

LAPAROSCOPIC (TRANSABDOMINAL PREPERITONEAL) REPAIR OF DE GARENGEOT'S HERNIA WITH CONCOMITANT ABDOMINAL INCISIONAL HERNIA: A CASE REPORT

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Introduction:

Inguinal hernias that contain the vermiform appendix within the hernial sac are called Amyand's hernias, while femoral hernias that contain the appendix are called de Garengeot's hernias. Both are rare, but always remain a possibility in hernia treatment and should thus be kept in mind. We report a patient who was preoperatively diagnosed with a small lower abdominal incisional hernia coexisting with de Garengeot's hernia, and was treated simultaneously in one stage with transabdominal preperitoneal inguinal hernia repair (TAPP). She was then released on postoperative day 3 with no complications. This is the first report of simultaneous laparoscopic surgery for de Garengeot's hernia and abdominal incisional hernia.

Case presentation:

The patient was an 82-year-old woman with a history of laparotomy for rectal cancer. She was examined by her regular physician after feeling a mass in the right femoral region accompanied by mild pain for 2 days, and was referred to our hospital for suspected right external inguinal hernia. She had decided to wait 6 days before visiting our hospital for examination. Physical findings on the first visit were: height, 148 cm; weight, 51.9 kg; body mass index (BMI), 23.7 kg/m²; blood pressure, 163/74 mmHg; heart rate, 86 beats/min; and temperature, 36.2°C. A tender, irreducible mass measuring 3×4 cm was found in the inguinal region, but no redness of the skin or fever was apparent at that site. Blood tests revealed a white blood cell count of 6,400 (range 3,300–86,000/μL) and a C-reactive protein (CRP) of 0.01 (range, 0.0–0.14 mg/dL), both within normal ranges. No abnormalities were evident on abdominal X-ray (Fig. 1). On contrast-enhanced computed tomography (CT), an enlarged appendix and fatty tissue were seen penetrating into a right femoral hernia, with accumulation of surrounding fluid, and a mass covered by the hernial sac with a total outermost circumference of 3.7×5.0×3.9 cm was identified. Hollow organs originating from the cecum poked through the femoral canal behind two parallel lines consisting of the inguinal ligament and IPT, leading to a blind end. Femoral hernia with incarceration of the appendix was diagnosed. A contrast effect was seen in the invaginated appendix tip. No abnormal findings such as a gas pattern, abscess around the hernial sac, or enlarged lymph nodes were seen, nor was there ileus intestine or obvious ascites in the peritoneal cavity. A concurrent small abdominal incisional hernia (M4, 3×2.5 cm) was seen on the lower abdominal midline (Fig. 4, 5, 6, 7, 8 and 9). Ultrasound (US) findings revealed a femoral hernia 47×18 mm in size with a hernial orifice of 8 mm, and the appendix and fatty tissue had invaginated within the hernial sac. Maximum diameter of the appendix was 9 mm and the wall presented typical findings of appendicitis in the form of inflammatory thickening. Fluid accumulation was seen around the appendix. No intestinal ileus or ascites was seen in the peritoneal cavity (Fig. 2 and 3). Based on the above, de Garengeot's hernia and lower abdominal incisional hernia were diagnosed, and emergency surgery was performed. In the surgery, three 5-mm trocars were inserted from the right abdomen at the height of the navel, and TAPP was performed. However, an additional 5-mm trocar was added directly above the pubis when closing the hernial orifice of the abdominal incisional hernia with sutures (Fig. 21, 22, and 35). First, since adhesion of the greater omentum to the lower abdominal midline wound was seen (Fig. 10), separation was achieved using an electrosurgical knife while observing the incarcerated appendix in the right femoral hernia and the abdominal incisional hernia (3×2.5 cm) (Fig 11, 12 and 13). An incision was made in the peritoneum about 4 cm cranial to the femoral hernial orifice, the preperitoneal space was entered, separation proceeded dorsally, and the round ligament of the uterus was ligated and dissected (Fig. 14 and 15). Separation was continued all the way around the femoral ring, and the neck of the hernial sac was clearly apparent. To avoid damage to the appendix inside the hernia, the lacunar ligament was cut first, then the hernial orifice was expanded (Fig. 16). The hernial sac was then delicately drawn out by pulling gently with packing gauze to release the incarcerated appendix (Fig. 17, 18 and 19). The preperitoneal space was further separated toward the navel in the inguinal region (Fig 20). Separation continued while pulling the umbilical prevesical fascia dorsally, exposing the hernial orifice of the abdominal incisional hernia. The surrounding area was further separated over about 5 cm (Fig. 21 and 22). Based on the measurement of the separated area, a partially trimmed 15×10 cm Parietex ProGrip mesh (Medtronic, Minneapolis, MN, USA) was folded, and a 12-mm Penrose drain was placed. The mesh was pulled intraperitoneally from the port wound where a lateral abdominal trocar had been removed, then spread, and the separated region was repaired. The myopectineal orifice (MPO), including abdominal incisional hernia and femoral ring, could be sufficiently covered with a single mesh sheet (Fig. 23 and 24). The peritoneum was closed using absorbable 3-0 V-Loc barbed sutures (Fig. 25). After completing preperitoneal space manipulations, we moved on to the appendectomy. After the mesoappendix had been ligated, the base of the appendix was ligated and dissected with an end loop, then placed in a bag and extracted from the body (Fig. 26, 27, 28, 29 and 30)). The tip of the appendix was hard and enlarged, and the center portion split in two within the bag during extraction (Fig. 30 and 31). However, the wound was not contaminated. After adequately washing inside the peritoneal cavity, an anti-adhesive agent (Seprafilm (chemically modified hyaluronic acid and carboxymethylcellulose; Genzyme Corporation, Cambridge, MA)) was inserted into a rolled 10-mm Penrose drain that was drawn into the peritoneal cavity (Fig. 32 and 33). After the agent was applied to the adhesion separation area and peritoneal suture area, the incision was closed to end the operation (Fig. 34). Pathological results for the appendix showed hemorrhagic necrosis and chronic appendicitis. The patient was released from the hospital on postoperative day 3 with no complications.

Discussion:

De Garengeot's hernia is a rare disease, but we have previously encountered and reported a different case [1]. In the present case, this disease was suspected from the clinical course, and preoperative diagnosis was relatively easily made from CT and US. Symptoms of de Garengeot's hernia are reportedly relatively mild, ileus does not often develop, and the time from the appearance of the main symptoms of pain or mass until surgery is often long. In this case, however, only 8 days passed from onset to diagnosis and surgery. Anatomical positional relationships were recognized as good on CT, and diagnosis was not that difficult. In addition, a concurrent abdominal incisional hernia was seen in the lower abdomen, and the surgery itself was performed soon without delay. An approach was made using the TAPP method, but inflammation had not spread markedly outside the hernial sac. With enlargement of the femoral ring by dissecting the lacunar ligament, the hernial sac was able to be extracted without touching the incarcerated appendix. A one-stage hernia repair was thus performed using mesh. The patient had a small build, and the two locations could be covered at the same time with one sheet of mesh. We were able to exercise caution with regard to mesh infection by performing appendectomy once the peritoneum had been closed. In cases when inflammation spreads to the surroundings, one good method may be to stop the infection by removing the appendix and simply closing the peritoneum without mesh repair first and then performing laparoscopic repair at a later date using mesh.

