DOUBLE MESH REPAIR (SANDWICH TECHNIQUE) WITH ABDOMINOPLASTY FOR COMPLEX VENTRAL HERNIAS: Multicenter experience With marvelous results

By

Dr. Alaa A. Redwan M.D, Ph.D.
Prof. and Chairman of G.I.T., H.B.P. Surgery And Laparo endoscopy Units, Sohag University
Prof. and Chairman of Surgery , Laparo-endoscopy Departments, Merit University


24th
Silver Jubilee of ESCRS
ANNUAL CONFERENCE
OF THE EGYPTIAN SOCIETY
OF COLON AND RECTAL SURGEONS
31 August - 2 September 2023
Intercontinental City Stars - Cairo - Egypt
25
ICOM

Complex ventral midline hernias are considered to be a surgical challenge due to high recurrence rate, previous major surgery and often comorbidity with obesity. It includes hernias with large defect (>10 cm), multi-orifice, or recurrent. Treatment of such hernias remains a surgical challenge due to the high incidence of hernia recurrence, complications, and associated comorbidities. *(Goran et al; 2023)*

Hernia repair with component separation techniques (either anterior or posterior approach, either open or mini-invasive) carries an intrinsic risk of wound complications due to the extent of soft tissue dissection involved; these complications include seroma, hematoma, skin necrosis, and infection.

(Cuccomarino et al; 2020)

Multiple mesh materials (absorbable Vs. non-absorbable, prosthetic Vs. biologic) and multiple methods of mesh insertion have been tried (onlay, inlay or sublay) but no single method is satisfactory nor become the standard for treatment. Dual layer (sandwich) reconstruction for complex ventral hernia repair may reduce hernia recurrence rates, but with an increased risk of surgical site occurrences and infections. *(Pablo et al; 2023)*

Risk factors for recurrence after surgery include the big size of hernia defect, the type of mesh material (absorbable versus nonabsorbable), associated obesity in many cases, multiparity with weak muscles, old age, diabetes, and chronic pulmonary disease.

The aim of this study is evaluation of a technique of repair of the hernia defect in between two layers of prosthetic mesh (sandwich technique) with the use of the remaining free edges of the hernia sac as a barrier between the intestine and the inner mesh.

120 Patients with complex ventral midline abdominal wall hernia admitted to the Surgery Department, Assiut University, Sohag University, and South-Valley University (Multi-Center Study) were included in this study for assessment and evaluation of such promising technique.

The study was approved by the Medical Research Ethics Committee, and informed consent was taken from all participants. All patients were booked for elective hernia repair. Exclusion criteria were emergency presentation with complicated hernia, poor surgical fitness and small defect hernias (< 10 cm).

All operations were done under general anesthesia with endotracheal intubation, the hernia sac was then exposed, and adjacent abdominal wall fascia cleared of subcutaneous tissues for at least 6 cm from the edge of the hernia defect. As possible, preservation of the perforator arteries to the skin was done to decrease ischemia at the edges of the skin flaps.

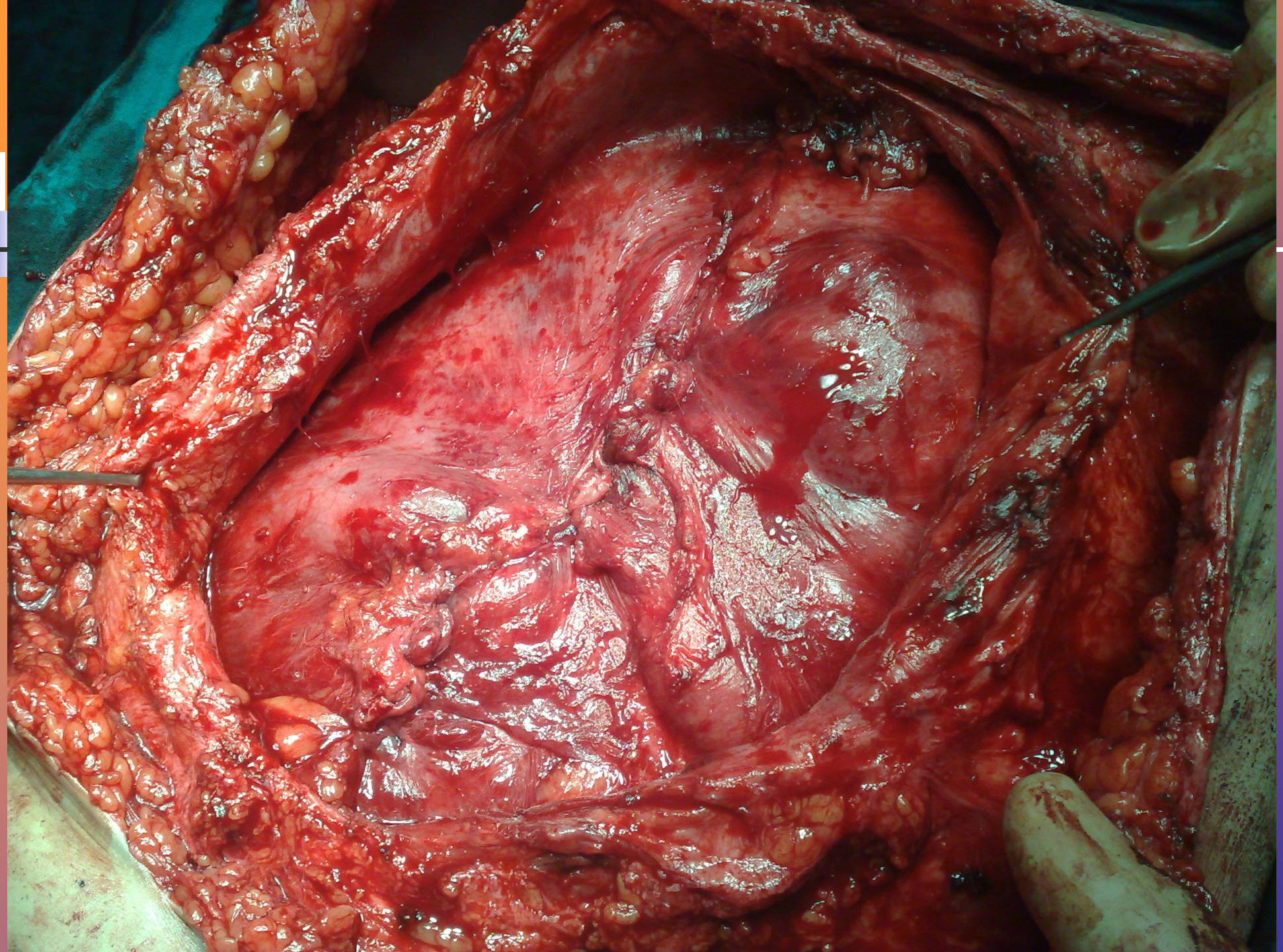
The sac was then opened and adhesolysis performed as indicated. After reduction of the hernia contents the greater omentum was spread as possible to separate the intestine from the hernia defect. The sac was then partially excised so that its edges can be brought together without tension and its edges sutured together by absorbable sutures (No. 0 polyglactic Acid). This is supposed to work as another barrier that separates the intestine from the first (inner) mesh to decrease incidence of adhesions and their sequelae.

