CHAPTER 3

SURGICAL ENDOSCOPIC ACCESS TO POTENTIAL ANATOMICAL SPACES: A MULTIDISCIPLINARY ISSUE

Attilio Maria Farinon
Department of Surgery, University of Rome “Tor Vergata”, Rome, Italy

In the seventies, diagnostic laparoscopy, endoscopy, ultrasounds, and later computed tomography, contributed deeply to modifying and renewing anatomical knowledge. Further improvements in imaging and video-assisted surgical techniques led us to reconsider diagnostic and therapeutical approaches. Consequently, laparoscopic surgery, as well as the diagnostic and therapeutical application of endoscopy in urological, digestive and tracheo-bronchial diseases, led to a better understanding of extraluminal (abdomen and thorax) and luminal (digestive tract, bronchial tree, bladder, etc.) anatomy. But, if we exclude anatomical cavities, we are still challenged by the potential or “virtual” spaces, those ones that have been traditionally described by Newell as “hidden” spaces [1].

The spread of video-assisted surgery and its application in the management of diseases involving organs or anatomical structures placed in the “potential” spaces, rendered the surgical anatomy of these spaces (neck, mediastinum, pre- and retroperitoneum, subfascial space of the leg, etc.) less abstract. Nevertheless, it must be underlined that the relative anatomical notions, well codified by traditional anatomy but better defined by modern radiological imaging, are an important part of the time spent for the learning curve of the mini-invasive surgical approaches and should be refined by assessing the possibilities of transforming a virtual space to a “real cavity” (by gas insufflation or gasless procedures) in which exploration and operation is realistic. These issues are shared by different surgical specialities. Some of these are strictly connected with general surgical and surgical subspecialities activities and therefore, once more, this testifies to the fact that the video-assisted and endoscopic surgical offers “transversal” ways to explore anatomical spaces. In other words, this transversality is better understood if we consider the multidisciplinarity on which the approaches are based (Fig. 1).
As recently stated by Meakins [2], “Surgery in all disciplines has been undergoing a revolution over the last decade as our refinement of surgical technique increases, driven by patient-centred outcomes, competition for patients and new technology. Examples of patient-driven operative approaches can be seen in the establishment of laparoscopic cholecystectomy as the standard approach”.

One of the problems in the introduction of a new surgical approach is how to get the best training in the interest of the patients and in the interest of the transmission of the lessons learned in the experimental and clinical settings (i.e. training and teaching).

Most of the problems we are facing in the video-assisted approach to the potential spaces have been in part overcome by other surgical specialistes (i.e. urologists, gynecologists, neurosurgeons, etc). For instance, since 1982 discoscopy has proved its value as a means of continous optical control of percutaneous intradiscal procedures [3].

In 1995 Zelko et al [4], demonstrated the safeness of laparoscopic lumbar discectomy, as an alternative to posterior microdiscectomy. Most of the contributions on the video-assisted approach to the retroperitoneum are due to the work of urologists [5, 6].

The endoscopic approach to the potential spaces or compartments is actually one of the abilities most required by general surgeons and this is demonstrated by the interest devoted to this field by leading researchers into video-assisted surgical techniques [7, 8].

![Diagram](image_url)