Conclusion:

By approaching the hernial orifice from the preperitoneal space and cutting the lacunar ligament first, the hernial sac can be drawn out after the femoral ring has been enlarged, and the incarceration can be gently released without pulling on appendiceal tissue that has been weakened by inflammation. With this technique, the hernia repair and appendectomy could be performed separately, and the method thus appear useful from the perspective of minimizing postoperative mesh infection. TAPP that enabled repair of the abdominal incisional hernia and de Garengeot's hernia in one stage with a single sheet of mesh proved effective. Obtaining a reliable preoperative diagnosis while keeping even rare diseases in mind is thought to be important in selecting appropriate surgical techniques.

Reference:

1. Takahiro S, Satoshi O, Yoshihiro S, Takao T, Fujio I, Junichi M (2019). A case of laparoscopic repair of a femoral hernia with incarceration of the appendix. Journal of the Japan Surgical Association. 2014;75(9):2606-2612.

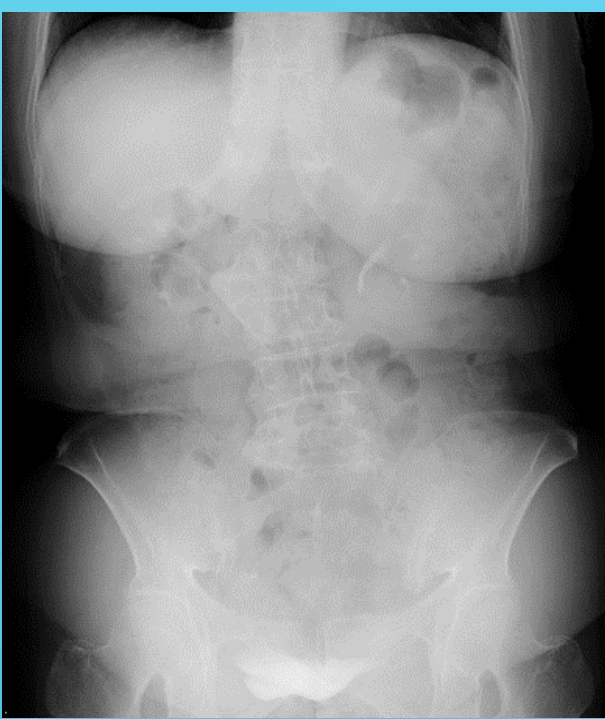


Fig. 1 abdominal X-ray



Fig. 2 US

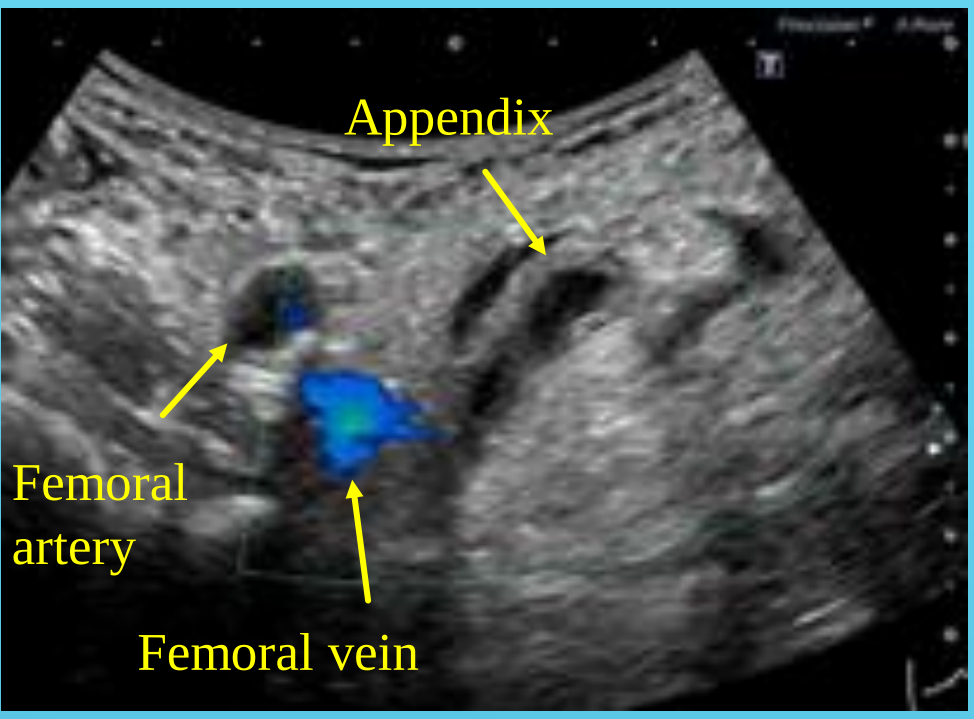


Fig. 3 Color doppler echography

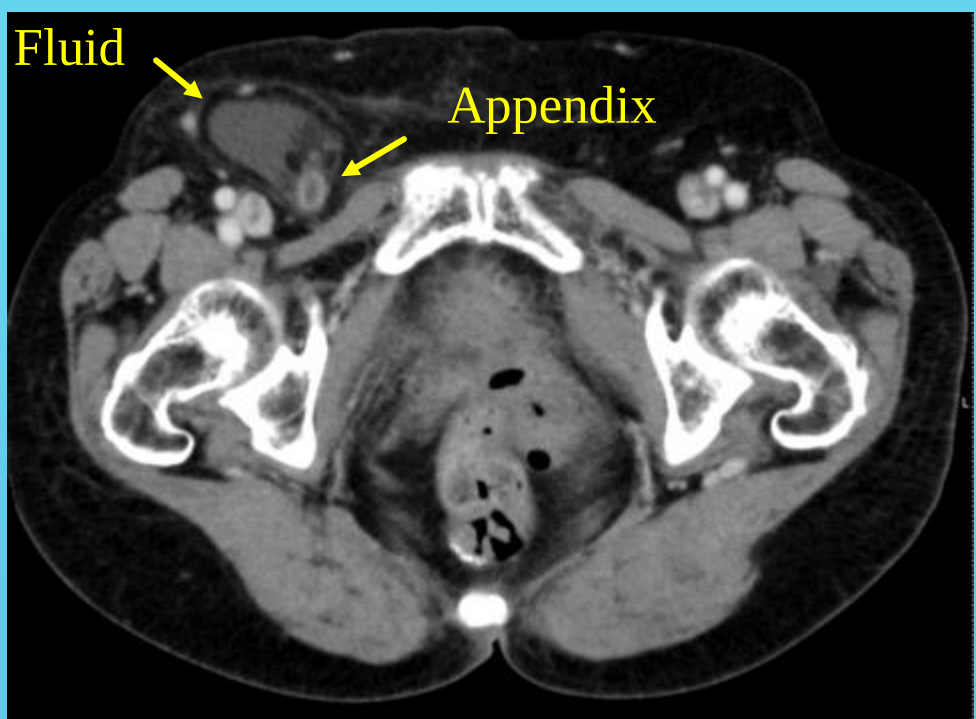


Fig. 4 CE-CT

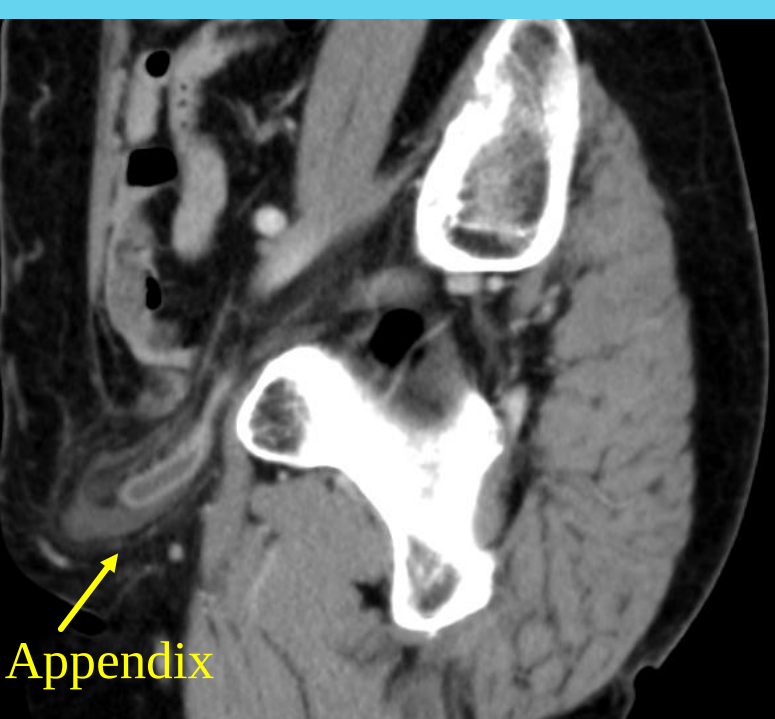


Fig. 5

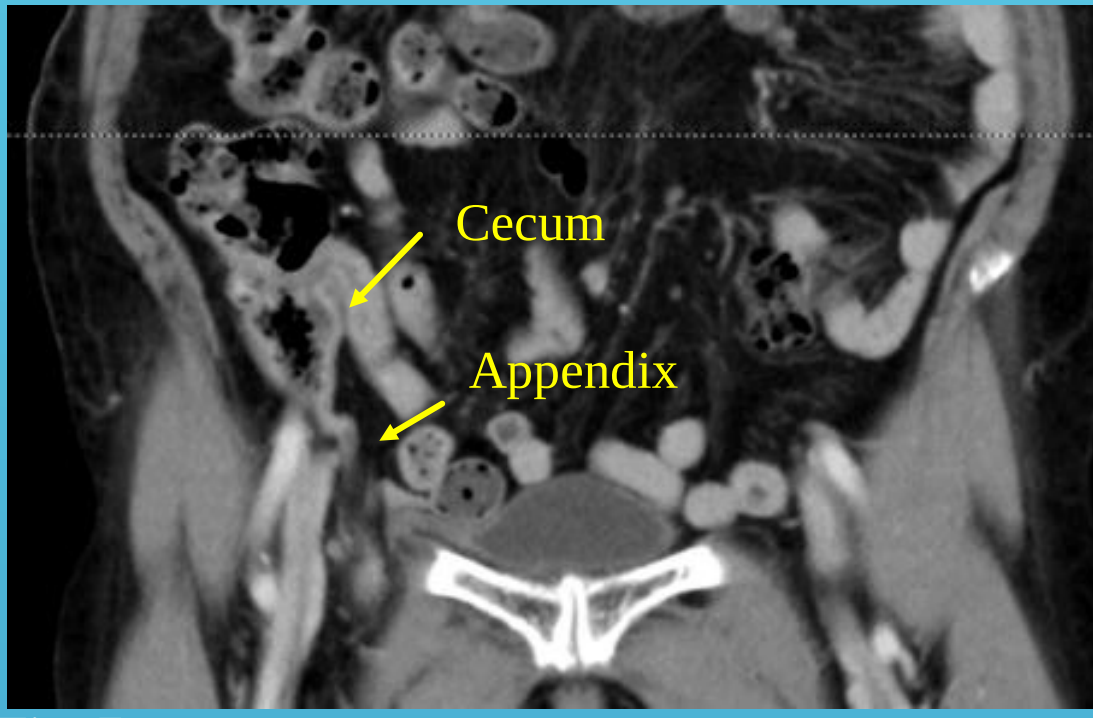


Fig. 7