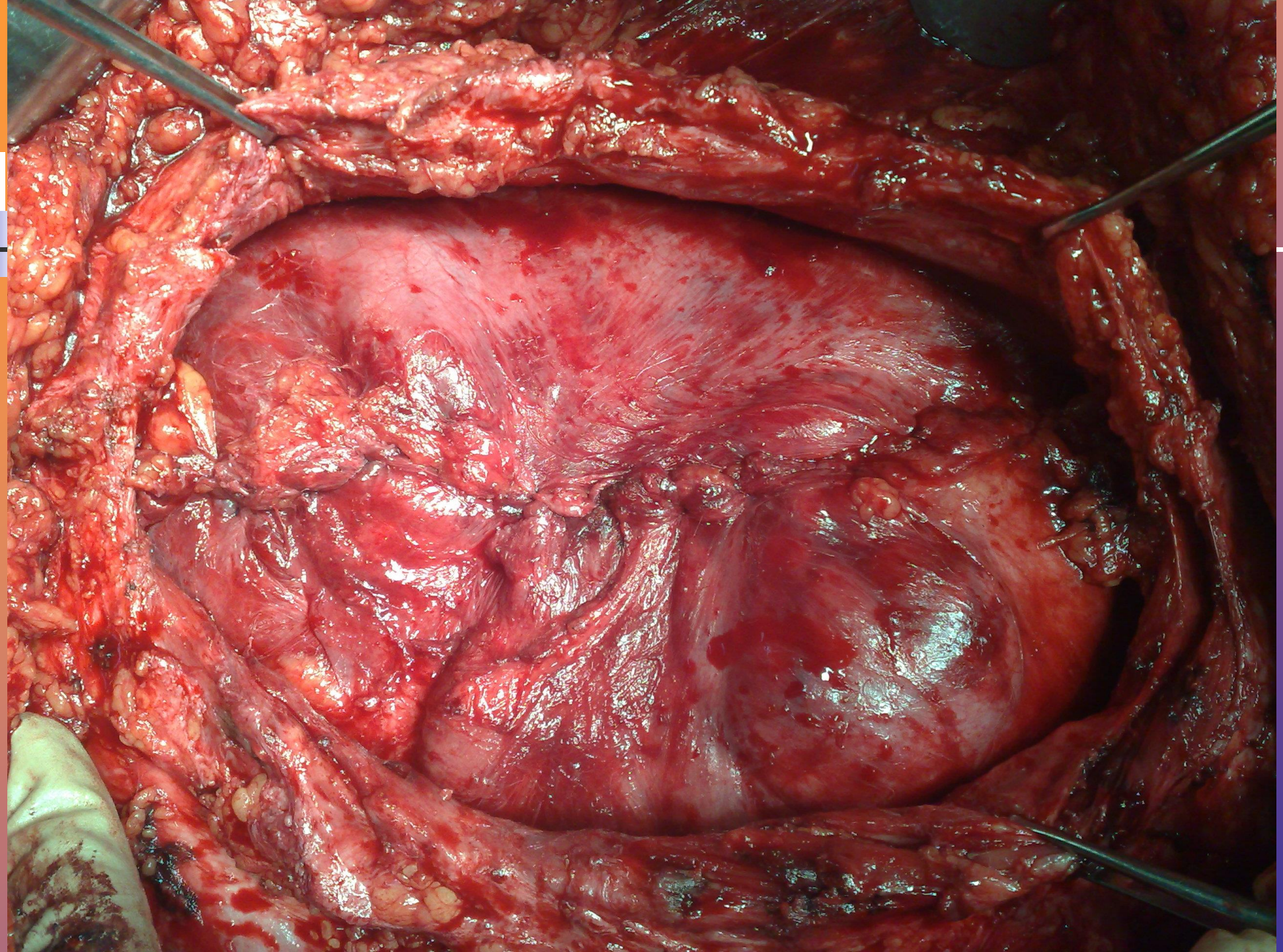
Then, separation of the recti muscles from the posterior rectus sheath was carried out for at least 6 cm from the fascial edge of the hernia defect. At that time, the first mesh layer was spread out under the muscle for at least 5 cm from the fascial edges in all directions and fixed to the fascial edges of the hernia defect using continuous nonabsorbable sutures (2/0 polypropylene)

