The Space of Bogros and the Interparietoperitoneal Spaces

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Since Vesalius, research in human anatomy, whether applied or fundamental, has had the objective of enhancing medical knowledge. Historically, surgeons have been the main petitioners for that knowledge. For several decades, investigators with a particular technique of morphological investigation have pressed for accurate anatomical awareness, often in areas that coincided with their interests. Too often has it been said that all aspects of anatomy have been described. Nothing is further from the truth. As soon as a new surgical technique appears or a new tool of morphological investigation is designed, our level of understanding appears suddenly deficient.

The human mind is such that it truly seeks only that of which it has an immediate need. Ambroise Paré has stated, "The arts are not so accomplished that nothing may be added."2

Did Bogros Describe the Space that Bears His Name?

In 1823, the leading investigations centered on a search for surgical approaches to arterial ligation in the limbs (Fig. 11.1). Wounds and aneurysms of the inferior epigastric and external iliac arteries, near or above the inguinal ligament, have given rise to three techniques, among others that were extensively discussed in surgical manuals of the 19th century:3 the procedures of Bogros, of Astley Cooper, and of Abernethy. In this era before antisepsis, the major concern was to avoid entering the peritoneal cavity where suppuration was reputed to be far less "desirable" than in the inferior limbs.

What Did Bogros Write?

"Injury to the epigastric artery is, with just cause, a great fear of surgeons every time an operation is performed near its course. Especially during debridement of inguinal and femoral hernias or ligation of external iliac artery . . . My aim is to put forth an approach for the ligation of the epigastric artery. . . . As the new procedure which I propose is based on the study of the relationship of these arteries to their neighboring structures, it is indispensable that I commence by an accurate and perhaps detailed anatomical description of the relative as well as the absolute site of these vessels . . . ."4

Such was the dedication and frame of mind with which Bogros applied himself to the description of what would be later called the "space of Bogros."

Detailing his reports of the anterior aspect of the external iliac artery, he stated, "the caecum on the right, the sigmoid on the left, as well as the peritoneum on the iliac fossa demarcate that aspect. This segment of the peritoneum, extending from the anterior abdominal wall to the iliac fossa, defines underneath it an interval of 4.5 to 6.5 mm, where the iliac artery terminates without cover by this serious layer. . . ."

A little further on, writing on the origin of the epigastric artery, he states: "A loose layer of cellular tissue separates it from the transversalis fascia. Behind, a thicker layer of the same tissue separates it from the peritoneum, shortly beyond its origin."

Moreover " . . . the external iliac artery and the first segment of the epigastric artery course through the iliac portion of the abdominal wall. These vessels are so placed that they are separated from the lower abdominal cavity by only the peritoneum and a more or less thick cellular layer."

Further study, layer by layer, of the "anterior wall of the iliac area" (inguinal or inguinoabdominal area), Bogros described successively, from the superficial to deep (a surgical approach):

- the skin;
- the superficial fascia;
- the external oblique aponeurosis;
- the muscular layer made up by the internal oblique and transversus muscles;
- the fascia transversalis;

and immediately behind the transversalis fascia: " . . . near the bladder, as well as about the abdominal apertures to the inguinal and femoral canals, one finds a thicker cellular layer than in the rest of this area. The first portion of the epigastric artery, which is found in this cellular layer, is closer to the fascia transversalis than to the peritoneum. . . . The peritoneum, which lines the abdominal cavity, covering the anterior aspect of the iliac and hypogastric areas, is elevated by the umbilical arteries and the urachus, then is reflected about these fibrous cords, forming about them a peritoneal fold. Medially, this serous membrane (peritoneum) descends within the pelvic cavity and lines the walls of this cavity as well as many of the contained organs. Laterally, it is reflected from the iliac area of the abdominal cavity, the caecum on the right, the sigmoid colon on the left, and forms behind the intestines, an extensive meso-iliac fold. The peritoneum, extend-
the distal peritoneum can be reflected to allow an extraperitoneal vascular ligation. One cannot deny that the advent of antisepsis and asepsis has facilitated the opening of a peritoneum and at the same time, took away from the interest of extraperitoneal surgery. The term "space of Bogros" appeared for the first time in 1912, penned by Rouvière in his treatise of human anatomy in Poirier and Charpy.

An excellent description, similar to that of Bogros, is taken up by Rouvière in all the subsequent editions of his treatise. He stated: "The peritoneum, which lines the deep aspect of the abdomino-inguinal wall, is reflected from the abdominal wall toward the iliac fossa, creating a fold of peritoneum on the shape of a gutter concave above and behind. This fold of peritoneum is such that, from the abdominal wall to the iliac fossa, the outer layer of the peritoneum is in contact with the soft tissues of the iliac fossa from 1 to 1.5 cm above the inguinal ligament. The peritoneum thus demarcates, with a dihedral angle formed by the fascia transversalis and the fascia iliaca inferiorly, a triangular, prismatic interval, filled with preperitoneal adipose tissue, called the space of Bogros." Testut and Latarjet underline the continuity of the preperitoneal (anterior interparietoperitoneal space) tissue layer between the peritoneum and transversalis fascia, as did Paturet, who studied the vascular and neural relationships of this space, and who pointed out as well that it is through the space of Bogros that preperitoneal hernias will emerge.

The Space of Bogros Is Part of a Whole: The Interparietoperitoneal Spaces

The recognition of the interparietoperitoneal spaces as greater channels of diffusion is not recent. Couinaud has urged the reexamination of the work of Delbet at the end of the 19th century on the spread of pelvic abscesses in women. He sums up the theses of Drouet and Mathis on the extraperitoneal spaces. These studies, again, were born out of a need to know the precise modes of spread in the extra- and retroperitoneal spaces. Drouet’s study was avant-garde; Mathis’s work had more immediate applications.

FIGURE 11.2. Sagittal paramedian sections of the abdominoinguinal region. (A) Lateral to the internal inguinal ring; (B) medial to the internal ring; (C) more medial still, through the femoral ring. (After Rouvière6.) 1 = transversus abdominis; 2 = anterior parietal peritoneum; 3 = fascia transversalis; 4 = iliopubic bandelette; 5 = space of Bogros; 6 = iliac fascia; 7 = deep circumflex iliac vessels; 8 = psoas muscle; 9 = fascia superficialis; 10 = superficial inguinal nodes; 11 = inguinal ligament; 12 = subcutaneous adipocellular layer; 13 = fascia superficialis; 14 = internal oblique muscle; 15 = external oblique aponeurosis; 16 = subcutaneous fat; 17 = interfoveal ligament; 18 = sheath of external iliac vessels; 19 = femoral vein; 20 = vascular sheath of femoral vessels; 21 = cribriform fascia; 22 = falcirom border of the cribriform fascia (ligament of Hey and Allan Burns); 23 = long saphenous vein; 24 = spermatic cord; 25 = femoral septum; 26 = deep inguinal lymphatics; 27 = conjoined tendon; 28 = pectineus muscle; 29 = deep inguinal lymphatic vessel; 30 = lowermost node of the middle lymphatic.