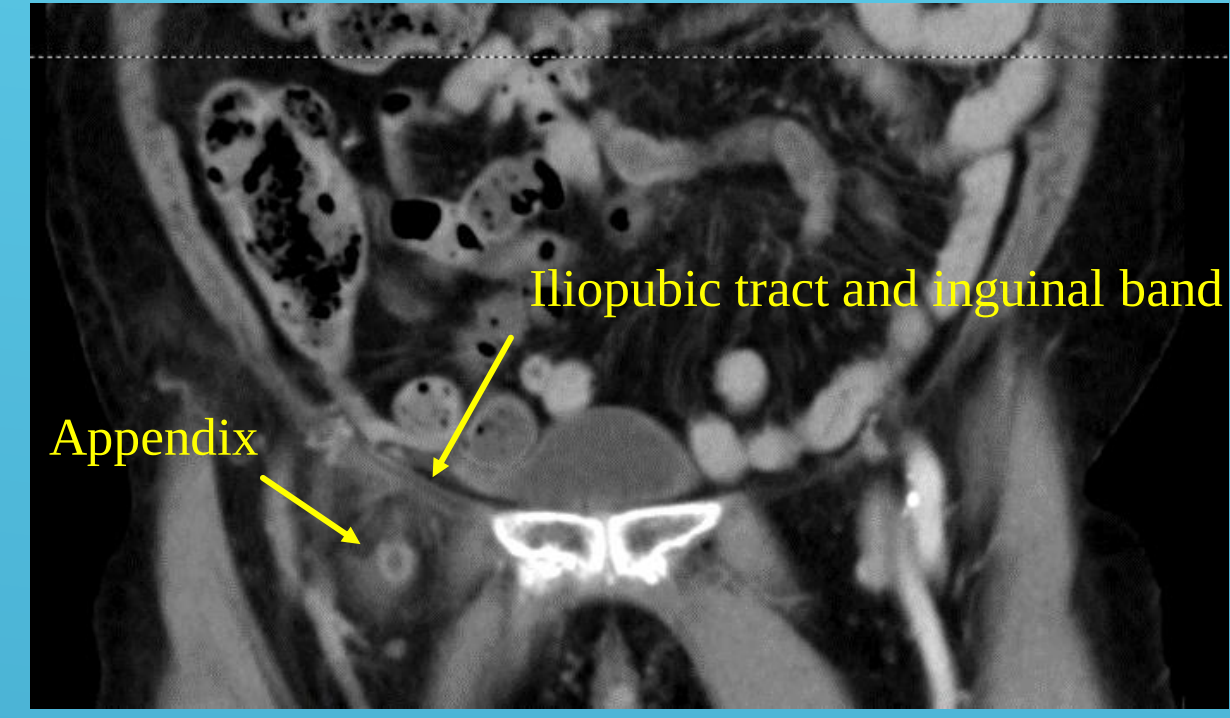


Fig. 8

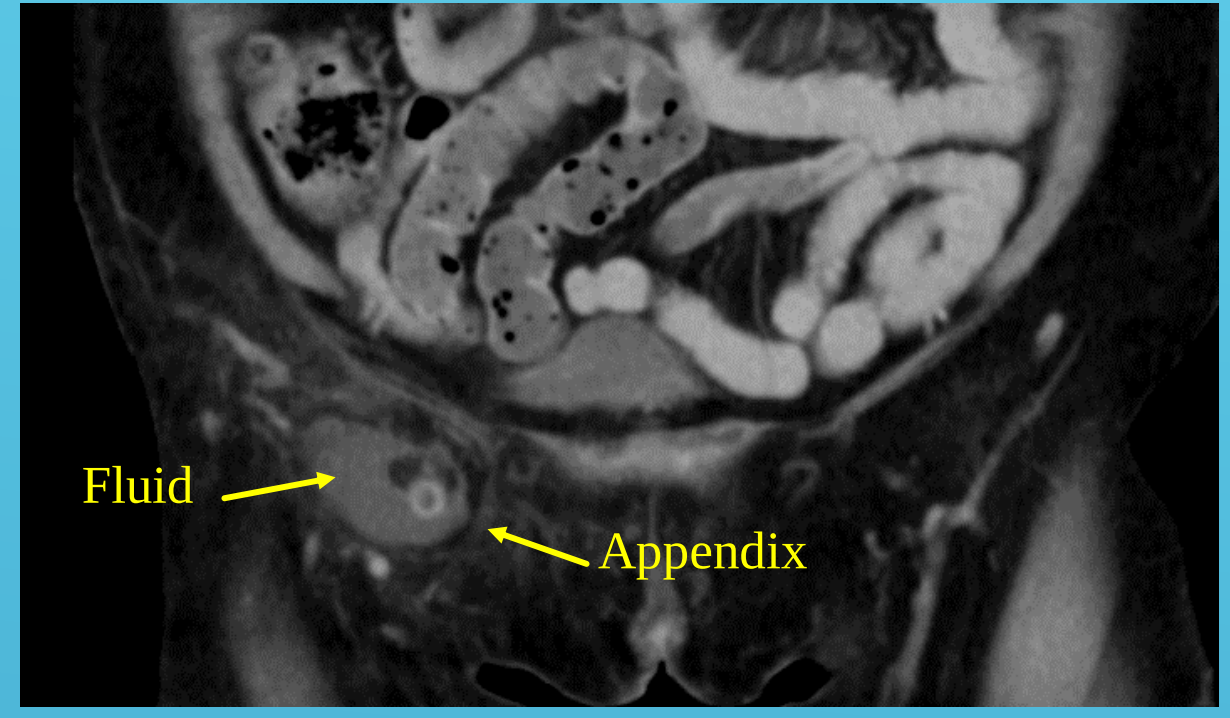


Fig. 9

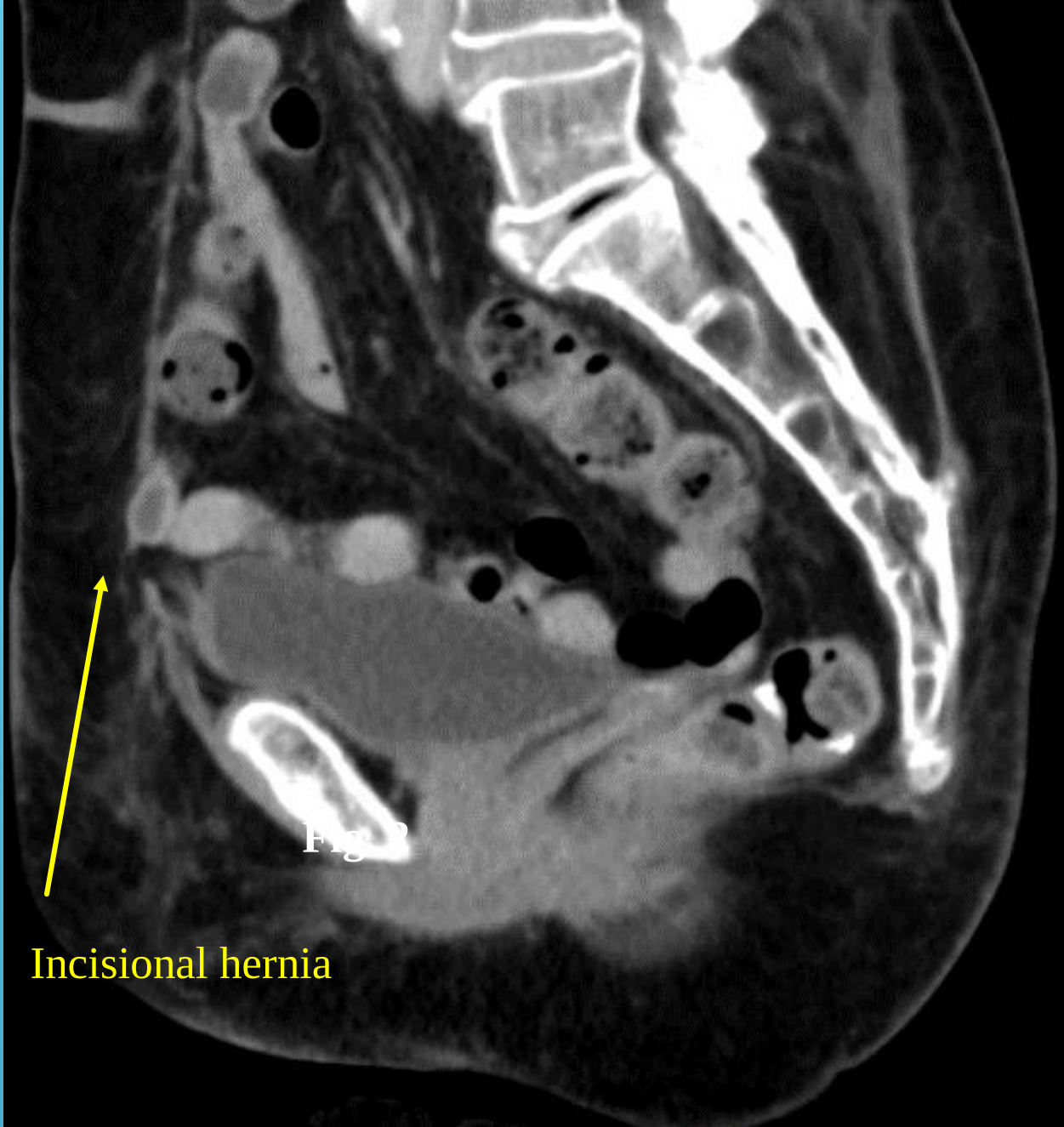


Fig. 6



Fig. 10 Adhesion

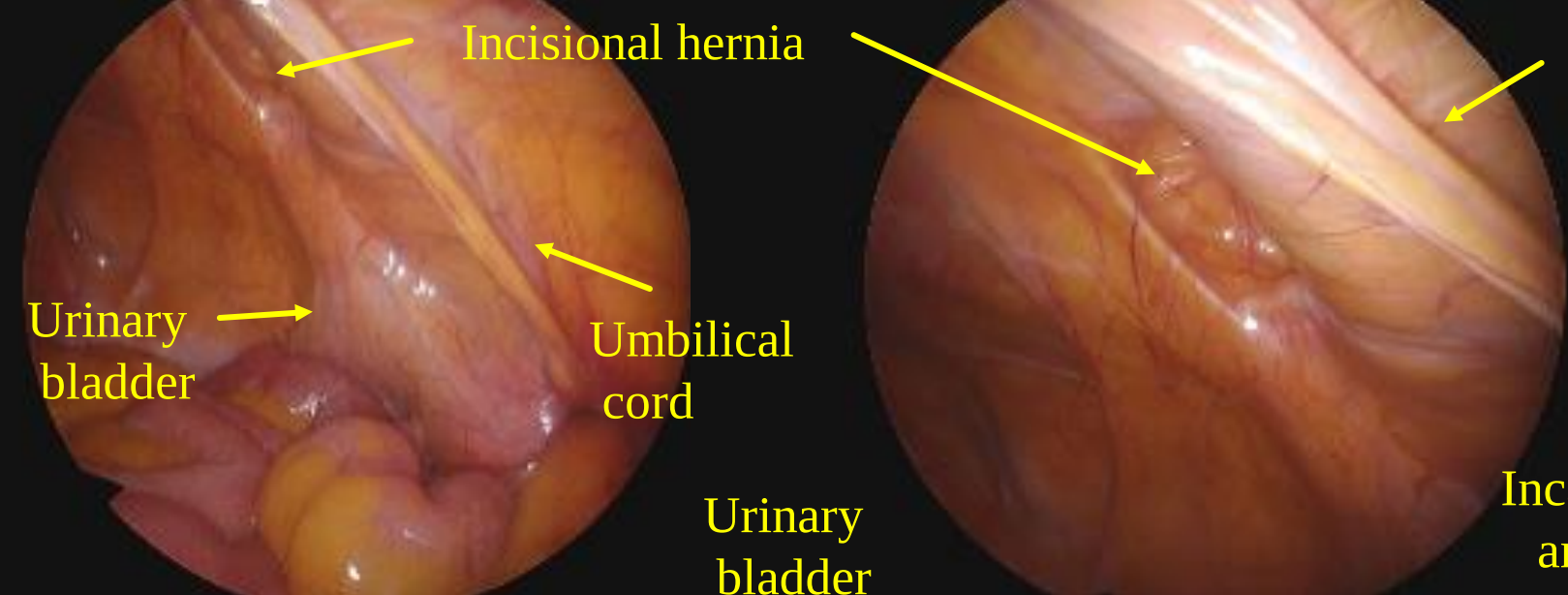


Fig. 11

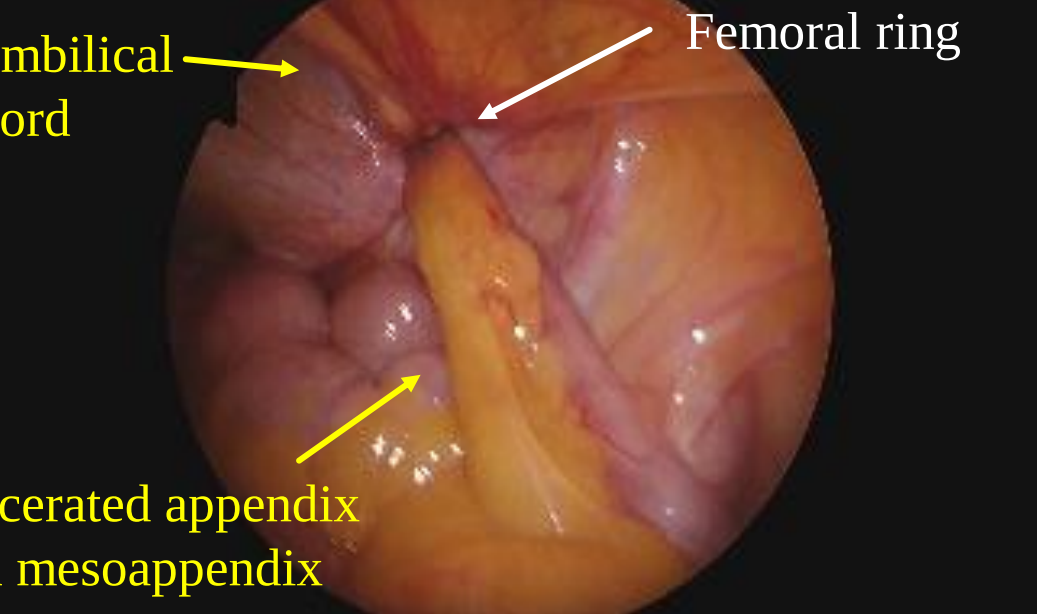


Fig. 12

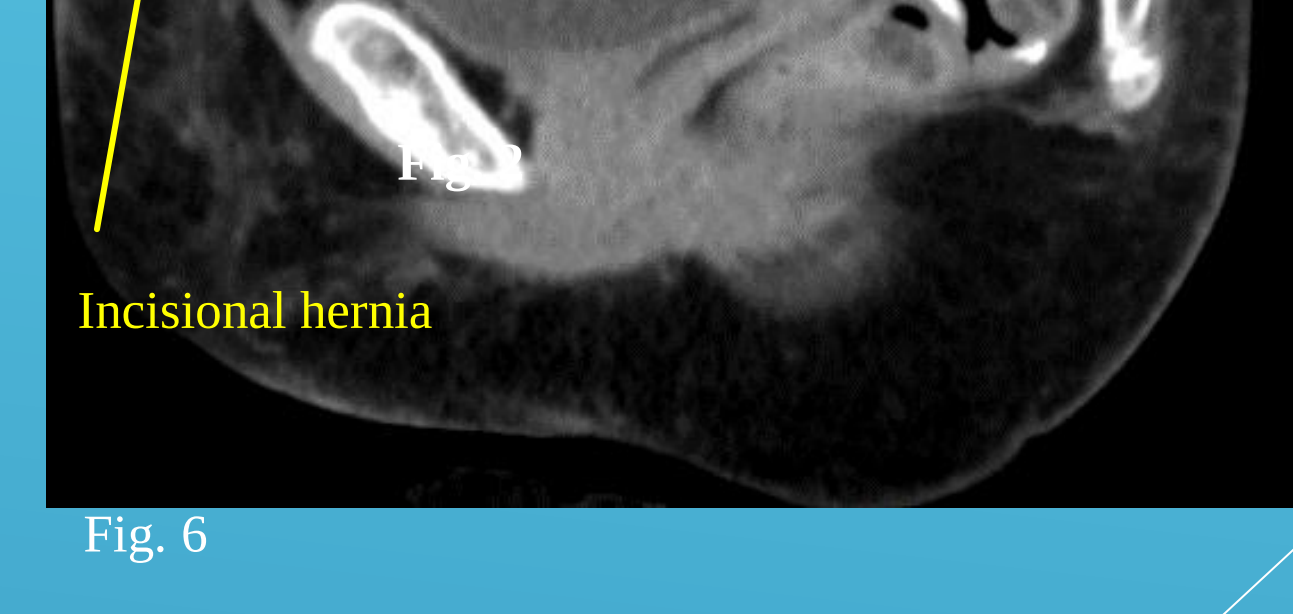


Fig. 13

