

# The peritoneum, a still neglected organ. Its rediscovery through a new scientific journal: the *Journal of Peritoneum (and other serosal surfaces)*

Luca Ansaloni,<sup>1</sup> Pompiliu Piso<sup>2</sup>

<sup>1</sup>General Surgery I, Papa Giovanni XXIII Hospital, Bergamo, Italy; <sup>2</sup>Department of Surgery, St. John of God Hospital Regensburg, Regensburg, Germany

The peritoneum is definitely still a neglected organ. If it was ever really considered an organ... In fact in Mosby's Medical Dictionary<sup>1</sup> if the liver is defined *the largest gland of the body and one of its most complex organs*, the peritoneum is instead simply described as *an extensive serous membrane that lines the entire abdominal wall of the body and is reflected over the contained viscera*. Instead, the peritoneum must in all respects be considered an *organ* not only with its anatomy, also very complex, its physiology with the many functions it performs, but also and above all with an absolutely peculiar and extremely multiform pathology.

On closer inspection, the peritoneum is definitively an organ with a very complex anatomy. It is formed by a continuous translucent membrane, which lines the abdominal cavity and covers the viscera. So macroscopically from the structural point of view peritoneum is made of two layers, which are continuous with each other, investing the walls of the abdominal cavity (parietal) and the surfaces of the abdominal organs, omentum and mesentery (visceral). Microscopically they both consist of a monocellular layer of simple squamous epithelial cells, called mesothelium, supported by fibrous connective tissue of variable thickness, deriving from mesoderm in the embryological period of development. The potential space between the parietal and visceral layers is called peritoneal cavity. It holds a small amount of serous fluid, but is otherwise empty. This fluid contains water, proteins, electrolytes and solutes derived from interstitial fluid in the adjacent tissues and from the plasma in the local blood vessels and, lubricating the peritoneum, allows the mobile viscera to slip freely on the abdominal wall and each other within the restrictions dictated by their ligaments and attachments. Although in males the peritoneal cavity is completely closed, in females it has a communication with the outside through the uter-

ine tubes, the uterus and the vagina.<sup>2,3</sup> Peritoneum accomplishes a number of important functions. Some of them are the following: peritoneum ensures that the mobile viscera glide easily on one another by mean of peritoneal fluid, works with its folds to support the viscera, providing a pathway for blood vessels lymphatics, and nerves to these organs, seals off many intraperitoneal sepsis with its ability to stick together in infection and, finally, acts as energetic deposit storing large amounts of fat in the ligaments, mesenteries and greater omentum.

But over the last thirty to forty years, two were definitely the lines of research and clinical applications that have renewed the interest in the peritoneum as an organ with its own functional capacity. On the one hand the development of peritoneal dialysis as a possible therapeutic response for patients with chronic kidney failure,<sup>4</sup> the other the paradigm shift regarding the peritoneal carcinomatosis from the absolute final evolution of the neoplastic disease to still loco-regional event (and therefore potentially curable).<sup>5,6</sup> To these two topics must be added two other pathological conditions that typically develop in the peritoneal cavity, against which surgeons (and gynecologists) have almost always fought: intra-abdominal sepsis (*i.e.*, peritonitis)<sup>7</sup> and the development of adhesions.<sup>8,9</sup> To all this we must add that these peritoneal either inflammatory/infectious, either oncological conditions often result in life-threatening diseases. Given all this is quite surprising how the peritoneum has been relatively poorly considered, as compared to other anatomical structures and organs. This paradox might be partially explicated by the fact that the peritoneum cannot be seen and directly examined, and is still nowadays with difficulty studied even by updated radiological methods, like computed tomographic scan and magnetic resonance imaging.

Many, if not all, of the above mentioned considerations regarding the peritoneum can be absolutely reiterated with the other serosal membranes, like pericardium and pleura, that show a similar arrangement in the parietal and visceral layers, with a cavity in between.

