulous PIW in one case
- Sensitivity – 95%
- Specificity – 100%
- PPV – 100%
DISCUSSION

- High sensitivity and specificity of the sonographic study
- Sonography is more accurate than herniography, especially in fat-filled hernias
- Sonography should be first-line imaging investigation in pts with equivocal findings
Radiologists can accurately diagnose small abdominal wall hernias using dynamic US.

Dynamic sonography is very sensitive and 100% specific compared to surgical examination.
The sports hernia is one of the least understood poorly defined and under-researched maladies to affect the human body.

…reflects a compilation of diagnoses grouped together with a wide range of other pathologies that needs to be excluded before this should be considered as a diagnosis

P Caudill 2008
SPORTS HERNIA

- Definition is unclear;

- Diagnosis is challenging;

- Management is problematic
SPORTS HERNIA

- The Athletic Hernia: A Systematic Review
  Kenneth G. Swan Jr. and Michelle Wolcott,
  Clinical Orthopaedics and Related Research, 455:78-87, 2006

- Sports Hernia: a systematic literature review
SPORTS HERNIA


SPORTS HERNIA

- Athletic pubalgia
- Gilmore’s groin
- Hockey groin syndrome
- Incipient hernia
- Posterior inguinal wall insufficiency
- Conjoint tendon injury
SPORTS HERNIA: ETIOLOGY

- Unclear;
- Kicking sports;
- Rapid change-of-direction while running;
SPORTS HERNIA: ETIOLOGY

- The strong pull of the adductors against a fixed leg;
- Imbalance between adductors and lower abdominal musculature;
- Shearing force across hemipelvis;
- Weakening or tearing of the transversalis fascia or internal oblique aponeurosis.
SPRINTS HERNIA:
PATHOPHYSIOLOGY

- Probably more controversial than etiology;
- Weakening or deficiency in the posterior inguinal canal;
- Preperitoneal lipoma;
- External oblique aponeurosis tearing;
- Conjoined tendon tearing;
- Rectus abdominis muscle/aponeurosis tearing;
- More than one lesion?!!!
CLINICAL DIAGNOSIS

- Dull and diffuse pain about the groin;
- Usual no acute event;
- Chronic in nature;
- Resistant to conservative treatment
PHYSICAL EXAMINATION

- No detectable inguinal hernia
- Inguinal canal tenderness
- Dilated superficial inguinal ring
- Pubic tubercle tenderness
- Hip adductor origin tenderness
DIFFERENTIAL DIAGNOSIS: ORTHOPAEDIC ETIOLOGIES

- Muscle / aponeurosis problems;
- Bone / joint problems;
- Nerve problems;
- Reumatologic problems.
DIFFERENTIAL DIAGNOSIS:
NONORTHOPAEDIC ETIOLOGIES

- Surgical (hernia, GI neoplasms, diverticulitis);
- Urologic;
- Gynecologic.
IMAGING

- X-Rays;
- Bone scan;
- CT;
- Herniography;
- MRI;
- Ultrasound
ATHLETIC PUBALGY: CONTINUUM OF INJURIES

- Common Adductor – Rectus abdominis dysfunction
- Osteitis pubis
- Inguinal wall insufficiency
  - posterior wall insufficiency
  - anterior wall insufficiency
- True hernia

G. Koulouris, 2008
ATHLETIC PUBALGY: CONTINUUM OF INJURIES

- Osteitis pubis
- Adductor enthesisopathy
- Symphiseal disc degeneration
- Pre-hernia complex (sports hernia)
- Pubic stress fractures

AG Davies 2009
APONEUROTIC INJURY: SPECTRUM

- Adductor / rectus abdominis strain
- Osteitis pubis;
- Stress fractures;
- Sports hernia.

Z. Rosenberg 2008
X-RAYS: OSTEOITIS PUBIS
MRI PATTERNS

- Bone marrow edema around the symphysis;
- Secondary cleft sign;
- Edema along the lateral edge of the rectus abdominis attachment;
- Mostly midline changes

ULTRASOUND

- Diagnostic imaging to identify sports hernias has not been particularly useful, with the exception of ultrasonography, which enables a dynamic assessment

P Caudill 2008
ULTRASOUND

- Connell DA et al., Sonography and MRI of rectus abdominis muscle strain in elite tennis players, AJR 2006; 187:1457-61
- Goh LA et al., Ultrasonographic features of an adductor longus tear: case report, Can Assoc Radiol J 2001; 52:252-4
ADDUCTOR STRAIN / TEAR
ADDUCTOR LONGUS TEAR
APONEUROSIS INJURY
ULTRASOUND: ADVANTAGES

- Better demonstration of muscle architecture
- Less time consuming
- More useful in assessing the stage of healing
- The probe could be placed exactly where it hurts
- Guiding of therapeutic procedures
- Dynamic assessment
DYNAMIC ULTRASOUND

- Ballooning of the inguinal canal during strain
- Anterior bulge of the posterior inguinal wall during strain
DYNAMIC US – BALLOONING
OF PIW

- Dynamic US of inguinal canal
- Good correlation between groin pain and posterior wall deficiency
DYNAMIC US – BALLOONING OF PIW
DYNAMIC US – BALLOONING OF PIW
DYNAMIC US – BALLOONING OF PIW
DYNAMIC US – HERNIA
ANTERIOR BULGING
ANTERIOR BULGING
SPORTS HERNIA

- Dynamic sonography!!!
- Functional MRI?!