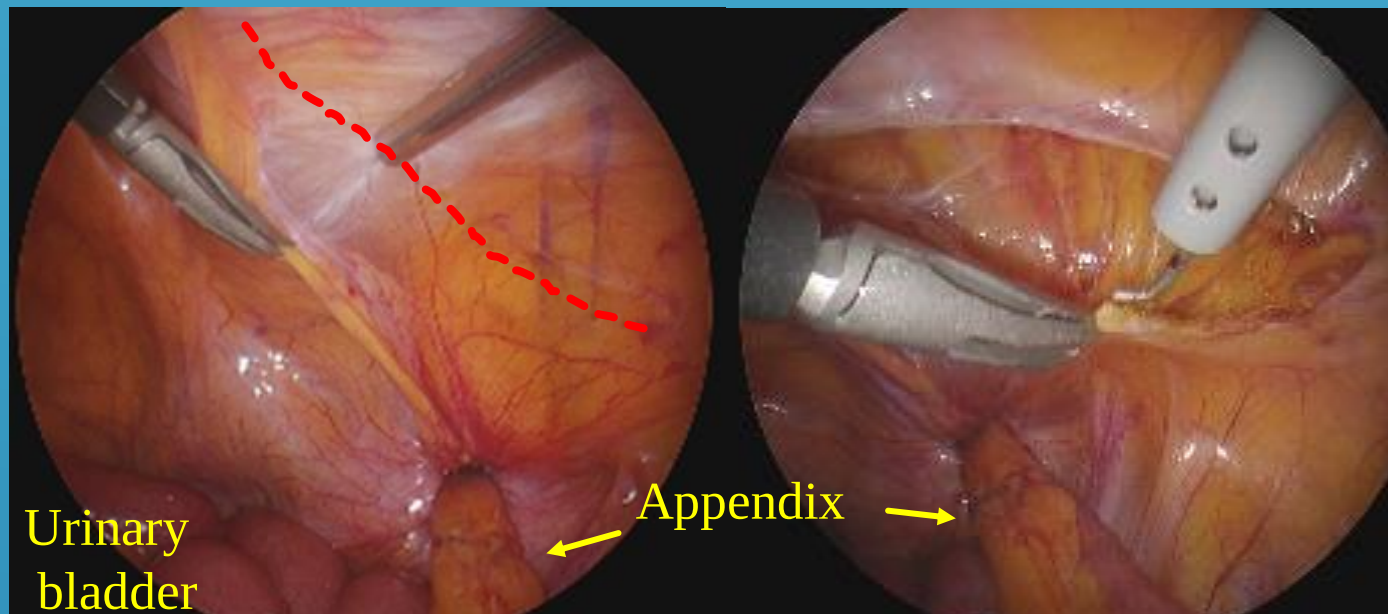


Fig. 14 Peritoneal incision line

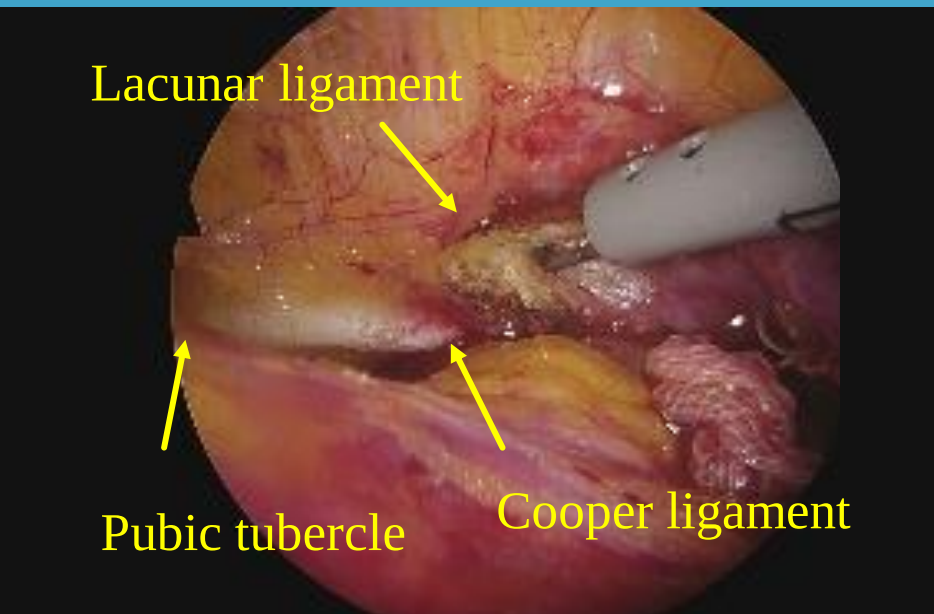


Fig. 15

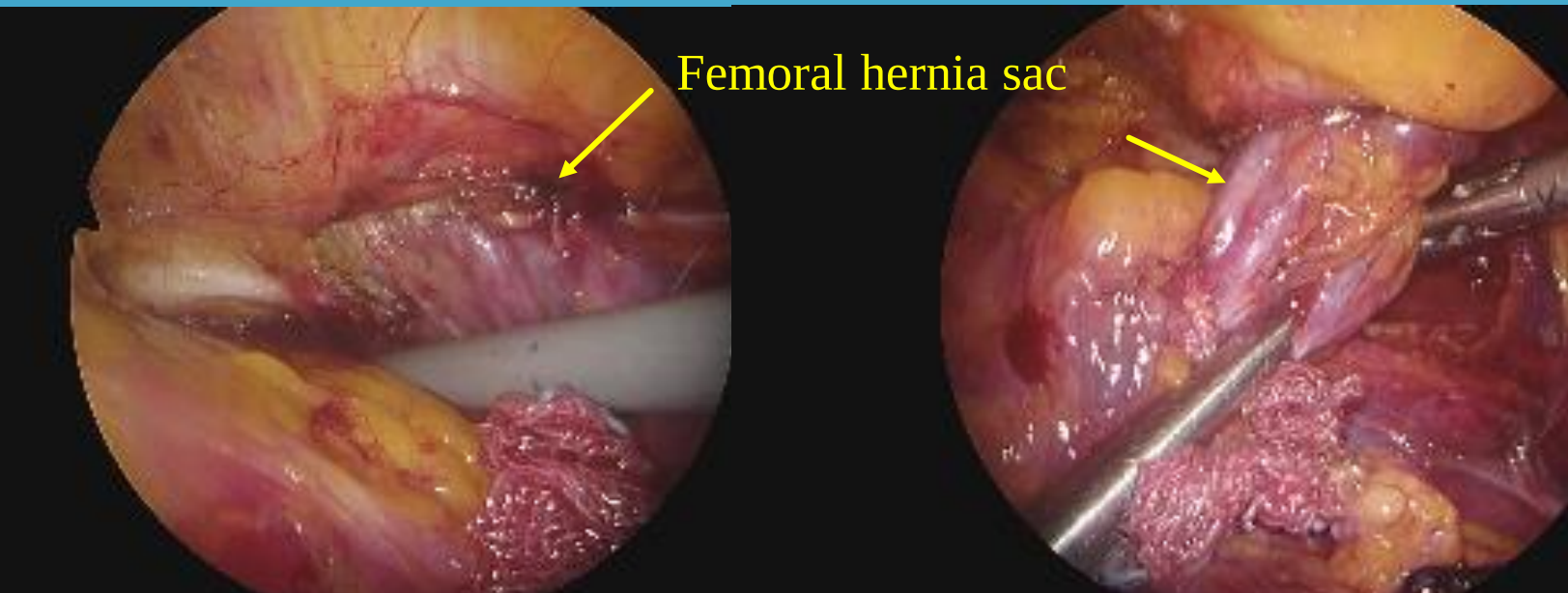


Fig. 16

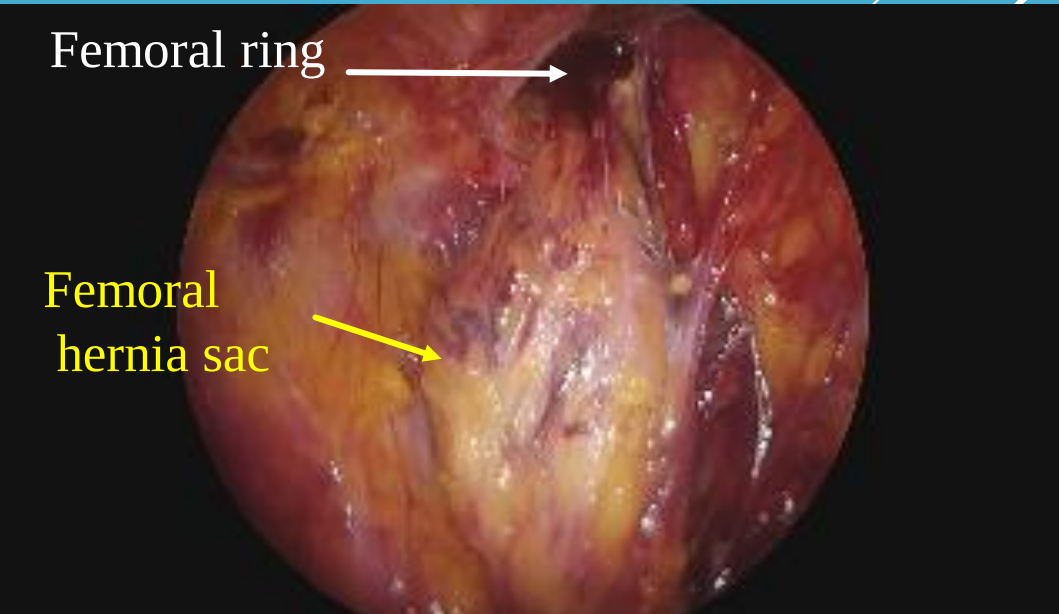


Fig. 17

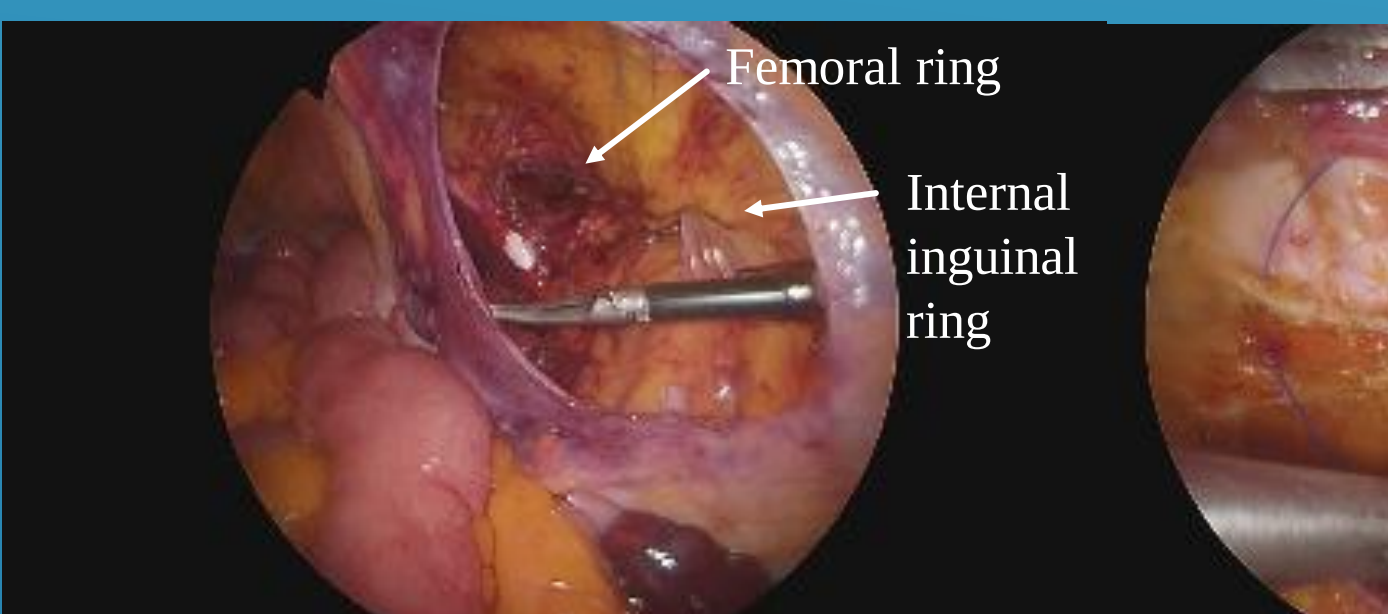


Fig. 18

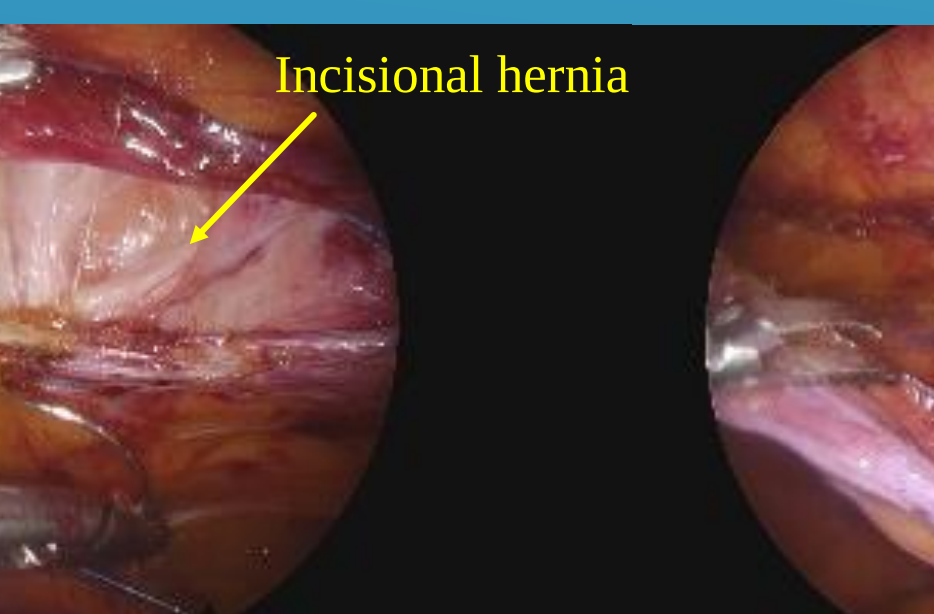


Fig. 19

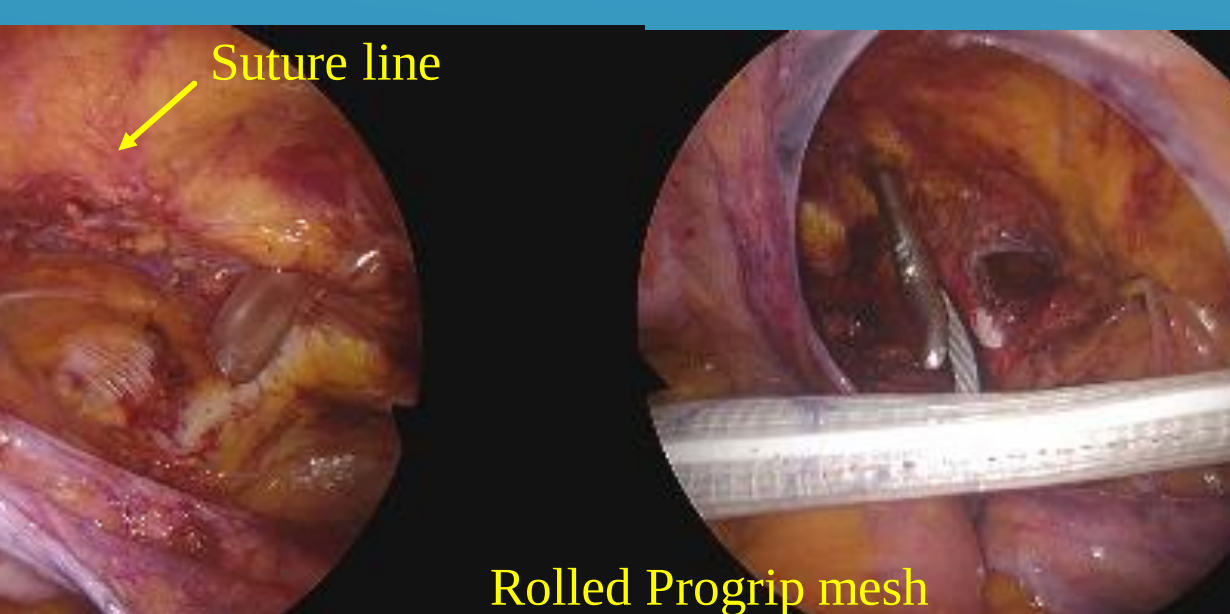


