Case report

Clin Ter 2011; 162 (3): 227-229

A case report of a difficult dissection of the iliac vessels conducted by means of the harmonic scalpel during a kidney transplantation

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Abstract

Background. The "difficult" preparation of iliac vessels in the kidney transplant recipient caused by a perivascular fibrosis with satellite lymphadenopathy is sometimes burdened by post-transplant complications (lymphocele, seroma and hematoma). Both iliac vascular adhesions and satellite lymphoadenopaty are often due to reiterate femoral cannulation aimed to hemodialysis.

Patients and Methods: The case report concerns a 60 years old female uremic patient, on dialysis for about 4 years with perivascular fibrosis and pelvic lymphadenopathy caused by bilateral femoral artery catheterization. In the course of kidney transplant, preparation of the iliac vessels was performed by ultrasonic scalpel. In the case we handled there was no incidence of immediate, medium and long term post operative complications, with a considerable reduction of the operative time in the vascular dissection performed without ligation. Often the long dialytic period, the same nephropathy, reiterative femoral catheterization determine perivascular fibrosis and/or consensual lymphadenopathy. In these cases, in light of initial experience, the use of ultrasonic scalpel enables easy dissection by the coagulative synthesis not only of vascular compartment but also of the lymphatic duct whose leakage, particularly in these cases, creates a favourable condition to hematoma and / or lymphocele formation. These complications, although rarely jeopardize patient's life, however, may affect the outcome of transplantation in terms of morbidity and survival of the organ. The use of ultrasonic scalpel ensures total control of vascular and lymphatic compartment coagulation, alongside a reduction in the time of surgical dissection. ***Clin Ter 2011; 162(3):?-?***

Key words: *harmonic scalpel, iliac lymphadenopathy, postoperative lymphocele, renal transplantation*

Introduction

Challenge in iliac vascular dissection in renal transplant recipient caused by perivascular fibrosis and satellite lymphadenomegalia is often associated with post transplant complications (lymphocele, seroma, hematoma). Iliac vascular axis fibrosis and particularly the satellite lymphadenomegalia are usually due to repetitive femoral catheterization during the dialytic period. In the majority of transplant centers, including our own, the external iliac vein and artery or the hypogastric artery are used for vascular anastomoses in renal transplantation. Using this standard technique, wide dissection of perivascular lymphatic vessels is unavoidable in this region. Lymphocele formation is a recognized complication of renal allotransplantation that can jeopardize the graft and cause major morbidity for the allograft recipient. The two main sources for lymph production are lymphatics close to the iliac vessels and those present in the renal allograft ilum. We attempted to prevent lymphocele formation by adopting two precautions in performing the iliac vessels preparation: 1) we limit, if possible, the area of dissection in the recipient to that necessary to obtain vessel control of the segment of iliac vessel for the vascular anastomosis (to decrease the number of lymphatics that will divide or destroy), and 2) we practice lymphostasis as meticulously as we do haemostasis.

For the first time, Box et al. (1) tested a comparative study of in vivo lymphatic sealing capability of the porcine thoracic duct by each of 4 commonly used laparoscopic dissection devices (Harmonic ACE™ Scalpel, LigaSure™ V, EnSeal™ and Trissector™). Each device tested produced a physiological seal and should be suitable for sealing lymphatic vessels during laparoscopic surgery.

Recently, Nakayama et al. (2) verified the usefulness of an ultrasonic scalpel for the sealing of lymphatic ducts, an harmonic scalpel was tested, using the thoracic ducts in pigs.

For these reasons in our experience we used harmonic scalpel™ (Ethicon Endo-Surgery, Cincinnati) which is an instrument that cuts and coagulates tissue by converting electrical energy into ultrasonic mechanical vibrations. This surgical tool can operate with minimum thermal tissue injury, while ensuring good haemostasis (3). We effected a rapid and large preparation of external iliac right axis in spite of a bilateral perivascular adhesions and satellite lymphomegalia, without complications in peri- and post-transplant period.

