Laparoscopic surgery in urological oncology

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Laparoscopic surgery has revolutionised the concept of minimally invasive surgery for the last two decades. In 1991 Ralph Clayman performed the first laparoscopic radical nephrectomy but it took a long time until his example had the impact it deserved.

Most probably, the reason was the relative rarity of kidney cancer and the necessity of a prudent innovative laparoscopic approach to any oncological pathology.

We had to wait until 1997 when the first laparoscopic radical prostatectomy was performed in Bordeaux by Richard Gaston. In the years which followed, this procedure was repeated in many European Centres and, after a reasonable period of follow up, was accepted by the international urological and oncological community.

It is clear that prostate cancer is much more diffuse than kidney cancer; therefore, many centres have been able to acquire the skills and the organisation necessary to perform this delicate and difficult surgical procedure.

As a consequence, in many European centres, laparoscopic surgery has substituted open surgery for numerous indications.

Adrenalectomy for malignancy

The laparoscopic approach today is the gold standard for this pathology. Blood loss, reduced surgical trauma, recovery after surgery are all in favour of laparoscopy.

Radical nephrectomy

Additionally for this pathology, the laparoscopic approach is the gold standard. The operation can be performed transperitoneally or through a retroperitoneal approach according to surgeon's preference. The retroperitoneal approach is preferable after previous abdominal surgery. Contraindications are the volume of the tumour, the location in contact with the main vessels and the presence of numerous lymph nodes.

Partial nephrectomy

The indications for this procedure are still somewhat controversial. Numerous studies show that with the laparoscopic approach, the warm ischemia time is slightly longer and that the complication rate is moderately higher. On the positive side, the surgical trauma is definitely less important. The location of the small mass plays a very significant role in the indications for this procedure. Patients with peripheral masses under 4 cm can obtain a particular benefit from a laparoscopic approach.

Nephroureterectomy

The laparoscopic approach to this pathology is not more complicated than for radical nephrectomy. Once the nephrectomy is completed one port will be added on the midline, distal to the umbilicus, the optic will be moved to a lower port and the ureter will be prepared until the submucosal part is exposed. Usually a Hem-o-lock clip or an Endogia will close the ureter removing a small cuff of bladder mucosa.

Retroperitoneal lymph node dissection

RPLND can be used as first approach to define the staging of clinical stage I. In this way chemotherapy can be avoided in a large percentage of patients that do not need it. RPLND for post chemotherapy patients can be done by experienced surgeons because the technique can be quite demanding due to adhesions secondary to chemotherapy.

Prostatectomy

Radical prostatectomy is today the most common performed laparoscopic procedure. Reduced trauma, short convalescence, equivalence of oncological results and patient's acceptance have imposed this operation to the urologist. In the USA, where the laparoscopic expertise was less widespread, the rapid diffusion of

the Robot Da Vinci has allowed the gap between open surgery and laparoscopy to be filled. Today, robotic-assisted surgery is one of the latest innovations in the field of minimally invasive surgery.

Cystectomy

This procedure has been the last to join the indications of oncological laparoscopy. This is not due to the difficulty of the operation, but transitional cell cancer, if the organ is violated, can spread quite rapidly with a peritoneal invasion. Proper indication is the key to this laparoscopic procedure which is best done in patients with low grade and low stage disease.

In conclusion, in the last 10 years, the surgical treatment of oncological diseases has changed dramatically in our specialty. Today, it is possible to treat most of the oncological diseases taking advantage of minimally invasive techniques with obvious benefit for our patients.

Conflict of interest statement

None declared.