Fig. 20

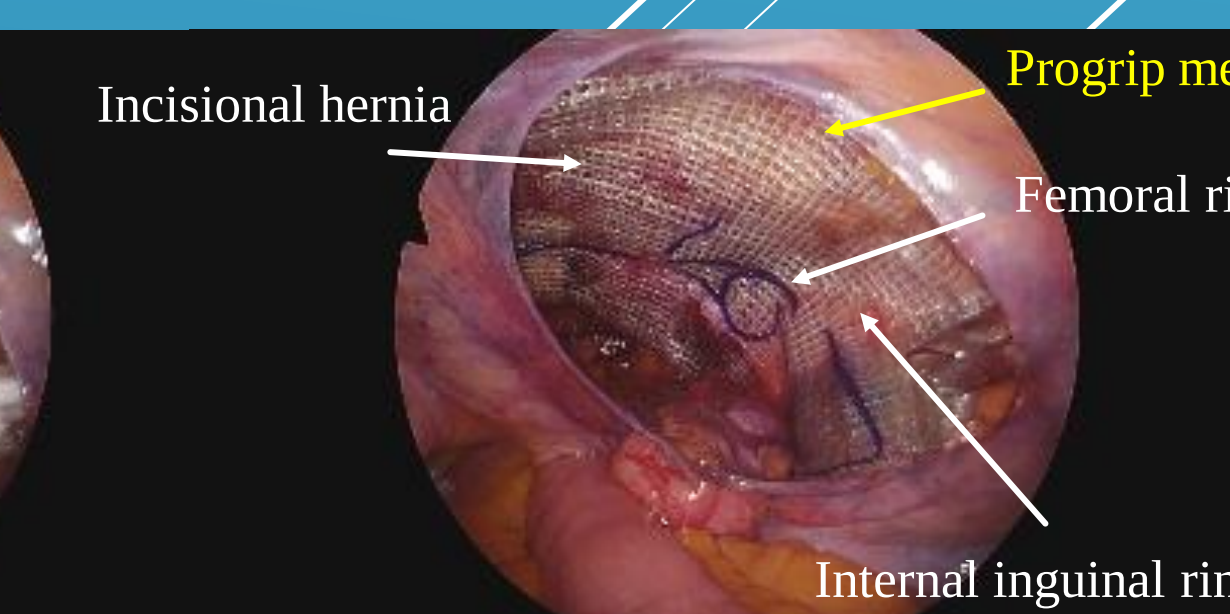


Fig. 21



Fig. 22



Fig. 23



Fig. 24



Fig. 25



Fig. 26

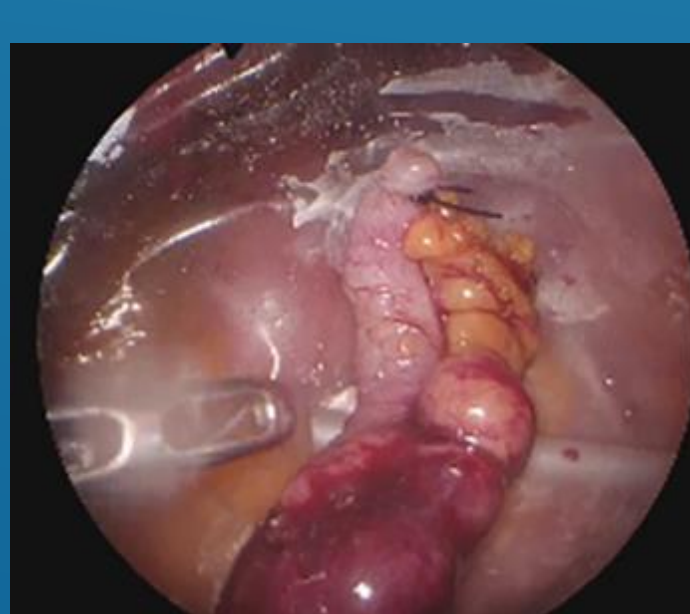


Fig. 27 Mesoappendix



Fig. 28



Fig. 29

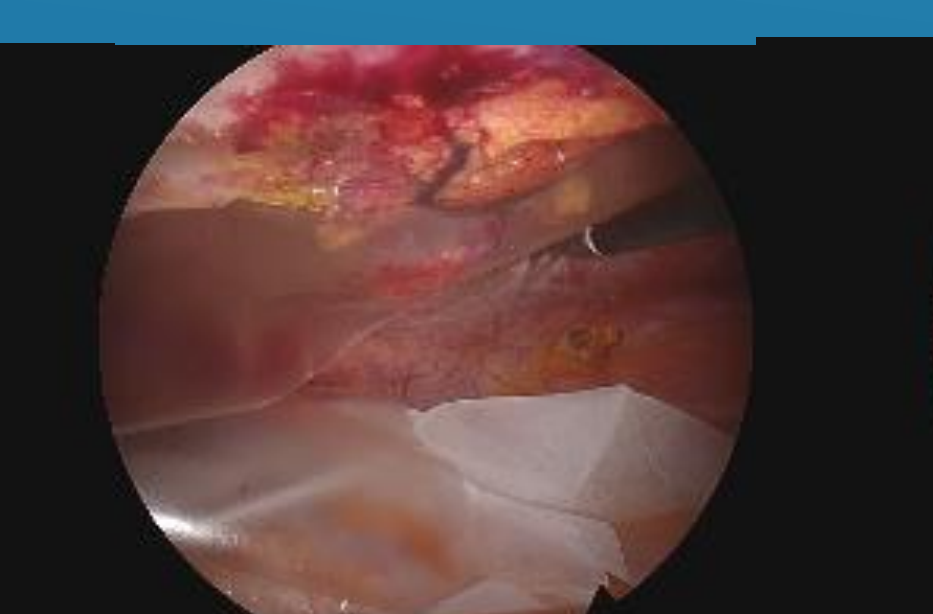


Fig. 30



Fig. 31



Fig. 32 Rolled Seprafilm



Fig. 33



Fig. 34



Fig. 35