Clinical History:

A 26-week-gestation neonate was admitted to the Paediatric Surgery Department due to painful bulge in the groin, 8 hours after the onset of symptoms. Physical examination revealed a non-reducible inguinal hernia. Laboratory examinations were unremarkable.

Imaging Findings:

The patient was referred for ultrasonography of the inguinal mass. A linear high-frequency probe was used to better depict the superficial structures under examination. Grayscale ultrasonography demonstrated the presence of an ovoid mass of mixed echogenicity. There were solid hyperechoic parts and multiple anechoic cysts that were peripherally located. Oblique views revealed that the mass was originating from the peritoneal cavity and protruding through a fascial defect. (Fig. 1) As a consequence, the presence of hernia was considered. No evidence of peristalsis was seen within the hernia. Colour and Power Doppler technique identified the presence of blood flow signals both within the mass and throughout the hernia's neck. (Fig. 2) The possibility of strangulation was thus excluded. As the hernia was non-reducible, the patient underwent surgery, which revealed the presence of an indirect inguinal hernia containing both the left ovary and the left fallopian tube. (Fig. 3)

Discussion:

The canal of ?uck (or processus vaginalis) consists of a small evagination of parietal peritoneum inside the inguinal canal, which arises during the 6th month and is normally obliterated by the 8th month of gestation. When this canal fails to obliterate, an indirect inguinal hernia occurs protruding from the deep inguinal ring, lateral to the inferior epigastric vessels.[1, 2, 3] Inguinal hernias in children and infants may contain omental fat, bowel, urinary bladder and in rare cases an ovary along with the round ligament (15% of cases). There are limited reports about hernias containing the fallopian tube and ovary along with the uterus. Proper and timely identification of hernia contents is...
crucial as herniated ovaries may be incarcerated in up to 43% of cases. 27% of female infants and children with inguinal hernia are premature. [4] The majority of ovary-containing hernias affect children younger than 5 years of age. An ovary-containing inguinal hernia may sometimes extend to the labia majora. [1, 2]

Inguinal swelling is the usual clinical presentation of an ovary-containing hernia. [1] Given the limited physical examination, ultrasonography is the primary imaging modality used to investigate inguinal masses in children and infants. Ovary-containing hernias usually measure less than 2 cm in size and are usually seen with an ovoid solid mass which may be isoechoic but contains hypoechoic cysts measuring 1-7 mm. The latter may be peripherally located as they represent ovarian follicles and constitute an important ultrasonographic finding of an ovary-containing hernia. The absence of peristalsis is another finding consistent with ovary-containing hernias. Strangulated ovaries may appear enlarged and heterogeneous in echogenicity. However, colour Doppler technique should always be used to assess the vascularity of the herniated ovary. Pulsed-wave Doppler technique normally shows low-resistance arterial waveforms in the ovarian vessels. In cases of torsion, no blood flow is evident within the ovary. A worsening of the symptoms should raise suspicion of ovarian torsion. [1, 2, 5] The correct diagnosis may be reached almost always with high-resolution ultrasonographic devices equipped with high-frequency probes, but is also achievable with point-of-care ultrasonography. [2, 3, 6] CT should be avoided due to radiation and performed only when ultrasonography is not available in order to exclude ovary torsion. A torsed ovary will appear enlarged and with decreased enhancement. Coronal reformatted images better illustrate the ovarian morphology. [7] Ovary-containing hernias that are non-reducible by manoeuvres are treated with elective surgical repair. In patients with ovarian torsion emergency surgery should be performed in order to avoid infarction and infertility. [2]

**Differential Diagnosis List:** Indirect inguinal hernia containing an ovary and fallopian tube., Inguinal lymph node, Inguinal hernia containing bowel loops, Omental fat-containing hernia, Inguinal hernia containing ovary, Inguinal hernia containing uterus and ovary, Hydrocele or cyst of the canal of Nuck, Soft tissue tumours

**Final Diagnosis:** Indirect inguinal hernia containing an ovary and fallopian tube.

**References:**


Description: Oblique ultrasonographic image of a subcutaneously located mass showing a mixed echogenicity structure with intraabdominal extension. A line of echogenic dots (arrows) possibly represent a part of the ovarian ligament. Origin: Rafailidis D. GH “Gennimatas”, Thessaloniki, Greece.

Description: This longitudinal plane reveals a hernia sac protruding through a permanent fascial defect with both solid (arrows) and cystic (asterisks) parts. The solid parts represent the ovary, fimbriae and ampulla of the fallopian tube. Origin: Rafailidis D. GH “Gennimatas”, Thessaloniki, Greece.
Description: This oblique plane confirms the presence of multiple round anechoic (cystic) areas within the hernia (asterisks). The cysts are peripherally located, one next to the other, producing a denticulated margin and representing follicles. **Origin**: Rafailidis D. GH “Gennimatas”, Thessaloniki, Greece.
Description: CDU reveals blood vessels within the solid parts of the hernia. The epigastric vessels are visible (arrow). The vessels entering the hernia are running lateral to them, revealing that the inguinal hernia is indirect. Origin: Rafailidis D. GH “Gennimatas”, Thessaloniki, Greece.
Description: PDI reveals multiple blood vessels in the hernia neck arising from the peritoneal cavity through the inner inguinal ring. The blood vessels are oriented towards the echogenic solid parts of the structure. Origin: Rafailidis D. GH “Gennimatás”, Thessaloniki, Greece.
Description: Inside the hernia sac both the ovary and the ipsilateral fallopian tube (with its fimbriae and ampulla) are depicted. Origin: Patoulias I, 1st Pediatric Surgery Department of AUTh, Thessaloniki