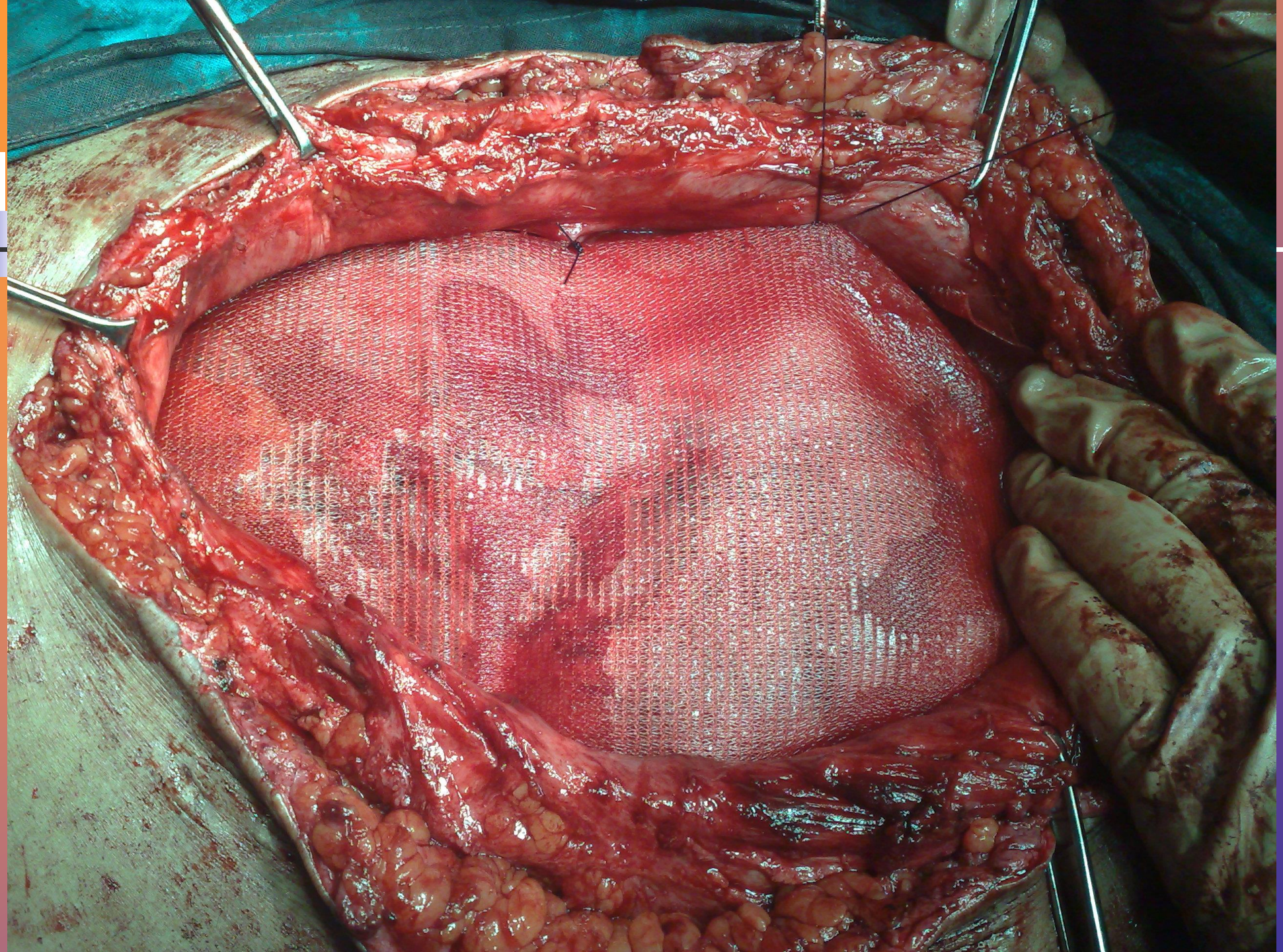
The second mesh layer was then fixed to the anterior rectus sheath fascia at least 5 cm from the edges of the defect with interrupted nonabsorbable sutures (2/0 polypropylene) taken 2cm apart and 1 cm from the edge of the mesh.

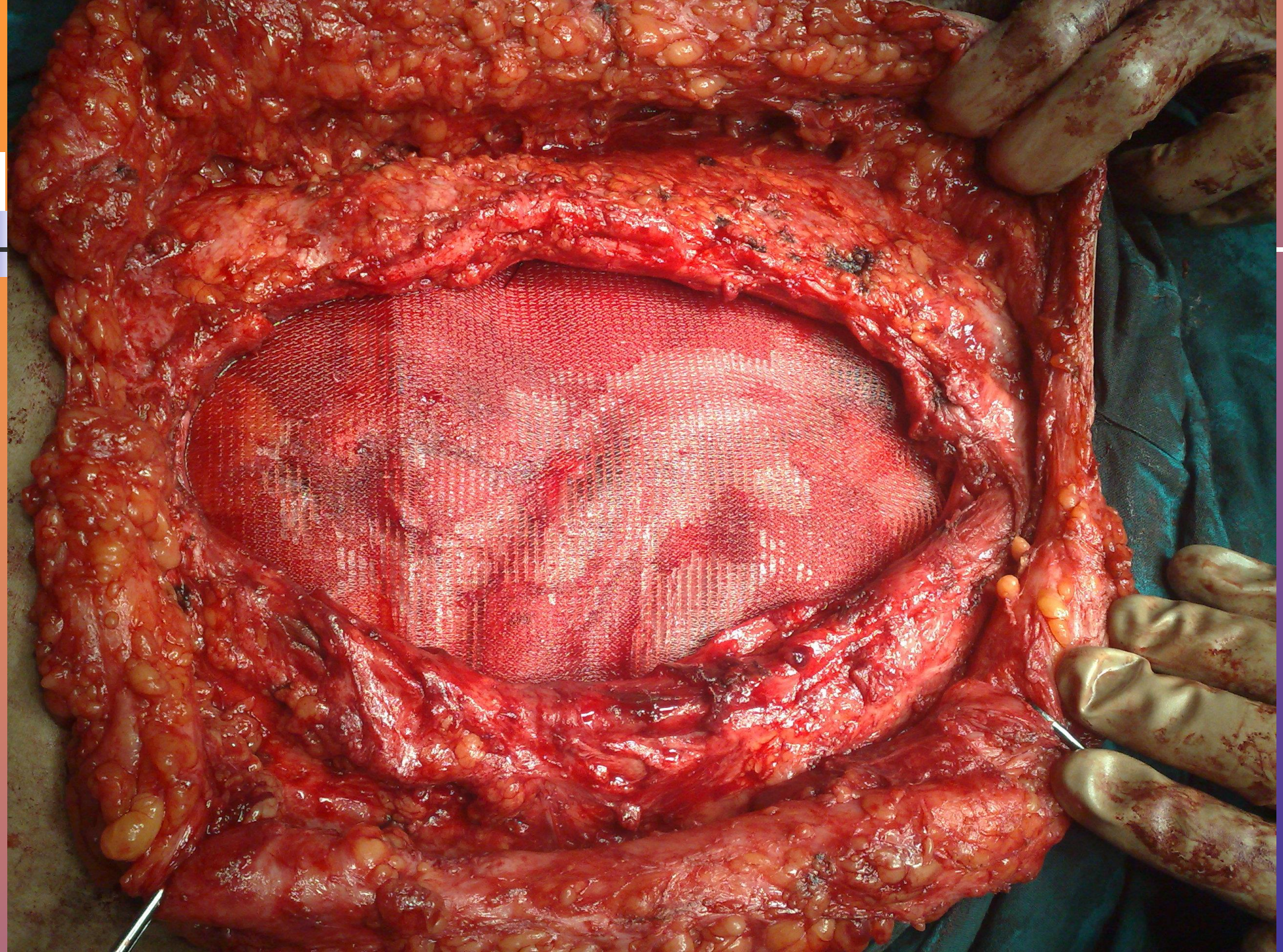
Redundant skin and subcutaneous tissue were excised (abdominoplasty), so that unhealthy skin at and around any previous operation scar was removed and a cosmetic appearance was achieved after wound closure.