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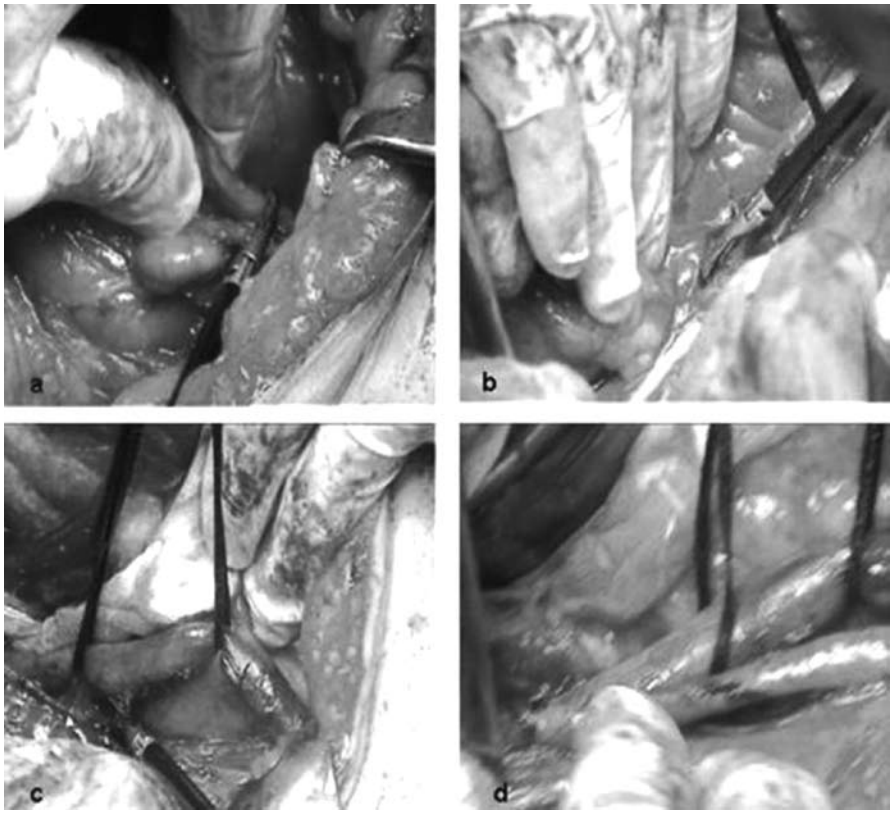

Fig. 1. Iliac vessels dissected free from surround tissue by using of ultracision:
a) perivascular lymphoadenopathy;
b) artery dissection;
c) venous dissection;
d) iliac vassels exposed.

Case report

In right iliac fossa we positioned a kidney transplant in a 60 years old female uremic patient, in periodic dialysis until 4 years, with iliac perivascular fibrosis and satellite lymphadenopathy due to percutaneous reiterate femoral catheterization. After a classic "J" cutaneous incision in right iliac fossa and following opening of muscle aponeurotic plane the peritoneal sac was medialized and the iliac vessel axis exposed. Preparation of both right iliac vessels was performed with harmonic scalpel™ (Ethicon Endo-Surgery, Cincinnati) in 13 minutes (Fig. 1).

Discussion

In the case treated, in spite of the contemporary presence of iliac perivascular fibrosis and satellite lymphoadenopathy there has been no incidence of post operative complications, both immediate and medium and long term with a considerable reduction of the operative time in the vascular dissection performed without ligation. Considered that iliac vessels dissection reported here belong to difficult execution cases which may be performed on average time of 45 minutes, we obtained the same results in less time, 13 minutes, corresponding to a reduction of 71.2%.

Persistent lymph leakage from lymphatic ducts injured during iliac vessels preparation can lead to postoperative lymphocele. Its incidence has been reported to range from 0.6% to 18% in several large clinical series (4-8). Ultrasonography has increased the possibility of detecting these fluid collections (9, 10). Most of these are small and resolve spontaneously. On the contrary, larger lymphoceles may produce clinical symptoms such as ipsilateral leg oedema, abdominal swelling, fever, and, depending on their size and location, hydronephrosis by compression or displacement of the transplant ureter or the bladder. Although some clinical reports have shown the possibility of late development of lymphoceles (11), most of these are detected 1 to 3 months after transplantation. The treatment consists of simple aspiration, external drainage, and marsupialization of the cyst into the peritoneal cavity by standard surgical technique or laparoscopy (12-16). Lymphoceles are present in all kidney transplant experiences, and their pathophysiology remains, at the moment, almost unknown. Many contributing factors such as extensive perivascular dissection of iliac vessels, acute rejection episodes, delayed graft function, source of kidney (cadaveric versus living related donor), use of diuretics, and steroid therapy have been involved (17-20).

It is unexplained why the lymph from the graft area has a role in lymphocele formation. Probably, the inflammatory process associated with allograft presence increases the flow of lymph from lymphatic vessels around the iliac vessels. Persistent lymph leakage from iliac lymphatic ducts injured during vessels preparation has an important role in lymphocele formation after kidney transplantation. Electric coagulation is an excellent technique for the haemostasis of small divided blood vessels, but is not useful for the occlusion of lymphatic vessels larger than collecting vessels. Because the lymph does not have any clotting factor, all of lymphatic vessels must be tied or clipped, but diathermy is not suggested. Moreover in case of perivascular fibrosis and lymphoadenomegalia these manoeuvres are difficult and dangerous and need a lot of time. Often the long dialytic

age, the same nephropathy, the reiterated femoral catheterization determine perivascular fibrosis of iliac axis and/or consensual lymphadenopathy. In these cases, in light of our initial experience, the use of ultrasonic scalpel enables easy surgical dissection in a "difficult field" by the coagulative synthesis not only of the vascular compartment but also of the lymphatic ducts whose leaking, particularly in these critic cases, creates a favourable condition to fluid collections. These complications, although rarely jeopardize the life of patient, however, may affect the outcome of transplantation in terms of morbidity and survival of the organ. The use of ultrasonic scalpel ensures total control of coagulation of vessels and lymphatic ducts, alongside a reduction in iliac vascular dissection time especially in difficult cases.

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