The *Journal of Peritoneum (and other serosal surfaces)* was born today with the ambition to change this trend, being itself an advanced exchanging forum for basic scientists, clinical researchers, physicians and surgeons of different specialties, in order to answer the above mentioned, up to now unmet, necessity to collect studies and researches regarding the peritoneum (and other serosa). The *Journal of Peritoneum (and other serosal surfaces)* is an open access, peer-reviewed online journal that covers all aspects of clinical and basic research related to either healthy, either diseased peritoneum (and other serosal surfaces, like pericardium and pleura) and its allied subjects. As we have pointed out before, peritoneum spans a wide range of disciplines and interests, including either surgical and medical specialties, but even anatomy, embryology, histology, physiology, pharmacology and basic sciences. The same can be told for

Correspondence: Luca Ansaloni, General Surgery I, Papa Giovanni XXIII Hospital, Piazza OMS 1, 24127 Bergamo, Italy.  
Tel.: +39.035.2673477 / +39.035.2673483 - Fax: +39.035.2674963.  
E-mail: lansaloni@asst-pg23.it

Received for publication: 11 February 2016.  
Accepted for publication: 17 February 2016.

©Copyright L. Ansaloni and P. Piso, 2016  
Licensee PAGEPress, Italy  
*Journal of Peritoneum (and other serosal surfaces)* 2016; 1:2  
doi:10.4081/joper.2016.2

This article is distributed under the terms of the Creative Commons Attribution Noncommercial License (by-nc 4.0) which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

other serosal surfaces of human body, like pericardium and pleura. Hence the *Journal of Peritoneum (and other serosal surfaces)* aims to provide a platform for research surgeons and physicians to publish their studies and rapidly exchange ideas and findings with the common topic of the peritoneum (and the other serosa). Thus areas of interest include, but are not limited to: oncology, inflammatory diseases and adhesions, septic diseases, gynecological diseases and endometriosis.

The scientific rigor of the *Journal of Peritoneum (and other serosal surfaces)* will be achieved by a close peer review, which will tend more than to restrict the publication of the studies as such, rather to make the data sent by the researchers available, trying, when possible, to help them make scientifically acceptable their articles. Moreover the online presence of the *Journal of Peritoneum (and other serosal surfaces)*, as well as its open access policy ensures that the articles published in the journal are highly visible and reach a wide audience, whilst immediate publication on acceptance ensures all findings are disseminated as quickly as possible. Furthermore in order to obtain such a large diffusion and immediate visibility within the worldwide scientific community, we will try to keep as much as possible a low costs policy regarding publishing fees.

We hope that this new publishing activity can be viewed with favor by the scientific community that wants to address, in order to increase knowledge of *organ* peritoneum.

## References

1. O'Toole MT. Mosby's Medical Dictionary. 9th ed. St. Louis, MO: Elsevier Mosby; 2013.
2. Di Paolo N, Sacchi G. Anatomy and physiology of the peritoneal membrane. *Contrib Nephrol* 1990;84:10-26.
3. Blackburn SC, Stanton MP. Anatomy and physiology of the peritoneum. *Semin Pediatr Surg* 2014;23:326-30.
4. Oreopoulos DG, Thodis E. The history of peritoneal dialysis: early years at Toronto Western Hospital. *Dial Transplant* 2010;39:338-43.
5. Sugarbaker PH. Surgical responsibilities in the management of peritoneal carcinomatosis. *J Surg Oncol* 2010;101:713-24.
6. Lungoci C, Mironiuc AI, Muntean V et al. Multimodality treatment strategies have changed prognosis of peritoneal metastases. *World J Gastrointest Oncol* 2016;8:67-82.
7. Fagenholz PJ, de Moya MA. Acute inflammatory surgical disease. *Surg Clin North Am* 2014;94:1-30.
8. van der Wal JB, Jeekel J. Biology of the peritoneum in normal homeostasis and after surgical trauma. *Colorectal Dis* 2007;9:9-13.
9. Beyene RT, Kavalukas SL, Barbul A. Intra-abdominal adhesions: Anatomy, physiology, pathophysiology, and treatment. *Curr Probl Surg* 2015;52:271-319.