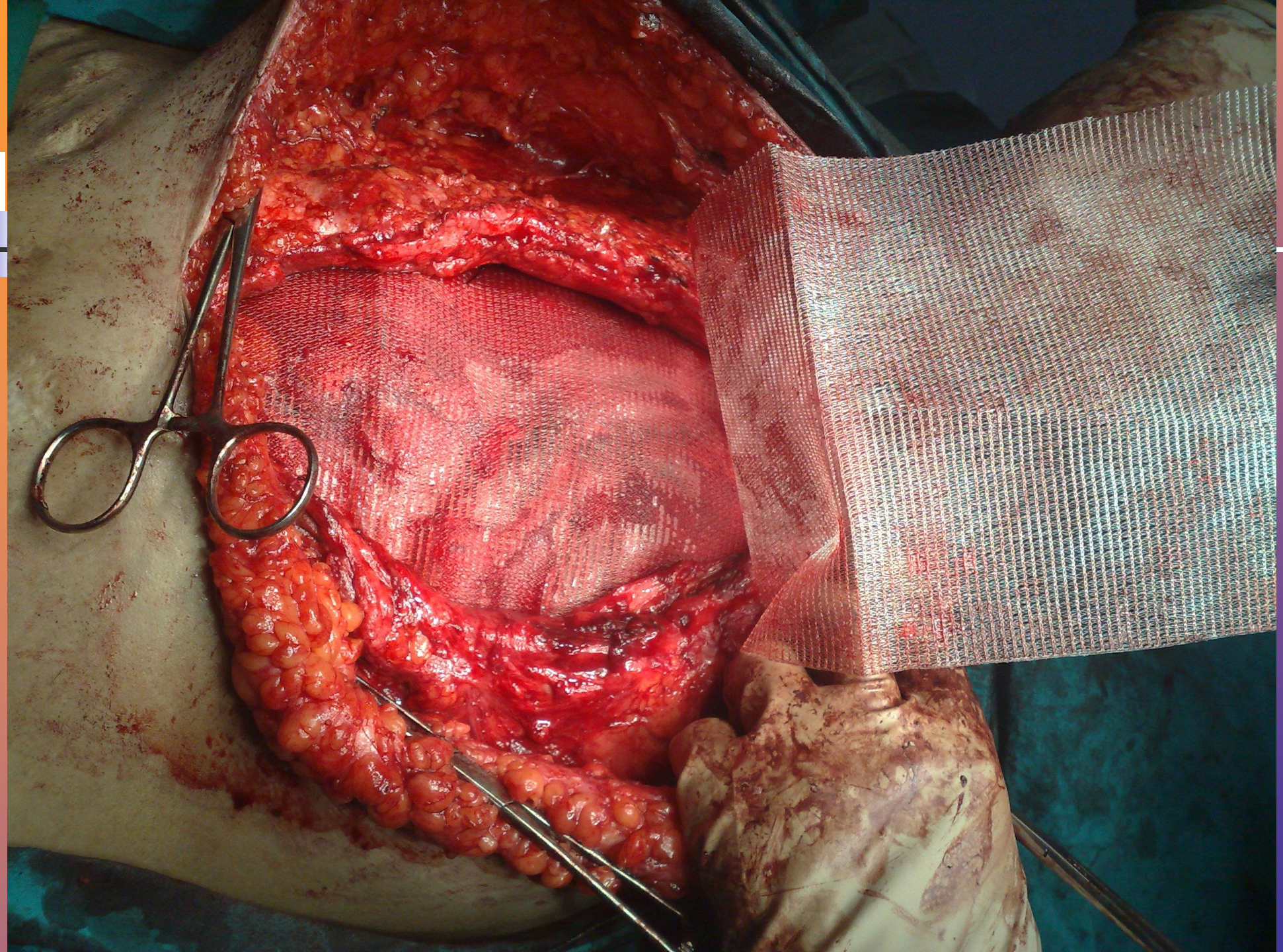
Then a small double tube suction drain was applied to the large subcutaneous space and exited the skin through two small openings. Finally, the subcutaneous tissue was approximated with No. 2/0 polyglactic acid sutures and skin was sutured with interrupted No. 3/0 polypropylene sutures.

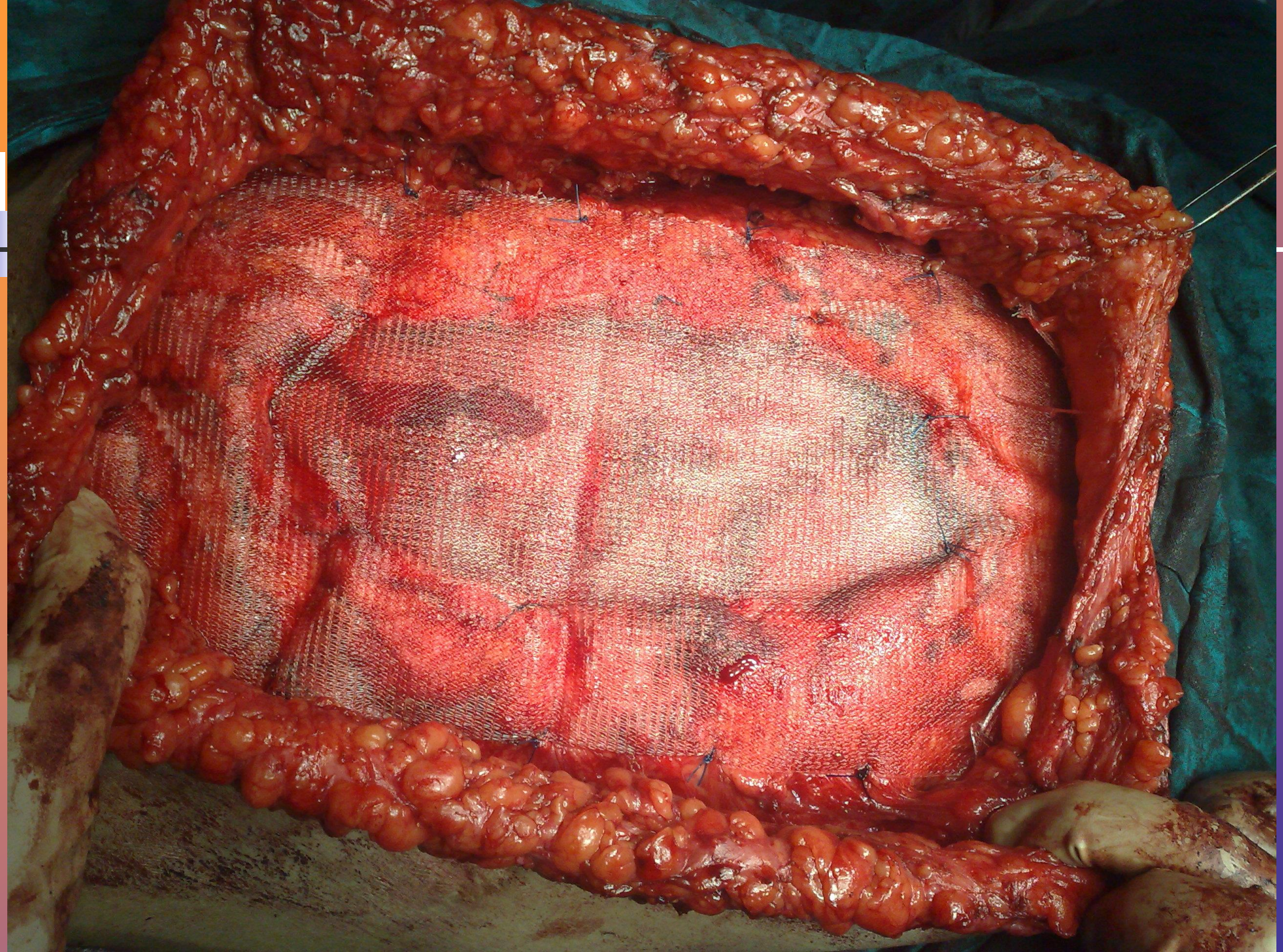


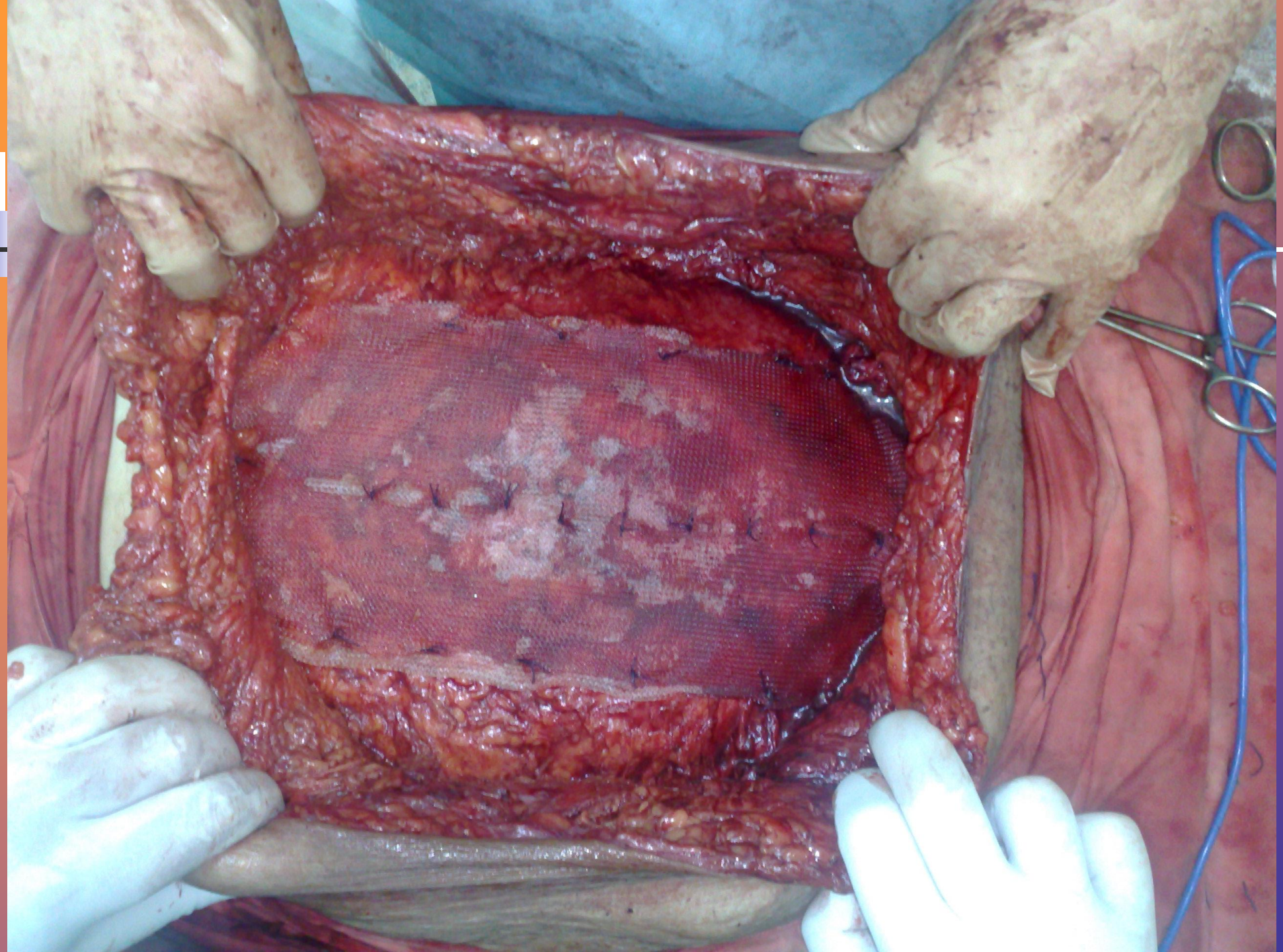


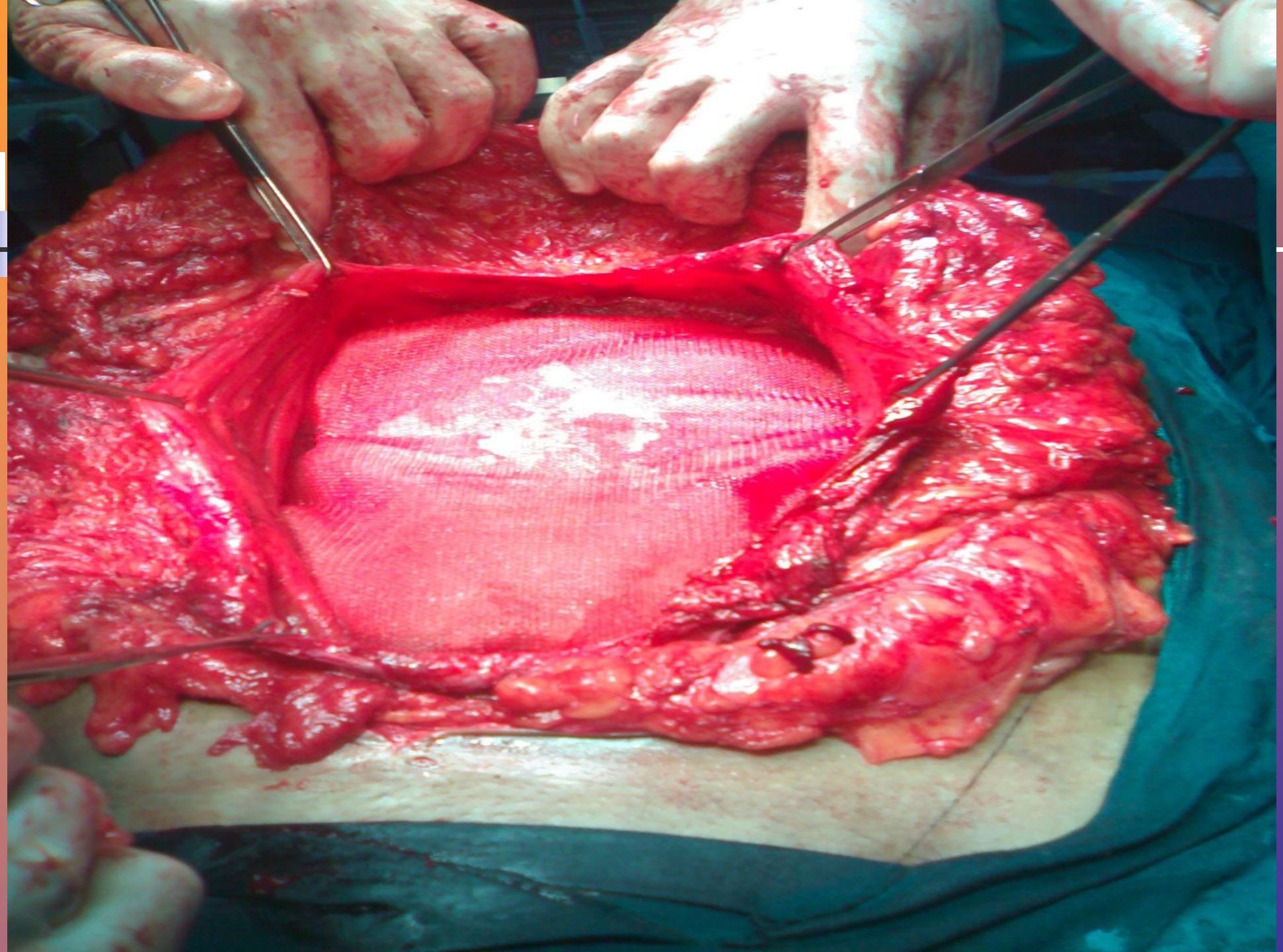


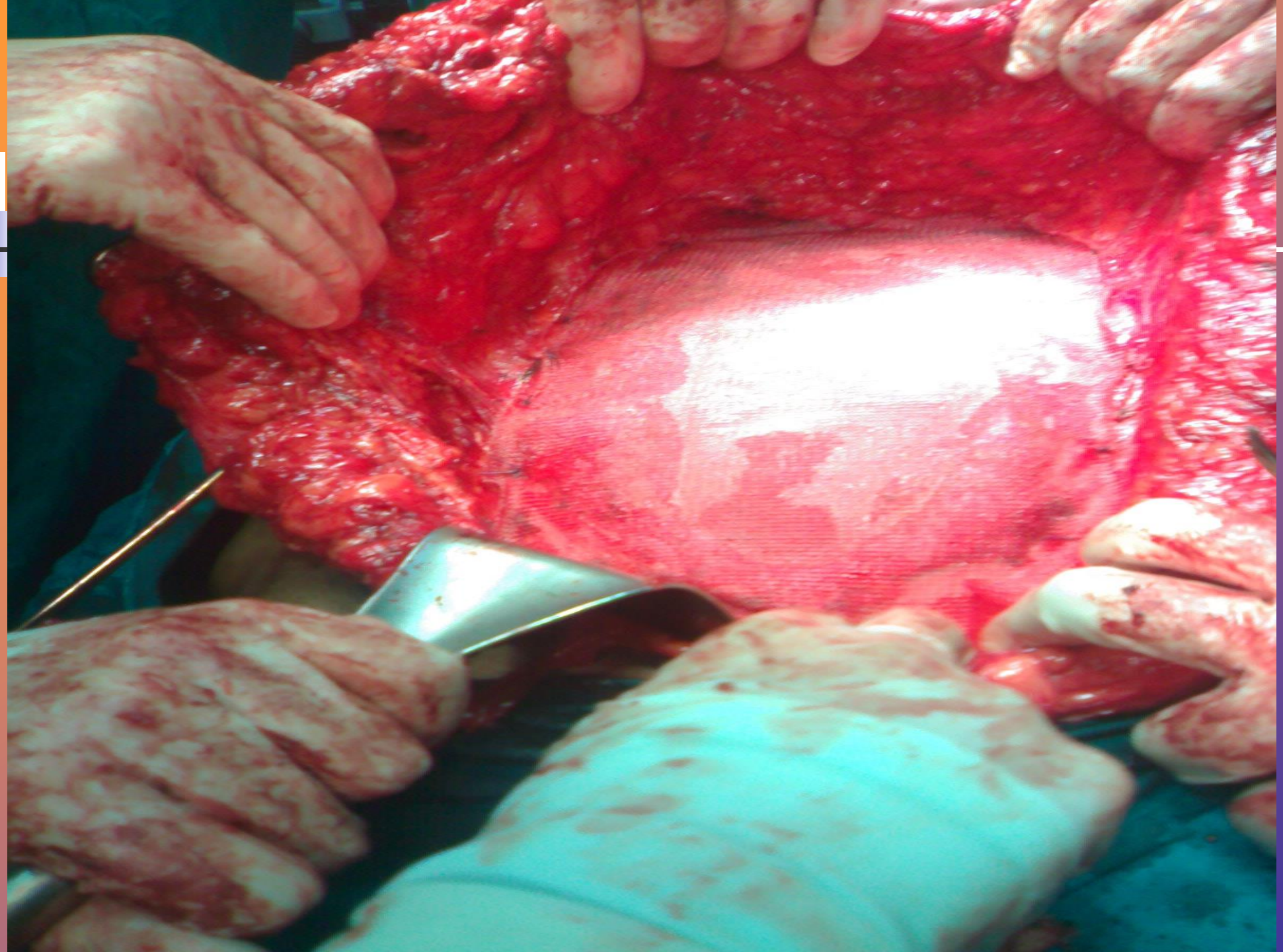


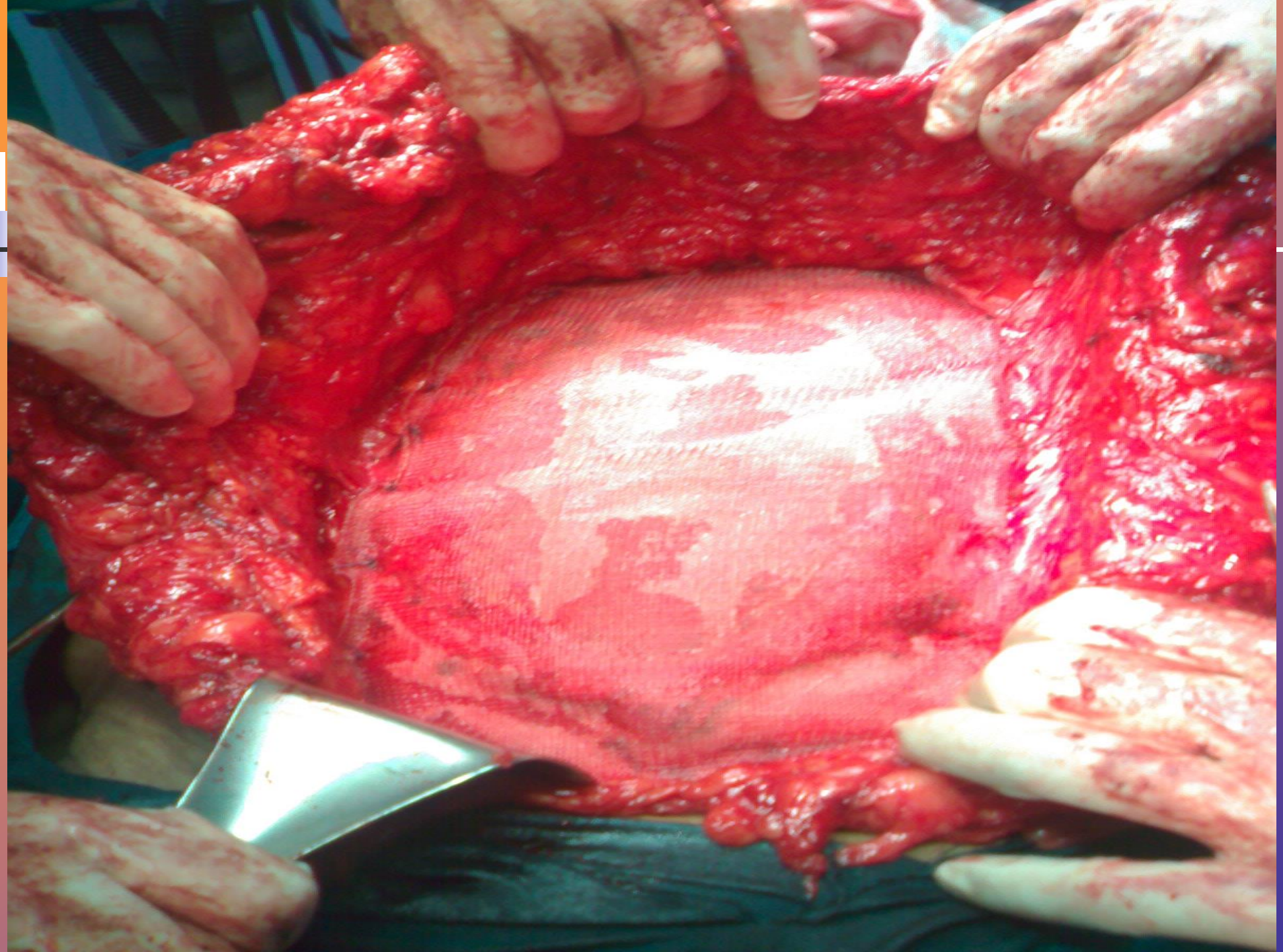


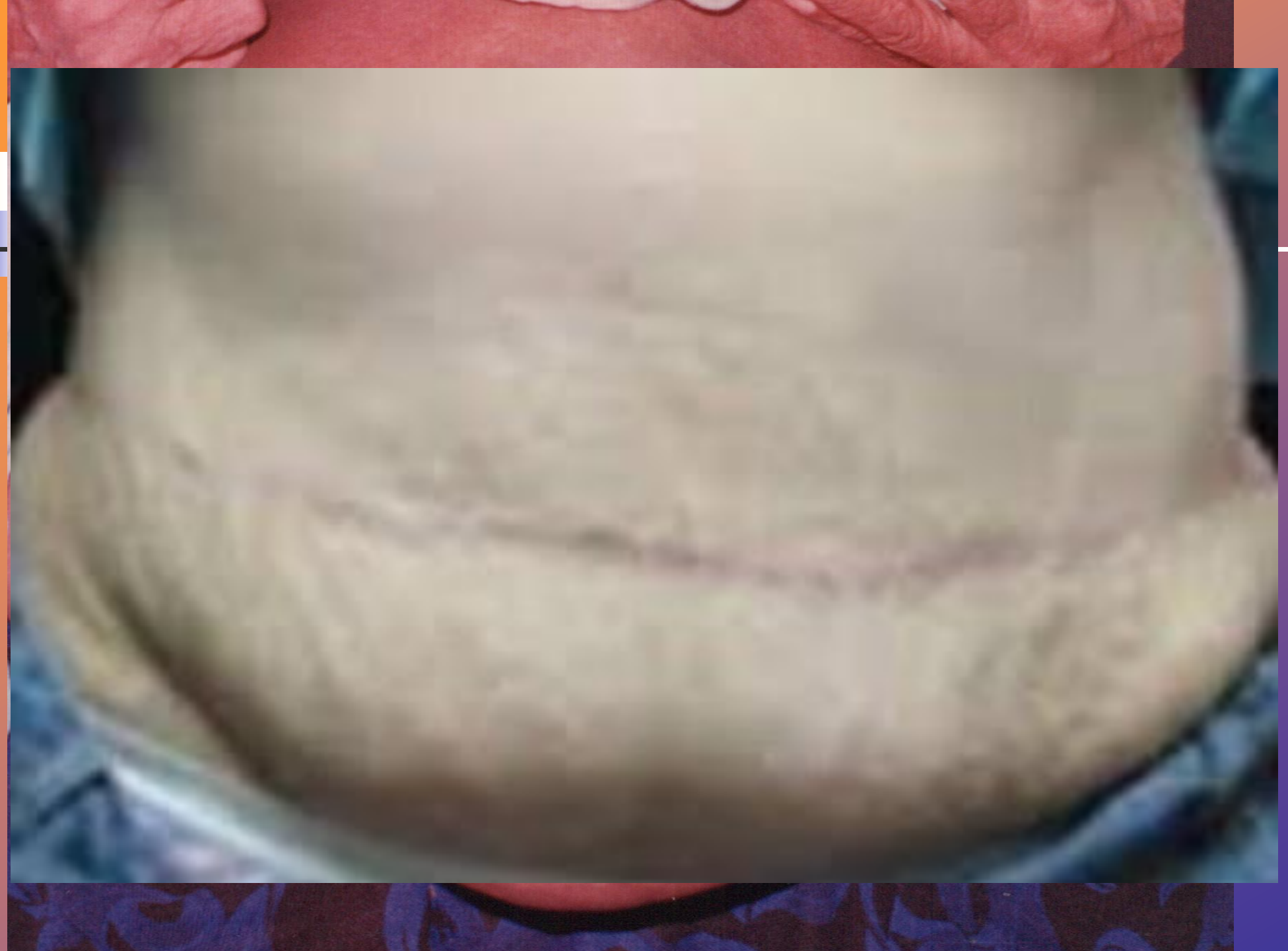


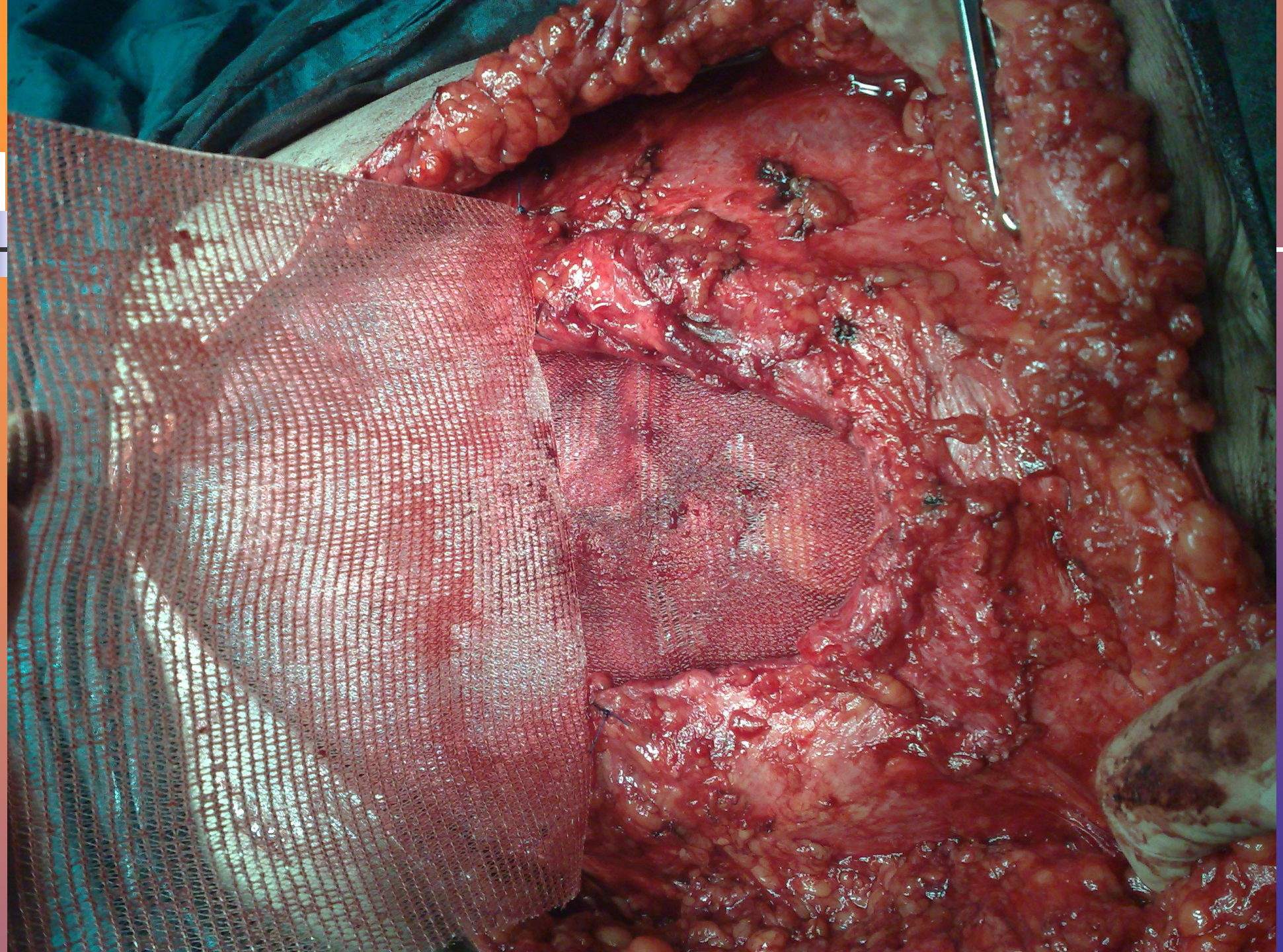












Ninety patients (75%) are females and 30 patients (25%) are males. Their ages ranged from 40 to 70 years (mean age 52 years).

Thirty five patients had De Novo hernia while the remaining 85 patients had either incisional or recurrent ventral hernia.

Forty cases (33%) had previous onlay polypropylene mesh repair at the hernia site. In these patients dissection of the sac from the mesh was difficult, but all meshes were removed even when part of the sac was to be excised with the mesh. One patient had previous intraperitoneal repair with expandable PTFE mesh. In this patient, adhesions between the mesh and bowel loops were found and lysed.

Table 1. Demographic and surgically relevant patient data.	
Male/female ratio	2/5
Age (range, mean)	(40-70, 52 years)
Obese pts (BMI 25-30)	35 (29%)
Morbidly obese pts (BMI > 30)	15 (13%)
Diabetic pts	36 (30%)
Defect length (range, mean) in cm	(10- 25, 16 cm)
Mesh type used	(30 X 30 cm polypropylene)
Operative time (range, mean) in min.	(95-180, 125 min.)
Blood loss in mL	(150- 800, 300 mL)
Postoperative hospital stay (range, mean)	(3- 18, 6 days)

Table 2. Indications for the primary surgery that resulted in incisional/recurrent ventral hernia development.

Indication	No. of patients
Gynecological	17
Hepatobiliary	22
Emergency exploration for acute abdomen	28
Elective bowel conditions	22
Ventral midline hernia	31
Total	120

During our surgeries, one limited small bowel injury occurred and was repaired with primary suturing. As planned, our double mesh repair technique was used in this patient who was then kept nil per mouth for three days after surgery. No surgical site infection had occurred in the patient.

Overall postoperative complications occurred in 30 patients (25%). Table 3 shows the type and frequency of postoperative complications.

Table 3. Type and frequency of postoperative complications.

Complication	Frequency (%)
Superficial wound infection	5 (4.1%)
Hematoma	2 (1.6%)
Seroma	9 (7.5%)
Deep wound infection at mesh site	2 (1.6%)
Hernia recurrence	4 (3.3%)
Adhesive intestinal obstruction	3 (2.5%)
Total	25 (30%)

In conclusion, this study tried to overcome some of the problems that face the surgeon while repairing a complex large ventral midline hernia by using the hernia sac to bridge the defect and prevent adhesion formation between the intestine and the inner mish layer without any additional cost.

On the other hand, we performed a double layer (Sandwitch) technique with the two meshes separated by the approximated recti muscles. This is supposed to give more strength to the repair. Actually this technique appears to be promising with good results regarding deep wound infection and hernia recurrence.

THANK YOU

ProfAlaaRedwan@med.Sohag.edu.eg